An Analysis of Core Entrepreneurial Competencies, their Interdependencies and their Cultivating Approaches in Virtual Education using a Collective Intelligence Methodology

A thesis submitted to the Department of Education and Professional Studies, University of Limerick, for the degree of Doctor of Philosophy

Morteza Rezaei-Zadeh
October 2014
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October 2014
Abstract:

In 2012, an OECD\textsuperscript{1} report entitled, ‘Education at a glance’ highlighted a dramatic increase in the unemployment rate of university graduates in many OECD countries. Since entrepreneurship is frequently seen as an important factor in reducing unemployment in nations and in specific groups including university graduates, Entrepreneurship Education (EE) has become an increasingly important focus of research. Despite this potential important impact, EE programmes are suffered by a number of gaps and shortcomings, such as: ignoring their stakeholders in the process of curriculum design, using traditional teaching methods, high ambiguity about the important entrepreneurial competencies, lack of appropriate use of educational technologies, and lack of clarity about the role of context.

Furthermore, e-learning is emerging as the new paradigm of modern education with a radical growth and technology is expected to positively affect EE. In this light, the current study seeks to contribute to EE literature by designing an e-learning based entrepreneurship curriculum which –against the gaps above- effectively stimulates students’ entrepreneurial competencies. Moreover, in order to review the impact of cultural factors on EE, this study was conducted in two countries with different backgrounds: Iran and Ireland.

Implementing five Interactive Management (IM) sessions as an exploratory collective intelligence method and six focus groups by active participation of Irish and Iranian academics, students and entrepreneurs, this study:

- Identified ‘Productive Thinking’, ‘Motivation’, ‘Interpersonal skills’ and ‘Leadership’ competencies as the key entrepreneurial competencies which enable university students to create their own innovative job opportunities after their graduation;

- Explored the inter-dependencies between these entrepreneurial competencies. In the sample as a whole, the critical mass and total influence scores for categories of competencies suggest that a focus on Productive thinking competencies – such as Tolerance for ambiguity - may serve to significantly enhance specific Motivation, Interpersonal, and Leadership competencies.

\textsuperscript{1} The Organisation for Economic Co-operation and Development (OECD)
Generated and classified two sets of cultivation approaches (solutions) which could be implemented in an e-learning platform for enhancing the first two highly recommended entrepreneurial competencies (Productive Thinking and Motivation) in students.

When considering these solutions, it was emerged that they are significantly aligned with two well-known educational theories: Cooperative and Experiential Learning. Therefore, the key features of cooperative learning (positive interdependence, individual accountability, promotive interaction, social skills and group processing), as well as the main cycles of experiential learning (concrete experience, reflective observation, abstract conceptualisation and active experimentation) and their affordances for implementing those solutions in an e-learning platform are outlined. It was also argued that while culture matters to entrepreneurship, dividing countries into “developing” and “developed” categories may cloud our understanding of the subtle similarities and differences across cultures. Another cultural contribution of this study was that while Hofstede’s cultural dimensions are dominantly used in cross-cultural entrepreneurship studies, they do not adequately describe cross-country differences in the context of entrepreneurship. Therefore, further information from other resources such as Global Entrepreneurship Monitor (GEM) and from other perspectives such as economic, politics, and infrastructures should be used in an entrepreneurship cross-country study.

To sum up, if EE is to be effective in reducing university graduates unemployment rate, it must meet some pre-requirements highlighted by this study. Resisting against these required improvements can result in enhancing passiveness and ineffectiveness of EE programmes. The most important pre-requisite is an evolution in the teaching methods applied in these programmes. Traditional teaching methods should be replaced by non-traditional cooperative-experiential methods which stimulate students’ right-hemisphere. The second pre-requisite is paying attention to specific know-how soft competencies including Productive Thinking, Motivation, Interpersonal skills, and Leadership in order to educate students ‘for’ entrepreneurship instead of ‘about’ entrepreneurship. Third, EE stakeholders should be engaged in the process of curriculum design in order to make sure that their needs and preferences are met by the curriculum. Fourth, appropriate use of educational technologies and e-learning platforms should be a priority in order to facilitate the process of conducting cooperative-experiential cultivating approaches generated by this study.
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# Table of Contents

1. Chapter 1: Introduction: ........................................................................................................ 14  
   1.1. Overview of the Research ......................................................................................... 14  
   1.2. Rationale .................................................................................................................. 20  
   1.3. Research questions ................................................................................................. 29  
   1.4. The aim of this study ............................................................................................... 31  
   1.5. The scope of this study ............................................................................................ 31  
   1.6. The context of this study ......................................................................................... 32  
      1.6.1 Economic context ............................................................................................... 32  
      1.6.2. Cultural context ................................................................................................. 35  
   1.7. Overview of the Research ......................................................................................... 38  
   1.8. Thesis Structure ....................................................................................................... 40  
   1.9. Definitions: ............................................................................................................... 41  
      1.9.1. Entrepreneurial Competency ......................................................................... 42  
      1.9.2. E-Learning ........................................................................................................ 44  
   1.10. Conclusion .............................................................................................................. 46  

2. Chapter Two: Review of Literature .................................................................................. 48  
   2.1. Introduction .............................................................................................................. 48  
   2.2. Identifying and classifying the most important entrepreneurial competencies ...... 49  
      2.2.1. Introduction: ...................................................................................................... 49  
      2.2.2. Definition of entrepreneurial competencies ......................................................... 52  
      2.2.3. Range of entrepreneurial competencies ............................................................... 54  
      2.2.4. Classifying entrepreneurial competencies ............................................................ 70  
      2.2.5. Analysis of previous studies on entrepreneurial competencies ...................... 74  
   2.3. Enhancing entrepreneurial competencies by education: ....................................... 76  
      2.3.1. Introduction: ...................................................................................................... 76  
      2.3.2. Entrepreneurship education; within or beyond the business school? .......... 80  
      2.3.3. Entrepreneurship Curriculum ......................................................................... 83  
         2.3.3.1. Challenge 1: Entrepreneurship teaching approaches .............................. 84  
         2.3.3.2. Challenge 2: Entrepreneurship curriculum stakeholders ..................... 91  
         2.3.3.3. Challenge 3: Educational technology in entrepreneurship Curriculum: ... 93  
      2.3.4. Analysis of previous studies on entrepreneurship education ......................... 95  
   2.4. Entrepreneurship and culture ..................................................................................... 97  
      2.4.1. Introduction ...................................................................................................... 97  
      2.4.2. Entrepreneurship; Universal, National, or Regional? ................................... 98
2.4.3. Entrepreneurial competencies and cross-cultural studies ...................................... 101
2.4.4. Cultural frameworks for interpreting entrepreneurial differences ...................... 102
  2.4.4.1. Hofstede's cultural dimensions theory ............................................................ 102
  2.4.4.2. GLOBE Cultural Dimensions ....................................................................... 104
  2.4.4.3. Trompenaars and HampdenTurner’s cultural dimensions .............................. 106
  2.4.4.4. Country Institutional Profiles for Entrepreneurship ..................................... 107
2.4.5. Analysis of previous studies on entrepreneurship and culture .............................. 108
2.5. Conclusion: ............................................................................................................... 112
3. Chapter three: Research Methodology: ....................................................................... 114
  3.1. Introduction: ......................................................................................................... 114
  3.2. Research Methodology (Purpose): ...................................................................... 114
  3.3. Research Methods: ............................................................................................. 117
    3.3.1. Interactive Management ................................................................................ 120
      3.3.1.1. Participants .......................................................................................... 120
      3.3.1.2. Method Description .......................................................................... 121
    3.3.2. Focus Group ............................................................................................... 126
      3.3.2.1. Participants .......................................................................................... 126
      3.3.2.2. Method Description .......................................................................... 127
    3.3.3. Literature Review ....................................................................................... 128
    3.3.4. Prototype Development .............................................................................. 129
  3.4. Research Ethics .................................................................................................... 133
  3.5. Reliability and Validity ........................................................................................ 133
  3.6. Conclusion ........................................................................................................... 134
4. Chapter Four: A Cross Cultural Comparative Study of highly valued Entrepreneurial
  Competencies and their interdependencies ............................................................................... 137
  4.1. Introduction .......................................................................................................... 137
  4.2. The Entrepreneurial Contexts of Iran and Ireland ............................................... 137
  4.3. Findings ............................................................................................................... 140
    4.3.1. Analysis of five enhancement structures across the five groups .................... 140
      4.3.1.1. Irish Entrepreneurs: .............................................................................. 141
      4.3.1.2. Iranian entrepreneurs: .......................................................................... 142
      4.3.1.3. Irish students: ...................................................................................... 143
      4.3.1.4. Iranian students: .................................................................................. 144
      4.3.1.5. Irish academics: .................................................................................. 145
    4.3.2. Scoring and Categorising selected competencies ......................................... 146
    4.3.3. Commonalities and differences across groups .............................................. 150
  4.4. Discussion............................................................................................................. 153
4.4.1. Productive Thinking ................................................................. 153
4.4.2. Motivation Competencies ....................................................... 155
4.4.3. Interpersonal skills ................................................................. 156
4.4.4. Managerial (Leadership) Competencies .................................... 157
4.4.5. Interrelationships between Sub-Competences and Similarities and Differences across Groups .................................................. 157
4.5. Conclusion .............................................................................. 161
5. Chapter Five: Identifying the cultivating approaches of the selected entrepreneurial competencies ................................................. 163
5.1. Introduction: ........................................................................... 163
5.2. Cultivating Productive Thinking competencies ......................... 166
  5.2.1. Cultivating Productive Thinking – Irish Academics ............... 166
  5.2.2. Cultivating Productive Thinking – Irish Entrepreneurs .......... 175
  5.2.3. Cultivating Productive Thinking – Irish Students .................. 181
  5.2.4. Cultivating Productive Thinking – Iranian Academics .......... 186
  5.2.5. Cultivating Productive Thinking – Iranian Entrepreneurs ....... 194
  5.2.6. Cultivating Productive Thinking – Iranian Students ............. 203
  5.2.2. Mapping between Productive Thinking sub-competencies and the solutions generated by focus groups ........................................ 208
  5.2.3. Categorising and comparing the generated solutions by different groups .......................................................... 214
5.3. Cultivating approaches (solutions) of Motivation competencies ...... 219
  5.3.1. Cultivating Motivation – Irish Academics ............................ 219
  5.3.2. Cultivating Motivation – Irish Entrepreneurs ....................... 227
  5.3.3. Cultivating Motivation – Irish Students ............................... 233
  5.3.4. Cultivating Motivation – Iranian Academics ....................... 238
  5.3.5. Cultivating Motivation – Iranian Entrepreneurs .................. 245
  5.3.6. Cultivating Motivation – Iranian Students ........................... 254
  5.3.2. Mapping between Motivation sub-competencies and the solutions generated by focus groups ................................................ 260
  5.3.4. Comparing the generated solutions by different groups ........... 268
5.4. Translating ‘theoretical solutions’ into ‘software-based solutions’ ...... 272
  5.4.1. Prototyping Sample: reviewing others’ stories ...................... 272
5.5. Conclusion .............................................................................. 279
6. Chapter 6: A hybrid Cooperative-Experiential Learning framework for cultivating students’ Productive Thinking and Motivation ............................................ 282
6.1. Introduction ............................................................................. 282
6.2. An overview of Cooperative Learning ...................................... 283
6.3. An overview of Experiential Learning ...................................... 288
6.4. Solution themes and cooperative-experiential e-learning ............................................. 293
6.4.1. Promoting “Learning from each other” ................................................................. 293
6.4.2. Highlighting practical applications ........................................................................ 298
6.4.3. Valuing experience (learning by doing) ................................................................. 300
6.4.4. Reflective observation ........................................................................................... 303
6.4.5. Involving students in curriculum design (curriculum flexibility) ....................... 305
6.4.6. Interactive learning environment ........................................................................... 306
6.4.7. Scaffolding students’ confidence ........................................................................... 309
6.4.8. Providing personal development programmes ........................................................................ 311
6.4.9. Improving students’ recruitment system ............................................................... 313
6.4.10. Pre-eminence of free thinking ............................................................................. 314
6.4.11. Curriculum integration ........................................................................................ 316
6.4.12. Stimulating students’ curiosity ............................................................................ 317
6.4.13. Promoting students’ critical thinking ................................................................. 319
6.4.15. Connecting students to job market ...................................................................... 322
6.4.16. Increasing positivity in educational environment ............................................... 323
6.4.17. Pushing students hard .......................................................................................... 325
6.4.18. Rewarding students ............................................................................................. 325
6.5. Discussion .................................................................................................................. 326
6.5.1. General perspective: The impact of cooperative and experiential learning on entrepreneurial learning ................................................................. 326
6.5.2. Specific perspective: The impact of cooperative and experiential learning on productive thinking and motivation ................................................................. 328
6.6. Conclusion: Contribution of this study in terms of Cooperative- Experiential Learning 330
7. Chapter 7: General Discussion ......................................................................................... 336
7.1. Introduction .................................................................................................................. 336
7.2. Summary of findings .................................................................................................... 336
7.3. Contributions of this study ........................................................................................... 341
7.4. Limitations and suggested future research ................................................................... 375
7.5. Overall Conclusion ....................................................................................................... 378
8. Bibliography: ..................................................................................................................... 382
9. Appendices ....................................................................................................................... 425
   Appendix A: list of Productive Thinking and Motivation sub-competencies provided to the participants of focus groups ................................................................. 425
   Appendix B: Sample of solutions Productive Thinking and Motivation solutions provided in the beginning of focus groups ................................................................. 427
   Appendix C: The form used for generating solutions by focus groups (See Introduction of
Chapter Five) ....................................................................................................................... 428
Appendix D: University Research Ethics Submission and Approval ......................... 429
Appendix E: Thesis related publications and presentations ........................................ 438
Appendix F: Initial interactive mock-up: Others Stories .............................................. 441
Appendix G: Usability Test questionnaire ...................................................................... 442
Appendix H: Revised interactive mock-up: Others Stories ......................................... 443
List of Figures

Figure 1-1 Young people not in education, training or employment between 2005 and 2010 (Source: OECD, 2012, Education at a Glance) ................................................................................................................................. 15
Figure 1-2 Four dominant themes of Entrepreneurship Education in Literature .................................. 18
Figure 1-3 Iran and Ireland cultural dimensions based on Hofstede’s theory ........................................ 36
Figure 1-4 The conceptual framework of this study .................................................................................. 39
Figure 2-1 Categorisation of entrepreneurial competencies identified by the literature ....................... 74
Figure 2-2 The matrix of pedagogical transferability and relevance of entrepreneurial competencies in EE (Source: Haase and Lautenschläger, 2011) ........................................................................................................... 79
Figure 2-3 A model of forces influencing internationalisation speed of entrepreneurship .................... 100
Figure 3-1 Steps involved in the Interactive Management (IM) process in the current study ................. 123
Figure 3-2 The stages of software prototyping ....................................................................................... 130
Figure 3-3 Application of the different research methods in the different stages of the study ............... 135
Figure 4-1 Irish entrepreneurs’ entrepreneurial competencies enhancement structure ....................... 141
Figure 4-2 Iranian entrepreneurs’ entrepreneurial competencies enhancement structure ................... 142
Figure 4-3 Irish students’ entrepreneurial competencies enhancement structure ............................... 143
Figure 4-4 Iranian students’ entrepreneurial competencies enhancement structure ........................... 144
Figure 4-5 Irish academics’ entrepreneurial competencies enhancement structure ........................... 145
Figure 4-6 Total influence scores for four categories of entrepreneurial competencies in the full sample and across five groups .......................................................................................................................... 151
Figure 4-7 Average influence scores for four categories of entrepreneurial competencies in the full sample and across five groups ........................................................................................................... 152
Figure 5-1 Experiential learning cycles (Source: Murphy et al., 2012) .................................................... 185
Figure 5-2 Bloom taxonomy of learning outcomes .................................................................................. 205
Figure 5-3 Schematic storyboard for “others’ stories” solution ............................................................... 275
Figure 6-1 Benefits of cooperative learning to students and instructors (Source: Shimazoe and Aldrich, 2010) .................................................................................................................................................. 287
Figure 6-2 Kolb’s experiential learning cycles and their brief definitions (Source: Healey and Jenkins, 2000) ........................................................................................................................................... 290
Figure 6-3 Conceptual grid of learning cycles and some pedagogical techniques (adapted from Randolph and Posner, 1979) .............................................................................................................. 292
Figure 6-4 Some solutions for improving cooperative learning in universities ................................... 333
Figure 9-1 The form used for generating solutions by focus groups ....................................................... 428


**List of Tables**

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 1-1</td>
<td>Traditional versus entrepreneurial education focus (Adapted from Garavan and O’Cinneide, 1994a)</td>
</tr>
<tr>
<td>Table 1-2</td>
<td>Covering the literature gaps by the research questions of this study</td>
</tr>
<tr>
<td>Table 1-3</td>
<td>Iranian and Irish economic and entrepreneurial environment data</td>
</tr>
<tr>
<td>Table 1-4</td>
<td>Definitions of entrepreneurial competencies</td>
</tr>
<tr>
<td>Table 1-5</td>
<td>Different types of courses and definitions of e-learning across the US universities (Source: Allen and Seaman, 2011)</td>
</tr>
<tr>
<td>Table 1-6</td>
<td>Some of the definitions of e-learning</td>
</tr>
<tr>
<td>Table 2-1</td>
<td>A comprehensive list of identified and examined entrepreneurial competencies</td>
</tr>
<tr>
<td>Table 2-2</td>
<td>Categorisation of entrepreneurial competencies identified by the literature</td>
</tr>
<tr>
<td>Table 2-3</td>
<td>Traditional versus entrepreneurial (non-traditional) teaching approaches (Source: Garavan and O’Cinneide, 1994, Carrier, 2007)</td>
</tr>
<tr>
<td>Table 3-1</td>
<td>An overview of research purposes and questions (Source: Marshall and Rossman, 2010)</td>
</tr>
<tr>
<td>Table 3-2</td>
<td>Mapping the research questions of this study with the standard purpose and type of the studies</td>
</tr>
<tr>
<td>Table 3-3</td>
<td>Mapping research questions and methods of this study with the standard types of study</td>
</tr>
<tr>
<td>Table 3-4</td>
<td>The rational of selecting the research methods</td>
</tr>
<tr>
<td>Table 3-5</td>
<td>The number of experts in each of the focus groups</td>
</tr>
<tr>
<td>Table 4-1</td>
<td>A general comparison between Iran and Ireland’s economical and entrepreneurial aspects</td>
</tr>
<tr>
<td>Table 4-2</td>
<td>Rank order list of the most important entrepreneurial competencies from across five IM sessions</td>
</tr>
<tr>
<td>Table 4-3</td>
<td>The final categorisation of the cumulative list of the most important entrepreneurial competencies</td>
</tr>
<tr>
<td>Table 5-1</td>
<td>Solutions for productive thinking and motivation generated by six expert groups</td>
</tr>
<tr>
<td>Table 5-2</td>
<td>Productive thinking solutions generated by Irish academics</td>
</tr>
<tr>
<td>Table 5-3</td>
<td>Productive thinking solutions generated by Irish entrepreneurs</td>
</tr>
<tr>
<td>Table 5-4</td>
<td>Productive thinking solutions generated by Irish students</td>
</tr>
<tr>
<td>Table 5-5</td>
<td>Productive thinking solutions generated by Iranian academics</td>
</tr>
<tr>
<td>Table 5-6</td>
<td>Productive thinking solutions generated by Iranian entrepreneurs</td>
</tr>
<tr>
<td>Table 5-7</td>
<td>Guidelines for cultivating intuition in students (Source: Sadler-Smith and Shefy, 2004)</td>
</tr>
<tr>
<td>Table 5-8</td>
<td>Productive thinking solutions generated by Iranian students</td>
</tr>
<tr>
<td>Table 5-9</td>
<td>Productive thinking sub-competencies covered by the solutions generated by focus group participants</td>
</tr>
<tr>
<td>Table 5-10</td>
<td>Grouping productive thinking solutions into the common themes</td>
</tr>
<tr>
<td>Table 5-11</td>
<td>Motivation solutions generated by Irish academics</td>
</tr>
<tr>
<td>Table 5-12</td>
<td>Motivation solutions generated by Irish entrepreneurs</td>
</tr>
<tr>
<td>Table 5-13</td>
<td>Motivation solutions generated by Irish students</td>
</tr>
<tr>
<td>Table 5-14</td>
<td>Motivation solutions generated by Iranian academics</td>
</tr>
<tr>
<td>Table 5-15</td>
<td>Motivation solutions generated by Iranian entrepreneurs</td>
</tr>
<tr>
<td>Table 5-16</td>
<td>A summary of some studies for assessing students’ and tutors’ expectations in the learning environments</td>
</tr>
<tr>
<td>Table 5-17</td>
<td>Motivation solutions generated by Iranian students</td>
</tr>
<tr>
<td>Table 5-18</td>
<td>Motivation sub-competencies addressed by solutions generated by focus group participants</td>
</tr>
<tr>
<td>Table 5-19</td>
<td>Grouping motivation solutions into the common themes</td>
</tr>
</tbody>
</table>
TABLE 5-20 The results of Usability Test for ‘Others Stories’ Mock-up........................................................................ 277
TABLE 6-1 Method of analysing experiential learning methods using Kolb’s learning cycles (Source: Frontczak, 1998)..................................................................................................................... 291
TABLE 7-1 The list of solution themes and their targeted competencies ................................................................ 339
TABLE 7-2 Comparing the solution themes generated by Irish and Iranian participants ........................................ 350
TABLE 9-1 List and definitions of competencies associated with Productive Thinking ........................................ 425
TABLE 9-2 List and definitions of competencies associated with Motivation .......................................................... 426
1. Chapter 1: Introduction:

Entrepreneurship researchers are obliged – from the outset – to make clear the conceptual and contextual elements of their study in order to ensure the empirical rigorousness of their research results. Failure to define their key concepts and objectives, or to identify their terms of reference can result in vague and/or weak findings, which are of little use to the academic community or to practitioners in the field of entrepreneurship (Matlay, 2005). Therefore, this chapter along with chapter 2 seek to provide details about the conceptual and contextual elements of this study.

1.1. Overview of the Research

Today’s challenging economic situation across the world means that it is no longer sufficient for a new graduate to have knowledge of an academic subject; increasingly it is necessary for students to gain specific skills which decrease the possibility of unemployment after graduation (Bai, 2006; Fallows and Steven, 2000). Currently, graduate unemployment is one of the most significant societal problems. In 2012, OECD\(^2\) predicted that unemployment will continue to rise in the euro area, plunging the global economy into a deeper recession and deflation.

The interrelationship between unemployment and university education is complex. On one hand, increasing unemployment, particularly among the younger age group, increases university enrolment demand (Handa and Skolnik, 1975). On the other hand, the rapid expansion of higher education institutions and courses over the past 20 years (Higher education Statistics Agency, 1998) has coincided with the economic recession of the early 1990s and the more recent recession of 2008 - 2014. This has produced in increased competition amongst graduates seeking employment (Fallows and Steven, 2000) as well as a decrease in permanent job availability and an increase in graduate unemployment levels (Woodley and Brennan, 2000). Research indicates that the job market for university graduates has expanded much more than that for non-graduates (Cardoso and Ferreira, 2009; Cardoso, 2007). However, since 1999, more graduates have obtained higher education qualifications, but in the current recession their qualifications appear less valuable than they used to be, in terms of employment opportunity and high capital returns (Bai, 2006). This implies that the increased demand for skilled labour has either been insufficient to absorb new graduates into the labour market, or these graduates are not

\(^{2}\) The Organisation for Economic Co-operation and Development (OECD)
suitably qualified for the available jobs. Pauw et al. (2008) and Woodley and Brennan (2000) argue that given the prevailing skills shortage in the world economy, the latter is more likely to be the case – graduates either do not possess the right qualifications, or their qualifications are not of a standard that is expected. In many instances, their skills, aptitudes, and prior work experience are not sufficient to obtain or create a job.

Each year, OECD releases a report entitled “Education at a Glance”, which is a compilation of education statistics and qualitative observations across the OECD countries. In 2012, this report highlighted a dramatic increase in the unemployment rate of university graduates in many OECD countries, including Italy, Spain, Hungary, Estonia, United Kingdom, United States, Portugal, New Zealand, Canada, Finland, Ireland, Sweden, Japan, Denmark, Norway and Iceland, specifically, between 2005 and 2010. For instance, in the case of Ireland, while 47 per cent of young adults have completed their third-level education, compared with 39 per cent across the OECD, the unemployment figures are disappointing. The Neither Employed nor in Education or Training (NEET) rate in Ireland doubled between 2008 and 2011 and the rise was most marked among graduates. Overall, 28 per cent of 25-29 years old Irish youths were in the NEET category in 2011 and graduate unemployment rose by 5 per cent in 2008 to almost 9 per cent in 2011, compared with an OECD average of 7 per cent (OECD, 2012, b). Figure 1.1 illustrates the growth or decline in the percentage of NEET population between 2005 and 2010.

Figure 1-1Young people not in education, training or employment between 2005 and 2010 (Source: OECD, 2012, Education at a glance 2012)

The consequences of university graduate unemployment has been empirically studied, with results indicating high levels of graduate psychological distress (Schaufeli and VanYperen, 1992), loss of national economic strength (Shadare and Tunde, 2012), migration of professionals into institutions which are not relevant to their profession (Peters and Jackson, 2013), increasing crime rates (Al-Dosary et al., 2006), migration of
graduates to other countries (Di Pietro, 2005), decreasing graduates’ earning power, and reductions in graduates’ overall level of mental health (Feldman, 1996).

Entrepreneurship is frequently seen as an important factor in reducing unemployment in nations and in specific groups including university graduates (Thurik, 2003; Van Stel et al., 2007). Research suggests that high unemployment rates may stimulate start-up activity of individuals (the “refugee” effect). On the other hand, higher rates of start-up activity may reduce unemployment in subsequent periods (the “entrepreneurial” effect) (See Faria et al., 2010; Faria et al., 2009; Audretsch et al., 2001; Audretsch and Thurik, 1998). While both directions of this interrelationship have been empirically supported in previous research (Baptista and Thurik, 2007), the second direction – entrepreneurial effect – is considerably stronger than the first one (Audretsch et al., 2001).

When addressing the potential impact of entrepreneurship and small business creation on decreasing unemployment, two issues should be considered. The first one refers to the distinction between entrepreneurial and self-employment activities. According to Carland and colleagues (1984), while small business venture is “any business that is independently owned and operated, not dominant in its field, and does not engage in any new marketing or innovative practices”, entrepreneurial venture is “one that engages in at least one of Schumpeter's four categories of behavior; that is, the principal goals of an entrepreneurial venture are profitability and growth and the business is characterized by innovative and strategic practices” (p.358). Accordingly, they concluded that innovation and strategic management are the two distinctive characteristics of entrepreneurs in comparison with the small business owners. The novelty and innovation aspects of entrepreneurship are also mentioned by other scholars such as Curran and Stanworth (1989) and Bruyat and Julien (2000). Therefore, it is concluded that while all entrepreneurs are self-employed, not all self-employed people are entrepreneurs (Garavan and O’Cinneide, 1994a).

The second issue is the moderating factors that affect the relationship between unemployment and entrepreneurship. A group of factors are identified by the previous studies including, employment and unemployment duration, occupation, age, gender, education, minorities, emigration, race, marriage, cultural factors such as differences in labour market, regional characteristics of the country, religion, unemployment benefits, and easiness to start a new business (See Remeikiene and Startiene, 2009; Leoni and Falk,
2008; Colombier and Masclet, 2008; Georgellis et al., 2005; Ritsilä and Tervo, 2002; and Cowling and Bygrave, 2002). Startiene and Remeikiene (2009) empirically assessed the effect of each of these moderators on the interrelationship between unemployment and entrepreneurship and concluded that a strong relationship exists between the number of companies established and both unemployment duration and the number of unemployed men and women in higher education/occupational training. Specifically, both short-term unemployment and higher education activities have positive effects on business creation, which may result in reduced unemployment levels. Therefore, people who have not been unemployed for very long and have a university degree, have a better chance of obtaining employment as an entrepreneur.

Due to the potential impact of entrepreneurship in reducing unemployment and driving growth in the economy, entrepreneurship education has become an increasingly important focus of research (Gorman et al., 1997). Research suggests that entrepreneurship education can increase the number of university students’ venture start-ups (Webb et al., 1982). However, the growing interest in entrepreneurship education is not simply due to its potential impact on creating new ventures and reducing unemployment. Entrepreneurial skills and abilities may also help students deal with modern life challenges and an uncertain future (Gibb and Cotton, 1998), learn an innovative approach to problem solving, adapting more readily to change, becoming more self-reliant, and developing their creativity (Henry et al., 2005a).

A number of consistent themes emerge in the entrepreneurship education literature, with the themes of the definition of entrepreneurship education, educability of entrepreneurship, the range of entrepreneurial competencies, and how entrepreneurship could be taught, being the four main themes that are most frequently addressed in the literature. These four themes which are integrated together can be seen in Figure 1-2 and are further described in below.
Definitions are particularly important in entrepreneurship education literature, because many of the specific terms associated with the discipline, such as entrepreneur, enterprise and small business, are often used interchangeably (Henry et al., 2005a). While some scholars view enterprise education and entrepreneurship education as synonymous (for example Nketekete and Motebang, 2008; Lee and Wong, 2007), a clear distinction between entrepreneurship education, which was developed in 1990s, and enterprise education, which was developed in 1980s (Gibb, 2000), is provided by Jones and Iredale (2010) and Gibb (1993). They point out that while enterprise education – commonly used in the United States and Canada - aims to maximise opportunities for the development of competencies to be utilised by people for whatever their career choice might be, entrepreneurship education - commonly used in the United Kingdom and Ireland - is aimed more at developing entrepreneurial competencies that encourage people to start, grow, and manage an innovative business on their own. Consistent with this point of view, Harte and Stewart (2012) described the key difference between enterprise and entrepreneurship education based on their intended outputs at the end of the programme: “Entrepreneurship education whilst similar in its approach to developing and improving skills has in addition, in many instances, a clear intention on business start-up and the factors to consider in choosing this as a route of employment” (p. 332). Understanding this key feature of entrepreneurship education – in comparison with enterprise education – is necessary whenever we think about entrepreneurial competencies and their cultivating approaches.
The second theme in the literature on entrepreneurship education concerns the educability of entrepreneurship. Despite a growing body of literature in the field, there is still considerable uncertainty as to whether entrepreneurs are born or made, which has led to an on-going debate about whether individuals can be actually taught to be entrepreneurs (Fiet, 2001). Not surprisingly, while some studies such as Miller (1987) believes that not all aspects of entrepreneurship can be taught, most studies indicate that entrepreneurship can be taught, or if not taught, at least developed by entrepreneurship education (Gorman et al., 1997; Henry et al., 2005b, Vesper, 1982; Garavan and O’Cinneide, 1994a). In support of Peter Drucker (1985) who points out that entrepreneurship, like any discipline, can be learned, Gorman et al. (1997) reviewed academic publications in the area of entrepreneurship education and reported that “most of the empirical studies surveyed indicated that entrepreneurship can be taught, or at least encouraged, by entrepreneurship education” (P.63). Therefore, Kuratko (2005) conclude that the question of whether entrepreneurship can be taught is obsolete. He suggested a more relevant question regarding entrepreneurial education is, what should be taught and how should it be taught? This question includes the third and fourth themes emerging from the literature on entrepreneurship education, which addresses the range of entrepreneurial competencies that should be the focus of training and the different approaches of training them. These two themes constitute the main focus of the current thesis.

The first part of Kuratko’s question --the third theme in the entrepreneurship education literature - addresses the nature and variety of entrepreneurial competencies. The central question in this theme is: who can be defined as an entrepreneur? While there are a huge number of studies that address this question, the field suffers from a lack of consensus about the specific competencies of an entrepreneur, or how these competencies are interrelated. Some of the many entrepreneurial competencies identified by the previous studies include: rational decision making and management (Cantillon, circa 1700), Risk-bearing (Mill, 1848), innovation (Schumpeter, 1934), need for achievement (McClelland, 1961), leadership, responsibility, desire for independence, career achievement, and creativity (Collins and Moore, 1964), intellectual, social, and managerial abilities (Gasse et al., 1997), and opportunity refinement, leveraging, and championing (Rasmussen et al., 2011). A more comprehensive list of the entrepreneurial competencies including 83 competencies could be seen in “Range of entrepreneurial competencies” in Chapter 2 of this thesis. Another lists of these competencies and their categorisations could be found in Rezaei-Zadeh et al. (2014), Mitchelmore and Rowley (2010), Rasmussen et al. (2011), Li
The second part of Kuratko’s question, as the fourth theme of entrepreneurship literature reviewed here, addresses the different approaches of training entrepreneurial competencies. Most commentators have focused on process and context when reviewing and discussing entrepreneurship education (Henry et al., 2005a). For instance, Bygrave (1989) sees entrepreneurship education as a process of becoming, rather than a state of being. Bruyat and Julien (2000) sees it as the process of creating something different, and Saee (1996) suggests that an entrepreneurship curriculum could be successful only if it demonstrates the process involved in being successful. In terms of pedagogy, this process-based education refers to value-laden rules and procedures that subtly shape an educational environment and can make or break the best-laid plans of an explicit curriculum (Hayse, 2010) (See “Curriculum Designs for cultivating entrepreneurial competencies” in chapter 2).

While Kuratko’s critical question, “What should be taught and how should it be taught?” has frequently been addressed by the previous studies, there are still some gaps which in the literature which have shaped the rationale for the current research. These gaps which are especially relevant to the third and fourth themes above are discussed in the next section.

1.2. Rationale

Entrepreneurship education for enhancing students’ entrepreneurial competencies is seen as important to business start-up, survival and growth, and consequently, improving the economic situation as well as decreasing the unemployment rate within the community of university students and graduates. However, the current literature in this area suffers from some gaps. These gaps are briefed here as the rationale behind this thesis and will be outlined in chapter 2 with more details.

- Lack of consensus about which entrepreneurial competencies are most important to be cultivated in university students

While some scholars such as Gibb and Nelson (1996) and Gibb (1987b) clearly distinguished between entrepreneurship, enterprising behaviour and small business management, Gibb (2000) suggests that general skills, on their own, are probably not sufficient for developing entrepreneurial behaviour. He believes that confusion in relation
to educational focus still exists, and warned that it is particularly important to clarify notions of the relationship between enterprise, entrepreneurship, business skills and personal transferable skills in developing an approach to entrepreneurship education. Undertaking a literature review of the research on entrepreneurial competencies, Mitchelmore and Rowley (2010) conclude that despite the wide use of the entrepreneurial competencies concept by researchers, government agencies and others, it is in need of further research and definition. Curran and Stanworth (1989) also mention that one of the barriers in devising entrepreneurship training strategies is an apparent lack of understanding about what entrepreneurial competencies are. This is caused perhaps due to the considerable diversification in entrepreneurship education programmes in terms of: delivery centres (universities, innovation centres, incubation centres, technical colleges); target audiences (students, researchers, managers from large firms); and the duration of these programmes (Garavan and O’Cinneide, 1994b). That is why Garavan and O’Cinneide highlight the importance of focusing on a specific target population in specific entrepreneurship education programmes. Therefore, the current study sought to identify the most important entrepreneurial competencies that need to be cultivated in university students participating in entrepreneurship education programmes.

- lack of exploring interdependencies amongst entrepreneurial competencies

Mitchelmore and Rowley (2010) conducted a large-scale literature review of entrepreneurial competencies and found that while it is acknowledged that there are interrelationships between competencies, these interrelationships are ignored by the previous studies. Therefore, they suggest that further work is needed to examine relationships between different entrepreneurial competencies, specifically, but not exclusively, to facilitate deeper understanding of the broader entrepreneurial competencies concept. Novak and Cañas (2008) suggested that concept maps developed in the context of reviewing interrelationships between entrepreneurial competencies can be enormously useful in curriculum planning, specifically for:

- Presenting in a highly concise manner the key concepts and principles to be taught;
- Suggesting more optimal sequencing of instructional material;
- Making the instruction “conceptually transparent” to students

Despite the importance of exploring interrelationships amongst the entrepreneurial competencies, to the best of our knowledge, none of the previous empirical studies in the area of entrepreneurial competencies explored this issue. Consequently, a significant challenge for entrepreneurship educators is the optimal design of skill training sequences so that the entrepreneurial competencies that are recognised as valid targets for training are delivered within a logical, orderly, cumulative skill development framework (Rezaei-Zadeh et al., 2014). The current study sought to explore the cause-effect interrelationships between key entrepreneurial competencies that need to be cultivated in university students, specifically, to help achieving a better understanding of the nature of those competencies as well as the sequence of an entrepreneurial education curriculum.

- Limited movement beyond traditional educational methods when teaching entrepreneurship

It has been suggested that using traditional and conventional education methods to develop entrepreneurs is inimical to an entrepreneurial spirit and could be interpreted as akin to teaching people “to drive using the rear mirror” (Garavan and O’Cinneide, 1994a, p.8). Some contrasts between a conventional and an entrepreneurial learning focus are illustrated in Table 1.1.

Table 1-1 Traditional versus entrepreneurial education focus (Adapted from Garavan and O’Cinneide, 1994a)

<table>
<thead>
<tr>
<th>Traditional learning focus</th>
<th>Entrepreneurial learning focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical judgement after analysis of large amounts of information</td>
<td>“Gut feel” decision making with limited information with little time for critical analysis</td>
</tr>
<tr>
<td>Understanding and recalling the information itself</td>
<td>Understanding the values of those who transmit and filter information</td>
</tr>
<tr>
<td>Assuming goals away</td>
<td>Recognize the widely varied goals of others</td>
</tr>
<tr>
<td>Seeking (impersonally) to verify absolute truth by study of information</td>
<td>Making decisions on the basis of judgement of trust and competence of people</td>
</tr>
<tr>
<td>Understanding basic principles of</td>
<td>Seeking to apply and adjust in practice to</td>
</tr>
<tr>
<td>society in the metaphysical sense</td>
<td>basic principles of society</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>Seeking the correct answer with time to do it</td>
<td>Developing the most appropriate solution under pressure</td>
</tr>
<tr>
<td>Learning in the classroom</td>
<td>Learning while and through doing</td>
</tr>
<tr>
<td>Gleaning information from experts and authoritative sources</td>
<td>Gleaning information personally from any and everywhere, and weighing it</td>
</tr>
<tr>
<td>Evaluation through written assessment</td>
<td>Evaluation by judgement of people and events through direct feedback</td>
</tr>
<tr>
<td>Success in learning measured by knowledge-based examination</td>
<td>Success in learning by solving problems and learning from failure</td>
</tr>
<tr>
<td>Focus mainly on theory and a didactic approach</td>
<td>Focus mainly on Practice and experience</td>
</tr>
<tr>
<td>Focus mainly on the past</td>
<td>Focus mainly on the present</td>
</tr>
</tbody>
</table>

Consistent with this view, many scholars such as Henry et al. (2005a), and Jack and Anderson (1998) point out that the entrepreneurial competencies in general and creative and innovative aspects of entrepreneurship in specific do not appear to be teachable using a conventional pedagogical approach. Taking these differences into account, more active experience-based teaching approaches and more flexible classes (Mwasalwiba, 2010; Gibb, 1984), and unconventional socially-oriented training approaches (Mars and Garrison, 2009) are recommended to be implemented in the entrepreneurship education field. Also, Mennecke et al. (2008), Heinonen and Poikkijoki (2006), Heinonen (2007), and Sexton and Bowman-Upton (1991) call for the need to find and experiment with more diverse entrepreneurship teaching methods which can go beyond the “science” of entrepreneurship and address the “art” of entrepreneurs, even to the point where an unstructured approach is adopted.

Therefore, taking into account this need in line with the previous studies which saw entrepreneurship education as a process (Henry et al., 2005a; Bygrave, 1989; Bruyat and Julien, 2000) (see the fourth consistent theme in entrepreneurship education in the introduction section of this chapter), this study sought to generate some cultivating approaches for enhancing entrepreneurial competencies in university students. Accordingly, the strategy of focus groups of this study was generating some
unconventional and innovative processes for cultivating entrepreneurial competencies in students.

- **Lack of stakeholders’ engagement in identifying entrepreneurial competencies and designing entrepreneurship curricula**

Another limitation of previous studies that is addressed in the current study is the limited engagement with stakeholders in identifying entrepreneurial competencies. Stakeholder input is important when working to identify entrepreneurial competencies and designing an entrepreneurship curriculum for cultivating those entrepreneurial competencies. Stakeholders can include entrepreneurs, educators, and students working in the same local or national context. Stakeholders and users of the concept of entrepreneurial competency have been important in shaping the meaning associated with the entrepreneurial competency concept (Mitchelmore and Rowley, 2010). Previous studies have worked with different stakeholder groups, such as academics and practitioners (Hayton and McEvoy, 2006), educators and politicians (Burgoyne, 1993) and entrepreneurs (Dodd, 2002). Obtaining stakeholder input in the definition of entrepreneurial competencies is important since it helps to address the needs and perspectives of those stakeholders, without which training programmes for enhancing these competencies are likely to be ineffective (Block and Stumph, 1992; Béchard and Grégoire, 2005).

An effective approach in curriculum design provides activities that encourage the various stakeholders of the curriculum to become involved in the design and implementation process of an educational programme and reveal their perceptions of what the central goal is and how it can be achieved (Kessels, 1999). Many studies such as McKenney et al. (2006), Abdullah et al. (2009), and Smith and Demichiell (1996) see stakeholders’ view as a necessary component of producing a robust curriculum design. Lightfoot (1999) points out that the curriculum design process has four primary stakeholders: Educators, businesses, students, and the tax-paying public. McKenney et al. (2006) consider parents as another group of stakeholders in the curriculum. In the case of entrepreneurship education, the curriculum stakeholders may include: students, tutors, and entrepreneurs. For instance, Block and Stumph (1992) highlighted the importance of considering students’ need in the process of entrepreneurship education programmes. Béchard and Grégoire (2005) also indicate that addressing the needs of individual students in
structuring teaching interventions is central to entrepreneurship education.

Despite the recent expansion in entrepreneurship research, the full extent of stakeholders’ involvement and their impact on entrepreneurial outcomes remains unclear (Matlay, 2009). Gibb (1987a) indicated that very little is known about the knowledge transfer process between trainers and entrepreneurs, and it is not entirely clear how participants in entrepreneurship programmes prefer to learn. Consistent with this view, Vollmers et al. (2001) highlighted the importance of students, educators, alumni and members of the business community working together as the main stakeholders of entrepreneurship education curriculum and argued that “. . . by obtaining feedback from each stakeholder group, a University can determine how to best meet their needs . . . it is important for a University to understand what graduating students will be expected to know when they enter the workforce, and what skills and abilities will be valued and serve them well in their career” (p.1). Consistent with this view, Czuchry et al. (2004) and Hynes and Richardson (2007) highlighted the tangible benefit of strategic cooperation between entrepreneurship teaching staff and external business representatives including entrepreneur and owner/manager of the small firm for both internal and external stakeholders. Therefore, this study sought to explore the ideas of these three internal and external stakeholder groups – students, academics, and entrepreneurs - regarding the most important entrepreneurial competencies and key activities that can be used to cultivate these competencies. Therefore, the focus groups of this study consist of three main stakeholders of entrepreneurship education including students, tutors and entrepreneurs.

- **Lack of research in the specific context of Entrepreneurship Education in the virtual learning environments**

Lawless et al. (2000) compared face-to-face and distance training modes in the context of training Small and Medium Enterprises (SMEs) in the UK and Ireland, and identified some key differences in implementing entrepreneurship education programmes in these two modes, including size of the target audiences, the amount of activity based learning, synchronous vs. asynchronous nature of course delivery, and the learning location. They conclude that the requirements of these two modes of entrepreneurship education are different and these requirements have to be taken into account when we are designing an educational system. Consistent with this study, Ponzurick et al. (2000) indicate that consistent course structure can be developed across different delivery formats but some pedagogical adjustments may be required for the distance education format, particularly in
the areas of class participation and course-related activities.

The current study sought to focus on the virtual learning environments and explore how students’ entrepreneurial competencies could be cultivated in an e-learning platform.

- **Lack of use of technology for enriching entrepreneurship education**

Since there is no question that the e-learning mode of delivering education will continue to expand in the 21st century, entrepreneurship, as a vibrant field of educational development and training, must recognize and apply new available technologies in the educational setting (Kuratko, 2005). Despite this fact, in the context of a national survey of American universities and colleges, Solomon et al. (2002) pointed out that only 21% of them use distance-learning technologies in their entrepreneurship education courses. This survey was repeated in 2005 indicating that while there is an increase in the number of universities using educational technologies in their entrepreneurship courses (i.e. 41 per cent of universities offer entrepreneurship course(s) on the web), there is a major concern about the quality of their content and delivery (see Solomon, 2007). Kuratko (2005) identifies the lack of use of technology as a challenge at the forefront of entrepreneurship education. In response to this challenge the current study sought to explore the potential use of technology, as the base of an e-learning platform, to cultivate students’ entrepreneurial competencies.

- **Some limitations in the cross-cultural research on entrepreneurship**

Another research stream examines entrepreneurial competencies across cultural contexts. Are entrepreneurial competencies universal or do they vary systematically across cultures? Hayton et al. (2002) identified two distinct approaches to addressing this question. The first approach examines whether entrepreneurial competencies vary across cultures, and the second approach examines whether entrepreneurs are similar to or different from their non-entrepreneurial counterparts across cultures. For example, using a survey with 62 items to measure students’ innovativeness, locus of control, risk-taking, energy level, and cultural distance, Thomas and Mueller (2000) found, in a sample of 1800 students at universities across the United States, Singapore, Croatia, Slovenia, Canada, Ireland, Belgium, Germany, and China participated in this study, that while internal locus of control, moderate risk-taking propensity, and high energy level vary across cultures, innovative orientation does not vary across cultures. Herbig (1994) and Herbig and Miller (1992) confirmed that cultures that reinforce conformity, group interests, and control over
the future are not likely to foster and reward risk-taking. Mitchell et al. (2000) also confirmed that cognitive scripts associated with venture creation decisions are affected by individualism and power-distance, two important aspects of culture that differ across groups. Differences across countries in entrepreneurial competencies and activities are interpreted based on the different contextual and cultural factors, such as cultural and religious factors (Weber; 1904; Bellu and Flume, 2004; Rueda-Armengot and Peris-Ortiz, 2012), socialisation factors such as parental influences (McClelland, 1961; Bellu and Flume, 2004), and level of individualism (Shane, 1992).

In the second group of cross-cultural studies on entrepreneurial competencies, researchers have sought to compare the competencies of entrepreneurs and non-entrepreneurs in different cultures. A major study in this area is the study conducted by McGrath et al. (1992). They compared 1217 entrepreneurs to 1206 non-entrepreneurs (career professionals) in eight countries and concluded that entrepreneurs are more like each other than non-entrepreneurs and they score consistently higher than non-entrepreneurs in power-distance, individualism, and masculinity, and lower in uncertainty avoidance.

Despite the growing interest in cross-cultural studies in the area of entrepreneurship, there are a number of limitations and gaps in our knowledge. One such gap, which is addressed in the current study, is the lack of cross-cultural entrepreneurial studies comparing developed and developing countries. Since most of the entrepreneurship research has been conducted in the US and Western Europe countries, with a few exceptions (e.g. Kiggundu et al., 1983), the generalisability of these research findings to developing countries is open to question (Thomas and Mueller, 2000; Thomas et al., 1994; Alder, 1991). Thomas and Mueller (2000) highlighted the importance of conducting comparative entrepreneurship research in the context of different cultures including industrialised and developing countries. In an effort to advance the literature in this regard, the current study sought to examine similarities and differences in the nature of entrepreneurial competencies and competency systems that are identified, ranked, and structured by stakeholders in Iran and Ireland.

Another potential limitation of cross-cultural research to date is the use of frameworks for interpreting cultural differences which are not necessarily appropriate for the field of entrepreneurship. Different cultural frameworks have been used in the cross-cultural entrepreneurship research, including Hofstede's cultural dimensions theory (Hofstede, 1993, 2010), GLOBE Cultural Dimensions (House et al., 2002), Trompenaars and
HampdenTurner’s cultural dimensions (Trompenaars and HampdenTurner, 1998), and Country Institutional Profiles for Entrepreneurship (Busenitz et al., 2000). Hofstede’s cultural dimensions theory has dominated much of the literature on entrepreneurial culture (e.g., Williams and McGuire, 2010; Brinckmann et al., 2010; Gupta et al., 2004; Hofstede et al., 2002; Mueller and Thomas, 2001, Thomas and Mueller, 2000; Mitchell et al., 2000; Steensma et al., 2000; Shane, 1993; Baum et al., 1993; McGrath et al., 1992). Hofstede proposed six dimensions of the cultures that are relevant here: Power Distance, Individualism, Masculinity, Uncertainty Avoidance, Long-term versus short-term orientation, and Indulgence versus self-restraint (Hofstede, 2010). However, there have been some criticisms with regard to applying this theory in cross-cultural entrepreneurial studies, including the argument that it was originally developed to understand management practices and may thus be less relevant to the field of entrepreneurship (Hayton et al., 2002). Moreover, Busenitz et al. (2000) point out that while a particular interest of Hofstede's theory is in the dimension of individualism, research indicates a weak correlation between levels of individualism across countries, levels of entrepreneurship, and the strength of small companies. Therefore, they argued that Hofstede's measures of culture, alone, do not adequately describe cross-country differences in entrepreneurial activity. Other concerns raised related to the survey-based quantitative methodology used, the sampling processes employed, the stability of the observed cultural dimensions over time, and the failure to address additional critical aspects of culture (Baughn and Neupert, 2003). A deeper understanding of the context of entrepreneurship in different countries and engaging the collective intelligence of key stakeholders in each country in relation to the entrepreneurial competencies and their interdependencies will help to advance understanding in this area.

- The limited application of qualitative research methods in entrepreneurship research

One final limitation of the literature addressed here is the relative lack of qualitative research in investigating entrepreneurial competencies. It has been noted that many substantive issues in entrepreneurship are rarely addressed and can only be addressed through qualitative methods and approaches (Gartner and Birley, 2002). Despite this fact, Hindle (2004) notes that while the use of qualitative methods in almost every domain of the social sciences is rapidly accelerating, entrepreneurship literature continues to be one
of the exceptions. Molina-Azorín et al. (2012) reviewed 955 refereed journal papers in five top-tier entrepreneurship journals. They found that only 16.7% of the empirical studies in their sample employed any qualitative techniques whatsoever. Similar to this finding, Chandler and Lyon (2001) reported that only 18% of empirical studies in the area of entrepreneurship published in key journals from 1989 to 1999 were qualitative. Nummela and Welch (2006) also reported on the limited implementation of different research tools in the area of entrepreneurship, noting that most of the entrepreneurship studies have been conducted by using surveys and interviews. In the current study, we make use of a qualitative collective intelligence method in an effort to address key gaps in our understanding in relation to the issue of consensus-based understanding of entrepreneurial competencies and their interdependencies, specifically, from the perspective of stakeholders interested in cultivating entrepreneurial competencies in students in both Iran and Ireland.

1.3. Research questions

The main questions to be addressed by this study are as following:

- What are the key entrepreneurial competencies that need to be cultivated in university students?
  
  o What are the interrelationships between the identified entrepreneurial competencies?
  
  o What are the similarities and differences between the models of entrepreneurial competencies generated by study participants across cultures, specifically, when Iran and Ireland are compared?

- How can these identified competencies best be cultivated in the context of the design of a virtual learning environment for higher education students?

In order to be clearer about the relationship between these research questions and the research gaps identified in the previous section, Table 1-2 illustrates the gaps covered by each research question.
<table>
<thead>
<tr>
<th>Research Question</th>
<th>Covered Gap(s) in the Literature</th>
</tr>
</thead>
<tbody>
<tr>
<td>What are the key entrepreneurial competencies that need to be cultivated in university students?</td>
<td>Lack of consensus about which entrepreneurial competencies are most important to be cultivated in university students</td>
</tr>
<tr>
<td></td>
<td>Lack of stakeholders’ engagement in identifying entrepreneurial competencies and designing entrepreneurship curricula</td>
</tr>
<tr>
<td></td>
<td>The limited application of qualitative research methods in entrepreneurship research</td>
</tr>
<tr>
<td>What are the interrelationships between the identified entrepreneurial competencies?</td>
<td>Lack of exploring interdependencies amongst entrepreneurial competencies</td>
</tr>
<tr>
<td>What are the similarities and differences between the models of entrepreneurial competencies generated by study participants across cultures, specifically, when Iran and Ireland are compared?</td>
<td>Some limitations in the cross-cultural research on entrepreneurship</td>
</tr>
<tr>
<td>How can these identified competencies best be cultivated in the context of the design of a virtual learning environment for higher education students?</td>
<td>Limited movement beyond traditional educational methods when teaching entrepreneurship</td>
</tr>
<tr>
<td></td>
<td>Lack of stakeholders’ engagement in identifying entrepreneurial competencies and designing entrepreneurship curricula</td>
</tr>
<tr>
<td></td>
<td>Lack of research in the specific context of Entrepreneurship Education in the virtual learning environments</td>
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<tr>
<td></td>
<td>Lack of use of technology for enriching entrepreneurship education</td>
</tr>
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<td></td>
<td>The limited application of qualitative research methods in entrepreneurship research</td>
</tr>
</tbody>
</table>
As can be seen in Table 1-2 all of the gaps identified in the literature have been covered by the research questions of the current study. These research questions and their relevant gaps will be addressed through this study. Then, the contributions of the study will be finally reviewed in line with the gaps above. Therefore, these gaps aligned with their relevant research questions could be clearly seen across different chapters of this study.

1.4. The aim of this study

As Aldridge (2013) mentioned we don't expect every student to start a business. But we do want to develop entrepreneurial instincts and competencies in our students and believe that the attributes of an entrepreneur can encourage the mind-set that there is no need to go on accepting the status quo, which for many families implies a life on benefits or social welfare in the absence of available jobs in the job market. We would like to develop a set of cultivating approaches (solutions) that could be implemented in an e-learning platform which encourages students to develop their entrepreneurial competencies; and consequently, try to change their existing environment by creating and developing new opportunities.

This reflects the increasing focus on the development of entrepreneurial competencies in order to promote a system of education that is flexible in response to rapidly changing economic needs.

1.5. The scope of this study

The educational system could and should transmit to the students the competences they need for a smoother transition from school to the labour market (Mora et al., 2000). Mora et al. describe these competencies as:

“a) Specialised competence related to the knowledge and skills that people need for their job. b) Methodological competence, i.e. the ability to solve problems, to think independently, to adapt to new situations, etc. c) Social competences, relating to behaviour in terms of the job, such as the willingness to work or a team spirit. And d) Participatory competence, i.e. the capacity to organise or to lead work teams” (p.236).

Accordingly, the focus of the current project is on cultivating entrepreneurial competencies via an e-learning platform, focusing broadly on skills related to the ability to
solve problems, to think independently, to adapt to new situations, willingness to work in teams, and capacity to organise or to lead work teams, specifically, by building a) a new model of entrepreneurial competencies that highlight their importance and interrelationships as well as, b) the design of a set of cultivating approaches which could be implemented in a virtual learning environments.

Students’ education within universities is a function of both explicit and implicit curriculum and instructional design. The concept of the ‘hidden curriculum’ stands in contrast to the concept of the ‘official or explicit curriculum’ in university. The latter is outlined in the Academic Statute and is divided into faculties, departments, and programmes. Each department works with a study programme, which is largely the official (explicit) curriculum (Bergenhenegouwen, 1987). The hidden curriculum in university can be described as the whole set of informal and implicit demands of study and study achievements that are to be met by students to complete units of study. According to Bergenhenegouwen (1987), these demands are made by teachers partly consciously and partly unconsciously. This study does not aim to create a new module or course for enhancing students’ entrepreneurial competencies. Instead, it sought to design some cultivating approaches which could be implemented in any classroom in the virtual environment. Therefore, these approaches could be classified as constituting part of a hidden curriculum.

1.6. The context of this study

Our study was conducted in both Iran and Ireland. The entrepreneurial contexts of Iran and Ireland have been shaped by the economic and cultural developments in each country. A brief review of these two contexts is presented in the following paragraphs.

1.6.1 Economic context

The Global Entrepreneurship Monitor placed Iran third in Nascent Entrepreneurship Rate, ninth in Established Business Ownership Rate, twenty second in Entrepreneurial Intention, and twenty sixth in Perceived Capabilities (GEM Iran Report, 2012). Iran is also placed fourth in the world with respect to entrepreneurial education across vocational, professional, college, and university levels (Razavi et al., 2008). This growth has been supported by 110 academic centres for entrepreneurship operating within Iranian universities (Mahdavi Mazdeh et al. 2012). Fooladi and Spence (2009) argue that
while much of the export activities of Iran centre on oil, Iran is trying to diversify its economy and encourage greater levels of entrepreneurship.

Ireland, as one of the stronger emerging industrializing economies (Mac Sharry et al., 2000), experienced a significant increase in the number of SMEs during the 1990s and the Irish economy saw unprecedented growth in many sectors and the establishment of many multinational companies (Humbert et al., 2010). At a national level there has been no explicit entrepreneurship policy and the levels of entrepreneurship have been impacted by the global down turn in 2008 and this is reflected in the latest Global Entrepreneurship Report 2012. In reflecting on a ten year period GEM (2012) noted improvements in intended internationalization of start-up businesses, positive culture and media and a recognition of starting a business as a career option. GEM (2012) reported educational attainment levels among early stage entrepreneurs in Ireland as one of the highest internationally and were focused on international markets. However, they noted challenges around numbers of people considering starting a business, the perception of opportunities for new business remains low and prevalence of early stage entrepreneurs in Ireland is at an all time low. Ireland had the lowest rate of entrepreneurial activity of all 21 EU countries in the GEM (2000), accounting for only 1.2 per cent of GDP. Less than 1 in 100 Irish people invest in new business start-ups, the lowest amongst GEM participating European countries (Low, 2005). Also, it could be seen that while Ireland’s exports increased from €105bn in 2000 to €151bn in 2009, there was no net jobs growth in the SME sector (Hennigan, 2013). More importantly, GEM suggests that the recent economic recession has had a very severe negative impact on the Irish public’s confidence and perception of business opportunities. It was reported that 46% of Irish people saw business opportunities in their local area in 2007, but this figure had fallen to 26% by 2012 (Independent.ie, 2013).

Thus, one of the important issues in the current decline of economic confidence in the developing and developed countries is how confidence can be improved in the population of potential entrepreneurs. There is a huge amount of empirical evidence suggesting that one of the primary benefits of entrepreneurship education is to increase self-confidence (Gorman, et al., 1997; Oosterbeek et al., 2010; Fayolle et al., 2006). However, more research is needed to understand how different entrepreneurial competencies support one another as part of a system of strengths. The current study makes use of a system thinking methodology to advance understanding in this regard.
Notably, while entrepreneurship education is still in its infancy in Ireland, and lags behind Iran in many respects, provision is available at tertiary levels in the form of business modules and structured academic programmes (Faoite et al., 2003). Cooney and Murray (2008) reported that the provision of entrepreneurship programmes and activities within the Irish third level system has grown. Ireland is also second to Belgium in the EU for the proportion of young adults with university degrees, with six out of ten majoring in engineering, science or business studies (Low, 2005). Irish universities have had some initiatives to promote their students’ entrepreneurial competencies. For instance, the University of Limerick launched a course to encourage its graduates to look creatively at entrepreneurial opportunities (Low, 2005).

An overview of general comparisons between Iran and Ireland could be seen at Table 1.3 derived from Global Competitiveness Report (2011–2012) and Global Entrepreneurship Monitor Report (2013).

Table 1-3 Iranian and Irish Economic and Entrepreneurial Environment data

<table>
<thead>
<tr>
<th>Factor</th>
<th>Iran</th>
<th>Ireland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population, million</td>
<td>75.1</td>
<td>4.6</td>
</tr>
<tr>
<td>GDP (US$ billions)</td>
<td>357.2</td>
<td>204.3</td>
</tr>
<tr>
<td>Unemployment (%)</td>
<td>11.5</td>
<td>13.7</td>
</tr>
<tr>
<td>Nascent entrepreneurship rate</td>
<td>10.8</td>
<td>4.3</td>
</tr>
<tr>
<td>New business ownership rate</td>
<td>3.9</td>
<td>3.1</td>
</tr>
<tr>
<td>Fear of failure</td>
<td>36.4</td>
<td>40.4</td>
</tr>
<tr>
<td>Entrepreneurial intentions</td>
<td>30.6</td>
<td>12.6</td>
</tr>
<tr>
<td>Entrepreneurship as a good career choice</td>
<td>64.1</td>
<td>49.6</td>
</tr>
<tr>
<td>High status to successful entrepreneurs</td>
<td>82.4</td>
<td>81.2</td>
</tr>
<tr>
<td>Media attention to successful entrepreneurs</td>
<td>59.9</td>
<td>59.9</td>
</tr>
<tr>
<td>Early-stage entrepreneurial activity (TEA)</td>
<td>14.5</td>
<td>7.2</td>
</tr>
<tr>
<td>Established business ownership rate</td>
<td>11.2</td>
<td>8</td>
</tr>
<tr>
<td>Discontinuation of businesses</td>
<td>5.7</td>
<td>2.5</td>
</tr>
<tr>
<td>Infrastructure (Rank – Out of 142)</td>
<td>67</td>
<td>29</td>
</tr>
<tr>
<td>Macroeconomic environment (Rank – Out of 142)</td>
<td>27</td>
<td>118</td>
</tr>
<tr>
<td>Financial market development (Rank – Out of 142)</td>
<td>123</td>
<td>115</td>
</tr>
<tr>
<td>Technological readiness (Rank – Out of 142)</td>
<td>104</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>Rank – Out of 142</td>
<td></td>
</tr>
<tr>
<td>--------------------------</td>
<td>-------------------</td>
<td></td>
</tr>
<tr>
<td>Market size</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>Innovation</td>
<td>70</td>
<td></td>
</tr>
</tbody>
</table>

1.6.2. Cultural context
Hofstede's cultural dimensions theory, originally, proposed six dimensions along which cultural values could be analysed: individualism-collectivism; uncertainty avoidance; power distance, masculinity-femininity, indulgence-self-restraint, and pragmatism. Hofstede (2010) defined these dimensions as below.

- Power Distance: The degree of inequality among people which the population of a country considers as normal.
- Individualism: The degree to which people in a country prefer to act as individuals rather than as members of groups
- Masculinity: The degree to which tough values like assertiveness, performance, success and competition, which in nearly all societies are associated with the role of men, prevail over tender values like the quality of life, maintaining warm personal relationships, service, care for the weak, and solidarity, which in nearly all societies are more associated with women's roles”.
- Uncertainty Avoidance: The degree to which people in a country prefer structured over unstructured situations.
- Pragmatism: This dimension describes how every society has to maintain some links with its own past while dealing with the challenges of the present and future, and societies prioritise these two existential goals differently.
- Indulgence versus self-restraint: The extent to which members in society try to control their desires and impulses.

More details about Hofstede’s theory and the definitions of these dimensions are provided in Chapter 2.

The Hofstede Centre (www.geert-hofstede.com) provided an online tool for comparing the countries in terms of Hofstede’s cultural dimensions. Using this online tool, Figure 1.3 illustrates the results of this comparison between the Iranian and Irish culture through the lens of Hofstede’s 6-D Model.
Figure 1-3 Iran and Ireland cultural dimensions based on Hofstede's theory

The similarities and differences of Iran and Ireland in terms of these six dimensions are also outlined by Hofstede’s online cross-cultural comparison tool. A brief description of these similarities and differences is extracted from Hofstede’s online tool and is presented below:

**Power distance**

Iran receives an intermediate score of 58 on this dimension so it is relatively a hierarchical society and centralisation is popular to some extent.

In contrast, at 28 Ireland sits in the lower rankings of Power Distance. Within Irish organisations, hierarchy is established for convenience, superiors are always accessible and managers rely on individual employees and teams for their expertise.

**Individualism**

Iran, with a score of 41 is considered a collectivistic society. This is manifest in a close long-term commitment to the member 'group', be that a family, extended family, or extended relationships. Loyalty in a collectivist culture is paramount, and over-rides most other societal rules and regulations. The society fosters strong relationships where everyone takes responsibility for fellow members of their group. In collectivist societies
offence leads to shame and loss of face, employer/employee relationships are perceived in moral terms (like a family link), hiring and promotion decisions take account of the employee’s in-group, management is the management of groups.

In contrast, at a score of 70 Ireland is an individualistic culture. In the business world, employees are expected to be self-reliant and display initiative. Also, within the exchange-based world of work, hiring and promotion decisions are based on merit or evidence of what one has done or can do.

**Masculinity**
Iran scores 43 on this dimension and is thus considered a relatively feminine society. In feminine countries the focus is on “working in order to live”, managers strive for consensus, people value equality, solidarity and quality in their working lives. Conflicts are resolved by compromise and negotiation and incentives such as free time and flexibility are favoured.

At 68 Ireland is a masculine society – highly success oriented and driven. Behaviour in school, work, and play are based on the shared values that people should “strive to be the best they can be” and that “the winner takes all”. The Irish are proud of their successes and achievements in life, and it offers a basis for hiring and promotion decisions in the workplace. Conflicts are resolved at the individual level and the goal is to win.

**Uncertainty avoidance**
Iran scores 59 on this dimension, and thus has a high preference for avoiding uncertainty. Countries exhibiting high uncertainty avoidance maintain rigid codes of belief and are intolerant of unorthodox behaviour. In these cultures, time is money, people have an inner urge to be busy and work hard, precision and punctuality are the norm, innovation may be resisted and security is an important element in individual motivation.

Unlikely, at 35 Ireland has a low score on uncertainty avoidance. Ideas are important, being imaginative is appreciated. Irish businesses embrace creativity and are always looking for new ways to approach problems. Making a point with practical facts is more appreciated than the use of too much technical language.

**Pragmatism**
Iran’s very low score of 14 and Ireland’s low score of 24 indicate that they have strong
normative cultural orientation. People in such societies are normative in their thinking. They exhibit great respect for traditions, a relatively small propensity to save for the future, and a focus on achieving quick results.

**Indulgence**

The relatively low score of 40 in this dimension means that Iran’s culture is restraint to some extent. Restrained societies do not put much emphasis on leisure time and highlight the importance of social norms.

In contrast, with a high score of 65, it is clear that Irish culture is one of indulgence. People in societies classified by a high score in indulgence generally exhibit a willingness to realise their impulses and desires with regard to enjoying life and having fun. In addition, they place a higher degree of importance on leisure time, act as they please and spend money as they wish.

Against the background of these economic and cultural differences between Ireland and Iran, the purpose of this research is to sketch the pedagogical plan for an effective e-learning platform which can enhance graduates’ entrepreneurial competencies in both countries and consider broader issues in relation to a world-wide e-learning market which includes a diversity of requirements, priorities, perspectives, and infrastructures.

### 1.7. Overview of the Research

There are two principle stages in this research; the first involves the identification of the core competencies of an entrepreneur, their importance and interrelationships; the second seeks to develop a virtual learning curriculum to support the development of the competencies identified in stage one by drawing upon the knowledge and expertise of a diverse group of learners. The overall conceptual framework of this study can be seen in Figure 1.4, showing the different stages of research.
Figure 1-4 The conceptual framework of this study

The components of this conceptual framework are consistent with the key elements of an entrepreneurial education model suggested by Hynes (1996). Her model comprises four components including: input, process (including content and teaching methods), outputs, and environment. With regard to ‘inputs’, she pointed out that entrepreneurship programmes should not be assumed generic in nature but rather take into consideration the preferences and needs of students. Entrepreneurship education ‘process’ is also seen from two perspectives: ‘content’ and ‘teaching’ focus. The content focus, which is not addressed by this study, describes the variation of topics and content which are incorporated into an enterprise programme. The teaching focus refers to the teaching methods used to deliver educational content to students. ‘Output’ refers to the tangible effects of the entrepreneurship education programme. Finally, ‘environment’ comprises internal and external conditions (contexts) which influence entrepreneurship in both a positive and negative manner. In the current study, the main focus is on the outcome and process of entrepreneurship education. The first research question addresses the outcomes
of an entrepreneurship education programme in terms of the entrepreneurial competencies which should be cultivated in university students. The second research question refers to the teaching methods which should be implemented in an e-learning platform in order to stimulate students’ entrepreneurial competencies. The role of ‘technology’ as one of the enablers of entrepreneurship education is considered at this stage. Furthermore, both ‘output’ and ‘process’ of an entrepreneurship education programme are supposed to be partially affected by environment.

1.8. Thesis Structure

The structure of the thesis is as follows:

Chapter Two presents a literature review concerning three major issues, outlined above: the nature of entrepreneurial competencies, entrepreneurship education, and curriculum designs for cultivating entrepreneurial competencies. The chapter provides an account of entrepreneurial competencies that have been identified as important to be cultivated in university students. Then, a review of the extant literature outlines and classifies the previous studies which have been conducted on entrepreneurship education, including entrepreneurship education programmes within and beyond the business schools. The chapter subsequently introduces the topic of curriculum designs for cultivating entrepreneurial competencies, and focuses on curriculum designs issues in the context of both the Explicit and Implicit (Hidden) curriculum.

Chapter Three presents the research methodologies adopted. The methods and methodologies commonly used in entrepreneurial research are discussed and the methodologies selected for this project are presented. Qualitative Exploratory is the overarching methodology used in the current study, and within this two specific qualitative methods are employed: Interactive Management (IM), and Focus Group methods. The processes which were adopted are described in detail and rationales for the selection of methodologies presented.

Chapter Four presents the results of study 1, which identifies the most important entrepreneurial competencies and their interrelationships, as clarified by Iranian and Irish entrepreneurs, academics, and students. Specifically, five Enhancement Structures derived from five IM sessions with experts are presented and synthesised. A classification of the identified competencies is also presented, with two major competencies highlighted – motivation and productive thinking --each of which includes a number of sub-component
Chapter Five introduces the generated solutions which could be used to cultivate the selected entrepreneurial competencies (productive thinking and motivation) in students. These solutions are generated by 6 participant groups in Iran and Ireland, including: academics, entrepreneurs and students. The ‘cooperative’ and ‘experiential’ nature of the solutions was gradually emerged when they were described and discussed using the narratives extracted from participants’ discussions. Therefore, the affordances of these two educational theories as well as the affordances of an ‘e-learning’ environment for implementing these solutions are initially discussed. Furthermore, the solutions are categorised into some themes and those themes are defined.

Following the initial discussions in chapter 5 about the affordances of cooperative and experiential theories as well as e-learning environments for implementing the solutions generated by this study, chapter 6 addresses these affordances in more details. These affordances are outlined in terms of the themes generated in the last chapter. Furthermore, since cooperative and experiential learning were already suggested as the effective entrepreneurship education frameworks, the contributions of this study into the literature of cooperative and experiential entrepreneurship education are outlined.

Chapter seven presents a brief review of findings and highlighted the contributions of this study to the current literature. These contributions are presented in accordance with the gaps identified and presented in chapters 1 and 2 of this thesis. Finally, the limitations of the current study alongside with the suggestions for the future studies are presented. One of these suggestions is translating the theoretical solutions generated by this study into a technical language for designing ‘software-based’ solutions. An example of this process is also provided and a software-based solution is generated to illustrate the potential of the theoretical solutions to be used by future studies.

1.9. Definitions:

Since we are going to explore the pedagogical approaches to support an e-learning platform which can effectively cultivate students’ entrepreneurial competencies, it is necessary at least to strive towards a definition of some of the terms and key words which are central to this study. These are detailed below.
1.9.1. Entrepreneurial Competency

What is “Competency”?

“Competency” has been defined according to many different perspectives (Hayton and McEvoy, 2006; Hoffmann, 1999) and it is interchangeably used with other terms such as “skills”, “expertise”, “acumen” and “competence” in the literature (Smith and Morse, 2005). Strebler et al. (1997) illustrate two meanings of “Competency” in the British and American Schools. Accordingly, while competencies have been seen as minimum standards of performance in the British point of view, the American school promoted by Boyatzis (1982) see competencies as underlying characteristics of a person which results in his/her effective action and/or superior performance. Competencies, in this point of view, are not seen as the task of the job, but rather that which enables people to do the task (Mitchelmore and Rowley, 2010). Also, Man and Lau (2005) believe that competencies are comprised of “one's motives, personality traits, self-image, attitudes, will, social roles, skills and knowledge” (p.465).

What is “Entrepreneurial Competency”?

As Brinckmann (2008) mentions, while considerable discussions and studies have focused on entrepreneurial competencies and how they have been applied in practice, there is scope for considerably more theoretical and empirical work in the area. Further to the diversity of definitions of “Competency”, there are also many different definitions of entrepreneurship (Mitchelmore and Rowley, 2010), and the definition of “Entrepreneurial competency” continues to be a topic of active discussion. Some of the definitions proposed are presented in Table 1.4.

Table 1-4 Definitions of Entrepreneurial Competencies

<table>
<thead>
<tr>
<th>Researcher</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bird, 1995</td>
<td>Underlying characteristics such as specific knowledge, motives, traits, self-images, social roles and skills which result in venture birth, survival and/or growth</td>
</tr>
<tr>
<td>Wu, 2009; Man et al., 2002</td>
<td>A set of higher-level characteristics involving personality traits, skills and knowledge as the total ability of the entrepreneur to perform a job role successfully</td>
</tr>
<tr>
<td>Mitchelmore and Rowley,</td>
<td>A specific group of competencies relevant to the exercise of successful entrepreneurship associated with the development of</td>
</tr>
</tbody>
</table>
The different definitions of entrepreneurial competencies are grounded in the interest in how entrepreneurial competencies are applied in different contexts and in relation to different aims (Hunger and Wheelen, 1996). For example, some studies, including Chandler and Jansen (1992) as well as Man et al. (2002), differentiate the entrepreneurial competencies necessary to start a business from those necessary to manage the business through growth. While some scholars believe that these competencies are supposed to be engaged by the birth, survival and growth of a venture, others highlighted the role of the entrepreneurial competencies in one or some of these stages (Bird, 1995). From another perspective, Man and Lau (2005) propose a dual origin for entrepreneurial competencies including those competencies that are more deeply rooted in a person's background (traits, personality, attitudes, social role and self-image) as well as those that can be acquired at work or through training and education (skills, knowledge and experience).

In line with the definition of “Competency” which has been articulated by Boyatzis (1982), the definition of “entrepreneurial competencies” adopted in the current study is: encompassing three types of characteristics including traits, skills, and knowledge that enable individuals to a) identify opportunities, establish, maintain and grow their own business; b) can be improved via training and development; and c) engage them in a more enterprising, innovative and flexible manner in a changing workplace environment (Sánchez, 2011; Hynes and Richardson, 2007).

This definition has three dimensions. The first dimension which addresses educating students to start a business is consistent with definition of ‘nascent

<table>
<thead>
<tr>
<th>Year</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>small and new businesses.</td>
</tr>
<tr>
<td>Onstenk, 2003</td>
<td>Competencies which are necessary for starting, surviving and growing an enterprise, including the ability to recognize and analyse market opportunities; to communicate, persuade and discuss with the business stakeholders; and to establish networks linking with stakeholders for mutual learning and collaborative undertaking.</td>
</tr>
<tr>
<td>Kiggundy, 2002</td>
<td>The sum total of the entrepreneur's requisite attributes for successful and sustainable entrepreneurship, including values, beliefs, attitudes, knowledge, skills, abilities, personality, wisdom, expertise (social, technical, managerial), mind-set and behavioural tendencies.</td>
</tr>
</tbody>
</table>
entrepreneurs’ who are considering, willing or are de facto about to start a career and move from employee to self-employed (Wagner, 2003). Therefore, it could be argued that nascent entrepreneurs are in the beginning of the entrepreneurial process, which will eventually lead to the formation of new and dynamic small businesses (Wagner, 2004). The second dimension of the definition above refers to the educability of entrepreneurial competencies. Since the second research question of this study addresses educating the entrepreneurial competencies, the educability of entrepreneurial competencies is an important issue which is further elaborated in Chapter two of this study. The third dimension of this definition refers to equipping students for a changing workplace. This highlights the need to ensure that a) entrepreneurial competencies are not confined to the business disciplines; and b) students of various disciplines have an appreciation of entrepreneurial opportunities and are supported in developing the skills required to explore these across diverse programmes (Hynes and Richardson, 2007). This subject (entrepreneurship education; within or beyond the business schools) is also discussed in Chapter 2.

1.9.2. E-Learning

One of the main focuses of this thesis is e-learning. Table 1.5 shows a brief description of different course types, some of which use e-learning.

### Table 1.5 Different types of courses and definitions of e-learning across the US universities (Source: Allen and Seaman, 2011)

<table>
<thead>
<tr>
<th>Proportion of Content Delivered Online</th>
<th>Type of Course</th>
<th>Typical Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>Traditional</td>
<td>Course where no online technology is used ---- content is delivered in writing or orally.</td>
</tr>
<tr>
<td>1 to 29%</td>
<td>Web Facilitated</td>
<td>Course that uses web-based technology to facilitate what is essentially a face-to-face course. May use a course management system (CMS) or web pages to post the syllabus and assignments.</td>
</tr>
<tr>
<td>30 to 79%</td>
<td>Blended/Hybrid</td>
<td>Course that blends online and face-to-face delivery. Substantial proportion of the content is delivered online, typically uses online</td>
</tr>
</tbody>
</table>
discussions, and typically has a reduced number of face-to-face meetings.

+80% Online A course where most or all of the content is delivered online. Typically have no [or a few] face-to-face meetings.

Following the different applications of e-learning which have been mentioned in Table 1.5, there is a wide diversity of definitions of e-learning in the academic literature. Some of these definitions have been mentioned in Table 1.6.

Table 1-6 Some of the definitions of e-learning

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fry</td>
<td>2000</td>
<td>Delivery of training and education via networked interactivity and a range of other knowledge collection and distribution technologies</td>
</tr>
<tr>
<td>Fivenines Consulting</td>
<td>2007</td>
<td>The use of ICT to achieve or enhance teaching and learning outcomes</td>
</tr>
<tr>
<td>Jelinek</td>
<td>1979</td>
<td>The process of creating, renewing and upgrading the latent and enacted capabilities based on its stock of explicit and tacit resources. It combines purely technical with purely administrative learning processes.</td>
</tr>
<tr>
<td>Sammour et al.</td>
<td>2008</td>
<td>Formally and systematically organised teaching and learning activities, in which the instructor and the learner(s) use ICT to facilitate their interaction and collaboration.</td>
</tr>
<tr>
<td>Tavangarian et al.</td>
<td>2004</td>
<td>“All forms of electronic supported learning and teaching, which are procedural in character and aim to effect the construction of knowledge with reference to individual experience, practice and knowledge of the learner”.</td>
</tr>
<tr>
<td>Clark &amp; Mayer</td>
<td>2003</td>
<td>Delivering instruction via a computer for promoting learning.</td>
</tr>
</tbody>
</table>
Looking more closely at Tables 1.5 and 1.6, we defined e-learning as “A systematically organised learner-centred environment which learners can interact with each other as well as their tutors and learn cooperatively facilitated by virtual and information technologies”. In terms of the different types of e-learning which has been presented in Table 1.6, this definition could be categorised in the fourth category (Online Courses) with more than 80% online content delivery.

1.10. Conclusion

The importance and effectiveness of well-designed entrepreneurship education programmes to nascent entrepreneurs and their impact upon new venture creation are highlighted by Hytti and O’Gorman (2004), Gibb and Cotton (1998), Carter et al. (2003), Matlay (2005), and Gatewood et al. (2002). However, as it has been mentioned by Delmar and Davidsson (2000) and Matlay (2006) there are considerable gaps in the learning processes that lead to the creation and development of new entrepreneurial businesses by nascent entrepreneurs. Some of these gaps are, but not limited to: lack of consensus about which entrepreneurial competencies are most important to be cultivated in university students, lack of exploring interdependencies amongst entrepreneurial competencies, failure to move beyond traditional and conventional educational methods when teaching entrepreneurship, lack of stakeholders’ engagement in identifying entrepreneurial competencies and designing entrepreneurship curricula, lack of addressing experiential learning cycles by entrepreneurial education programmes, lack of research in the specific context of Entrepreneurship Education in the virtual learning environments, lack of use of technology for enriching entrepreneurship education, some limitations in the cross-cultural research on entrepreneurship, and the limited application of qualitative research methods in entrepreneurship research. It can be concluded that these gaps reduced the effectiveness of entrepreneurship education in many instances; therefore, it is important to address these gaps and take them into account in the new studies in the area of entrepreneurship education.

Against this context, the current thesis investigates the most important entrepreneurial competencies which are necessary for students as nascent entrepreneurs to create their own innovative jobs after their graduation from university. Then, a variety of solutions for cultivating those entrepreneurial competencies in a virtual learning environment are generated and discussed.
The findings of this study have important implications for universities in general and e-learning systems in specific which want to shape a promising future for their graduates, decreasing the probability of their unemployment after graduation. This can be achieved by empowering students in terms of their entrepreneurial competencies and thus increasing their capability of creating jobs for themselves and others.

This study is conducted in a cross cultural context between Iran and Ireland and tries to interpret the similarities and differences between these two contexts in terms of entrepreneurship education. Furthermore, the dominant cultural frameworks which can be used in the cross-cultural entrepreneurship studies are reviewed and examined.

All of these efforts are in order to address the gaps existing in the entrepreneurship education literature. Addressing these gaps are supposed to motivate and direct us to contribute to the extant literature and expand the current knowledge in the specific context of entrepreneurship e-education in universities. This expanded knowledge should help students to stimulate their entrepreneurial competencies and empower themselves in order to create their own future and job pathways. This improvement could also significantly affect societies as well due to the important role that students and university graduates have in their societies.
2. Chapter Two: Review of Literature

2.1. Introduction

This chapter seeks to critically review the literature relevant to the current study in three main subjects: entrepreneurial competencies, entrepreneurship education and entrepreneurship and culture.

The first section reviews the different perspectives in defining entrepreneurial competencies and then identifies and categorises a comprehensive list of 83 entrepreneurial competencies identified and referred by previous studies. Furthermore, the gaps in the literature are highlighted and discussed, including: lack of consensus on the definition and range of competencies associated with entrepreneurs, lack of exploring interdependencies amongst these competencies and lack of use of qualitative research methods in exploring entrepreneurial competencies. Moreover, the implications of these gaps on the current study are addressed.

The second section of this chapter reviews some major aspects of entrepreneurship education. It looks into the debate about where entrepreneurship education should be placed; within or beyond the business school. Then, three main challenges of entrepreneurship curriculum are defined: implementing traditional teaching methods, lack of involving entrepreneurship curriculum stakeholders in the relative studies and lack of implementing educational technologies in entrepreneurship education. These three challenges are discussed and the applications of this study for addressing those challenges are highlighted.

The third section of this literature review is dedicated to entrepreneurship and culture. First, three dominant themes in entrepreneurship and culture, including ‘universalism’, ‘nationalism’ and ‘regionalism’, are defined and some examples are provided. Then, the cross-cultural studies of entrepreneurial competencies are defined and classified. Finally, four cultural frameworks for interpreting cultural and entrepreneurial relationships are described and analysed. The gaps in the literature of entrepreneurship and culture are also discussed and their implications for this study are outlined.

At the end of this chapter, all of the analysis provided by the last three sections come together and provide a synthesis of all of the gaps identified by the literature. Furthermore, the important issue of how these gaps are to be addressed by this study is outlined.
2.2. Identifying and classifying the most important entrepreneurial competencies

2.2.1. Introduction:

Entrepreneurs play an important role in pioneering economic development (Li et al., 2006) in new venture creation (Baron, 2007), in the life of society (Seelos and Mair, 2005; Hannafey, 2003), in the creation and development of new innovations (Lee et al., 2012; Windrum, 2008), and in developing and commercializing the technologies (Kropp and Zolin, 2005). Thus, it is important to know “what is the definition of an entrepreneur?” While this question has been the main basis of numerous studies over the last number of decades, there is a lack of consensus in providing an agreeable and comprehensive response to this question. For instance, Cole (1969) mentioned that:

“My own personal experience was that for ten years we ran a research center in entrepreneurial history; for ten years we tried to define the entrepreneur. We never succeeded. Each of us –had some notion of it- what he thought was, for his purposes, a useful definition. And I don't think you're going to get farther than that”. (Cole, 1969, p. 17)

However, these questions of whether an entrepreneur could be defined have not stopped researchers from attempting to do just that. Asking the question, “why do certain individuals start firms when others, under similar conditions, do not?” (Kobia and Sikalieh, 2010, p.113), means that much research in the area of entrepreneurship has focused on the person of the entrepreneur (Gartner, 1999). Many of the previous studies in the area of entrepreneurial intentions and behaviours draw upon on the Theory of Planned Behaviour (Ajzen 1987, 1991). According to this theory, three factors, including attitude towards the behaviour, subjective norm and perceived behavioural control, determine intentions and subsequent behaviour. Consistent with this theory, Shapero (1982) developed the Model of the Entrepreneurial Event to explain entrepreneurial intentions. This model points out that entrepreneurs’ pre-existing belief that the activity is desirable and feasible, as well as their personal inclination to act on opportunities, affects their decision to take on an entrepreneurial activity. Many other variables have been identified as determinants of entrepreneurial intentions and behaviours. For instance, Lee and Wong (2004) highlighted the importance of both situational and individual variables, with social, economic and political highlighted as important situational factors (Boyd and Vozikis 1994) alongside individual variables, such as personal characteristics and skills (Stewart
and Roth 2004), as well as personality traits (Rauch and Frese, 2007).

Another approach to understanding entrepreneurial competencies has involved efforts to distinguish between the traits of entrepreneurs and entrepreneurial behaviours. The first perspective addresses the traits of entrepreneurs such as the need for achievement, internal locus of control, the need for independence, the need for responsibility and the need for power (Carland et al., 1984, 2002). The second perspective highlights the importance of entrepreneurial behaviours such as seeing a “big picture” perspective, spotting unique opportunities, making a total commitment, seeing a need for control, welcoming uncertainty, using contacts and connections and embracing competence (Gartner, 1988; Mitton, 1989). The main question in the trait approach is “who is an entrepreneur?”, whereas the behavioural approach asks “what does an entrepreneur do?”. Another difference is that the trait approach addresses the individual level and the behavioural approach highlights the functional level (McKenzie et al., 2007). However, from a theoretical and applied perspective, the distinction between trait and behaviour level descriptions of entrepreneurs is often fuzzy and difficult to distinguish. Certain entrepreneurial traits, such as internal locus of control, and behaviours, such as seeing a need for control, may be seen as interdependent and, therefore, may not be distinguished from each other clearly.

Further to the classification above, Haase and Lautenschläger (2011) proposed another classification of entrepreneurial competencies. They divided these competencies into three categories:

- ‘Know-what’ competencies: The hard facts about business creation and management, ranging from business plan development to the principles of accountancy, finance and marketing.

- ‘Know-how’ competencies: A set of soft competencies such as creativity, pro-activeness, leadership, risk taking propensity and wakefulness are decisive for successful entrepreneurial ventures.

- ‘Know-why’ competencies: A group of entrepreneurial conviction, such as the right mind-set, awareness, motivation and attitudes.

A number of scholars, such as Rauch and Frese (2007), Sánchez (2011) and Baum and Locke (2004), believe that entrepreneurship is strongly linked to specific traits rather than
broad traits and that broader traits have an effect on entrepreneurial intention and behaviour by means of specific traits. Sánchez (2011) labelled these specific traits as “competencies” and conceptualised them as encompassing three types of characteristics that affect a major part of one’s job, correlate with performance on the job, can be measured against well-accepted standards and can be improved via training and development. These include traits, skills and knowledge. On the basis of findings from a training study in a student sample, Sánchez concluded that training programmes could significantly enhance even some cognitive and personality-based entrepreneurial competencies such as self-efficacy, pro-activeness, risk-taking and intention of self-employment in students. Thus, a focus on enhancing entrepreneurial competencies in students is a promising avenue of future research. In line with other scholars such as Kirby (2004) and Blenker et al. (2008), Haase and Lautenschläger (2011) argued that entrepreneurship education must primarily target a change in the individual’s entrepreneurial ‘know-how’ (soft entrepreneurial competencies).

Therefore, since the ultimate goal of this study is to generate educational approaches for cultivating entrepreneurial competencies, the trait perspective is selected by this study as the main framework of entrepreneurial competencies.

The trait approach in defining entrepreneurial competencies has a long tradition. Carland et al. (2007) presented a historical view of entrepreneurship since circa 1700 and pointed out that individual level of entrepreneurs’ competencies should provide a comprehensive definition of an entrepreneur. Consistent with this view, Tajeddini and Mueller (2009) pointed out that it is important to develop a deeper understanding of the core competencies that facilitate people working as entrepreneurs.

The importance of entrepreneurial competencies has been examined from two perspectives. While the first perspective views competencies as essential factors for a successful start-up, others see them as prerequisites for sustaining business success (Bird, 1995). With regards the first perspective, Wong et al. (2005) suggest that the success of a start-up depends on key competencies (e.g. risk-taking propensity and need for achievement) of the entrepreneur as founder of the business being incubated. In line with the second perspective, Kellermanns et al. (2008) suggest that specific entrepreneurial competencies (e.g. opportunity identification and networking skills) help firms to adapt and respond to environmental changes, such as consumer preferences, competitor actions and technological developments. In another study, Filatotchev et al. (2005) point out that a
founder’s characteristics can also have a direct impact on the firm’s development and success in the long-run. Given this potential overlap between the entrepreneurial competencies necessary for launching and sustaining a business, knowledgeable stakeholders who come together in collective intelligence sessions to define entrepreneurial competencies and their interdependencies may not distinguish between these two classes of competencies, or may see these two classes of competencies as interrelated in specific ways. As such, these distinctions between traits and behaviours and between start-up competencies and sustained business success competencies may act as part of a broader frame of reference for expert stakeholder groups as they think about competencies and systems of competencies. But the distinctions also highlight the potential value of the CI method used in this study, specifically, as a way to further our understanding of entrepreneurial competencies and their interdependencies from an expert stakeholder perspective, and to draw a potential distinction between the way academics may think about and approach the development of entrepreneurial competency models and the way experts think about competencies to collectively arrive at a consensus view.

Therefore, since both of the perspectives above rely on defining and determining a set of entrepreneurial competencies; and moreover, since venture capitalists have traditionally placed more emphasis on the personal competencies of entrepreneurs than on other factors, e.g. environmental issues in assessing new ventures (Kumara and Sahasranam, 2009), this part of the literature review seeks to have a closer look at the definition, range and classification of the entrepreneurial competencies identified by previous studies.

2.2.2. Definition of entrepreneurial competencies

One of the key challenges in the entrepreneurial competencies literature is that there are many different definitions of competency (Hayton and McEvoy, 2006; Bron, 1999; Strebler et al., 1997). Furthermore, Smith and Morse (2005) point out that some terms such as skills, expertise, acumen, competence and competency are sometimes used interchangeably by the previous studies.

For instance, there is a distinction between “competency” and “competence”. Boyatzis (1982), as the representative of American school of thought, define “competency” as the underlying characteristics of a person which results in effective action and/or superior performance in a job. On the other hand, the UK school of thought define “competence” as a description of something which a person who worked in a given occupational area
should be able to do, or a description of an action, behaviour or outcome which a person should be able to demonstrate (Mitchelmore and Rowley, 2010). According to these definitions, it seems that while “competency” is more relevant to the underlying characteristics of a person, “competence” is more likely to address the behaviours of a person. This dividing fits into the two main perspectives in investigating entrepreneurial competencies which could be viewed from a “traits” (Rauch and Frese 2007; Ibeh, 2003) or “behavioural” (Man et al., 2002) perspectives. While the traits perspective sees the individual as the primary unit of analysis, and focuses on his/her characteristics, the latter one sees entrepreneurial competencies as the sources of reflecting the actual behaviour of the entrepreneur. Therefore, when we are talking about entrepreneurial competencies from the traits perspective the word “competency” is more appropriate. However, the word “competence” is more fitted into the behavioural perspective in defining entrepreneurial competencies.

Further to the vagueness existing in terms such as competency and competence, “entrepreneurial competencies” suffer from a lack of consensus in other relevant concepts such as “entrepreneur”, “entrepreneurship” and “entrepreneurial” (Morales-Gualdrón and Roig, 2007). Therefore, the definitions provided for “entrepreneurial competencies” are somehow different. Some of these different definitions of entrepreneurial competencies are detailed below:

- Competencies such as specific knowledge, motives, traits, self-images, social roles and skills which are necessary for birth, survival and/or growth of new ventures (Bird, 1995).

- The total ability of the entrepreneur to perform a job role successfully (Man et al., 2002)

- The mind-set and process to create and develop economic activity by blending risk-taking, creativity and/or innovation with sound management, within a new or an existing organization (Commission of the European Communities, 2003).

Amongst the three definitions above, while the second one is very vague and general, the first one complies with the “traits perspective” of defining entrepreneurial competencies, and the third one addresses the “behavioural perspective”. As was previously mentioned, this study sees entrepreneurial competencies from the traits perspective and seeks to focus on the soft competencies of an entrepreneur as the ‘Know-how’ competencies. This
perspective is especially important in the framework of entrepreneurship education since they are essential for successful business venturing (Haase and Lautenschläger, 2011). This point of view is further detailed in section 2.3 of this chapter.

Taking into account all of these insights, “entrepreneurial competencies” adopted in the current study, based on the definition of “Competency” which has been articulated by Boyatzis’s (1982), can be defined as: “Certain mind-set, characteristics or dispositions of a person that enable him/her to identify opportunities, establish, maintain and grow his/her own innovative business.” This definition was used in the empirical phase of this study, when study participants were asked to determine which entrepreneurial competencies are most important to be cultivated in university students.

2.2.3. Range of entrepreneurial competencies

Although Thomas and Mueller (2000) argued that the literature investigating entrepreneurial profiles (including innovation, risk-propensity, internal locus of control and energy level) is reasonably consistent on the defining competencies that distinguish entrepreneurs from non-entrepreneurs, other scholars highlight a lack of consensus as to what competencies distinguish entrepreneurs from non-entrepreneurs (Miller et al., 2012; Jain, 2011; Mitchelmore and Rowley, 2010). Prompted by repeated calls to develop a deeper understanding of the core competencies that facilitate people working as entrepreneurs (cf. Tajeddini and Mueller, 2009), researchers are increasingly focused in their efforts to identify entrepreneurial competencies and develop entrepreneurial competency frameworks. However, there has been a lack of consensus in relation to identifying the most important competencies associated with entrepreneurship. A number of important entrepreneurial competencies previously identified include:

- Cantillion (circa 1700) see rational decision making and management as the key competencies of an entrepreneur.

- Risk-bearing was identified by Mill (1848) as the main characteristic of entrepreneurs, which distinguish them from managers.

- Schumpeter (1934), who bring the entrepreneur term into general use among economists, rejected Mill’s idea and argued that risk-bearing is inherent in ownership, but entrepreneurs are not necessarily owners. Instead, he highlighted
the importance of innovation as the core competency of entrepreneurs.

- McClelland (1961), in his book titled The Achieving Society, emphasized the "need for Achievement" as characterizing the entrepreneur. McClelland defines need for Achievement as the desire to do something better, faster, more efficiently, with less effort.

- Leadership, responsibility, desire for independence and career achievement, and creativity were selected by Collins and Moore (1964) as the entrepreneurial competencies.

- Hornaday and Aboud (1971) highlighted the impact of gender and race on entrepreneurs' competencies and concluded that the following competencies are significant for entrepreneurs across the different ethnic groups: the need for achievement, self-reliance, competitiveness, initiative, confidence, versatility, perseverance, resilience, innovation and physical health.

- Timmons (1979) worked with nearly 1200 entrepreneurs over a 12-year period. As a result of his great experience in the field, he argued that while no one entrepreneur could possess all the desirable qualities needed for success in business, they recognize their own shortcomings and accentuate their strengths. He profiled entrepreneurial competencies as having a high level of drive, energy and self-confidence; seeing money as a way of keeping score and a tool for growth; being willing to have productive collaboration with others; having high but achievable goals; believing that they can control their own destinies; being able to learn from failures; having long term vision; and being willing to have intense competition with self-imposed standards.

- Martin (1982) believed that while creativity is the core competency of entrepreneurs, entrepreneurial creativity is different from literary or artistic creativity. An entrepreneur does not innovate by creating ideas but by exploiting the value of ideas.

- Mitton (1989) highlighted a behavioural perspective in identifying entrepreneurial competencies and identified need for control, welcoming uncertainty, seeing a big picture perspective, making a total commitment, having a utilitarian view of what is right and embracing competence as the entrepreneurial competencies.
- Martin and Staines (1994) point out that personality, approachability, leadership, self-confidence, innovativeness and risk-taking are crucial for an entrepreneurs’ success.

- Personal background and experience were seen by Murray (1996) as the most important entrepreneurial competencies. Experience includes commercial experience, a history of innovation, production and marketing experience and previous contact with venture capitalists.

- Gasse et al. (1997) highlight the importance of intellectual, social and managerial abilities as the entrepreneurial competencies.

- Man et al. (2002) summarize various entrepreneurial competencies identified in the literature into six major competency groups, including opportunity, relationship, conceptual, organizing, strategic and commitment competencies.

- Managerial interaction and communication skills are again highlighted as entrepreneurial competencies by Flore´n (2006).

- Opportunity is considered as the heart of entrepreneurial competencies by Rasmussen et al. (2011). They identified three competencies of opportunity refinement, leveraging and championing that appeared crucial for the entrepreneurs and ventures to gain credibility.

As can be seen in the above, it appears that there is a huge variety in the list of entrepreneurial competencies identified by the different scholars. This lack of consensus on definition hinders the development of a body of knowledge from research initiatives and clarity in practical applications and implementations (Mitchelmore and Rowley, 2010). To have a better understanding of this variety, this study provides a comprehensive list of entrepreneurial competencies specified by the previous studies.

Using the constant comparative method, 63 peer-reviewed articles were selected for inclusion in this literature review. The studies selected for inclusion in the review were conducted in a variety of different contexts and were driven by diverse research goals and hypotheses; however, all of them shared a common focus on examining some entrepreneurial competencies. All studies were published in peer-reviewed scientific journals (60 out of 63) and books (3 out of 63). Using a large set of keyword searches,
including entrepreneurial, entrepreneurial competencies, entrepreneurial characteristics, entrepreneurial skills, entrepreneurship, etc., studies were sourced from scientific databases such as: ERIC, Science Direct, JStore, Sage and Google Scholar. Other studies were sourced by searching the bibliographies of papers identified in the initial literature review. By using an iterative process of search and analysis, and by discarding irrelevant studies, a total of 63 studies between 1934 and 2010 were identified as providing a comprehensive list of entrepreneurial competencies. Accordingly, as can be seen in Table 2.1, 83 entrepreneurial competencies were identified and classified.

Studies describe an overlapping set of entrepreneurial competencies that enable people to identify opportunities, start-up and maintain innovative business ventures and continue to innovate and add value in the face of on-going business challenges (see Table 2.1).

Table 2-1 A comprehensive list of identified and examined entrepreneurial competencies

<table>
<thead>
<tr>
<th>Entrepreneurial competency</th>
<th>Definition</th>
<th>Author</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accepting of responsibility</td>
<td>Openly accepting the challenge of taking on responsibility for tasks.</td>
<td>Kordnaeij et al., 2007; Collins and Moore, 1964</td>
</tr>
<tr>
<td>Adaptability and flexibility</td>
<td>“Flexibility is defined as ‘the capacity to adapt’ across a variety of different situations, timescales, goals and intentions, and areas of business focus (cf. Golden and Powell, 2000).</td>
<td>Jahangiri, 2008; Tajeddini and Mueller, 2009</td>
</tr>
<tr>
<td>Self-confidence</td>
<td>Having confidence in one’s ability to accomplish goals, overcome obstacles and succeed where others may fail.</td>
<td>Hornaday and Aboud, 1971; Martin and Staines, 1994</td>
</tr>
<tr>
<td>Applied in orientation</td>
<td>Interested in making an impact and seeing a direct or immediate application of their work and seeking out real-world application for their efforts.</td>
<td>Mendes and Kehoe, 2009</td>
</tr>
<tr>
<td>Multi-experience identity</td>
<td>Having diverse work histories and linking one’s previous experiences to current projects, using this diversity of experiences</td>
<td>Hornaday and Aboud, 1971; Mendes and</td>
</tr>
<tr>
<td>Feature</td>
<td>Description</td>
<td>Source</td>
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<tr>
<td>Non-traditional</td>
<td>Engaging in activities that cannot be easily classified as routine activities.</td>
<td>Mendes and Kehoe, 2009</td>
</tr>
<tr>
<td>Optimistic</td>
<td>Exhibiting exuberance when discussing their career and expressing great resilience when encountering career barriers and setbacks.</td>
<td>Kehoe, 2009</td>
</tr>
<tr>
<td>Commercial understanding</td>
<td>Understanding the commercial environment in which their business is situated.</td>
<td></td>
</tr>
<tr>
<td>Communication skills</td>
<td>The ability to persuade and discuss with various stakeholders such as customers, clients, suppliers, competitors, service providers and others.</td>
<td>Izquierdo and Deschoolmeester, 2010; Hynes et al., 2009</td>
</tr>
<tr>
<td>Conceptual skills</td>
<td>The ability to formulate ideas and work with concepts, understanding abstract relationships and conceptual connections.</td>
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<tr>
<td>Practical work experience</td>
<td>The experience of working directly in many roles relevant to their current entrepreneurial business context.</td>
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<tr>
<td>Self-understanding</td>
<td>Awareness of and ability to understand one's own actions.</td>
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<tr>
<td>ICT proficient</td>
<td>Skilled and experienced in understanding and using Information and Communication Technology.</td>
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<tr>
<td>Negotiation</td>
<td>Techniques to help the entrepreneur stand their ground and reach conclusions that they can live with.</td>
<td>Keogh, 2006</td>
</tr>
<tr>
<td>Creativity</td>
<td>The production of novel ideas that are useful and appropriate to the situation.</td>
<td>Martin, 1982; Collins and Moore, 1964</td>
</tr>
<tr>
<td>Assertiveness</td>
<td>The ability to standing one’s ground without being aggressive.</td>
<td>Keogh, 2006</td>
</tr>
<tr>
<td>Determination</td>
<td>The ability to continue trying to do something, although it is very difficult.</td>
<td>Zali, et al., 2007</td>
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<tr>
<td>Engineering skills</td>
<td>Possessing engineering and technical skills relevant to the business venture.</td>
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<tr>
<td>Task motivation</td>
<td>Being motivated to perform well on a task.</td>
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<tr>
<td>Ability to motivate</td>
<td>The ability to motivate others to perform to the best of their ability on tasks.</td>
<td>Izquierdo and Deschoolmeester, 2010</td>
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<tr>
<td>others</td>
<td></td>
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<tr>
<td>Venture and career</td>
<td>The ability to evaluate ventures and career opportunities.</td>
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<tr>
<td>evaluation</td>
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<tr>
<td>Finance management</td>
<td>The planning, directing, monitoring, organizing and controlling of the monetary</td>
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<td></td>
<td>resources of an organization.</td>
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<tr>
<td>Integrity</td>
<td>The quality of being honest and having strong moral principles.</td>
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<tr>
<td>Concern for high</td>
<td>A strong focus on optimizing the quality of products and business processes.</td>
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<tr>
<td>quality of work</td>
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<tr>
<td>Seeing the market</td>
<td>Taking perspective on the market and opportunities in the marketplace.</td>
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<tr>
<td>from a different</td>
<td></td>
<td></td>
</tr>
<tr>
<td>angle</td>
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<tr>
<td>Marketing and sales</td>
<td>Establishing and developing long-term customer relationships, so that the</td>
<td></td>
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<tr>
<td>skills</td>
<td>objectives of the parties involved are met. This is done by a mutual exchange</td>
<td></td>
</tr>
<tr>
<td></td>
<td>and keeping of promises.</td>
<td></td>
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<tr>
<td>Goal-setting skills</td>
<td>“The process of deciding what you want to achieve or what you want someone else</td>
<td></td>
</tr>
<tr>
<td></td>
<td>to achieve over a particular period”.</td>
<td>Boojihawon et al, 2007; Kumara and Sahasranam, 2009</td>
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<tr>
<td>Time-management skills</td>
<td>“Identify needs and wants, rank them in regard to their importance or priority,</td>
<td></td>
</tr>
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<td></td>
<td>and then allocate time and resources accordingly”.</td>
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<tr>
<td>problem solving</td>
<td>“A behavioural process which (a) makes available a variety of response alternatives</td>
<td></td>
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<tr>
<td>ability</td>
<td>for dealing with a problematic situation and (b) increases the probability of</td>
<td></td>
</tr>
<tr>
<td>Analytical ability</td>
<td>Selecting the most effective response from among these alternatives.</td>
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<tr>
<td>Networking &amp; Team-building</td>
<td>The ability to deconstruct a problem into its component parts and analyse the relations between those component parts.</td>
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<tr>
<td>Intuitive ability (sixth sense)</td>
<td>Knowledge sharing, team working and learning within the network.</td>
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<tr>
<td>Need for achievement</td>
<td>The reception of information not gained through the recognized physical senses but sensed with the mind.</td>
<td></td>
</tr>
<tr>
<td>Leadership/Management</td>
<td>… A factor … measured by coding an individual’s spontaneous thoughts, for the frequency with which he thinks about competing with a standard of excellence, or doing something better than before.</td>
<td></td>
</tr>
<tr>
<td>Job involvement</td>
<td>“The management school describes entrepreneurs as persons who organize, own, manage and assume the risk of an economic venture, while the leadership school views entrepreneurs as leaders of people who have the ability to adapt their style to the needs of people”.</td>
<td></td>
</tr>
<tr>
<td>Experiential learning</td>
<td>“The degree to which a person is identified psychologically with his work, or the importance of work in his total self-image”.</td>
<td></td>
</tr>
<tr>
<td>Need for Variety</td>
<td>A diverse learning process that occurs at the various intersections of knowledge and experience, as well as through observation, reflection and action.</td>
<td></td>
</tr>
</tbody>
</table>

Sapuan et al., 2009; Sadler-Smith, 2010; Burke and Miller, 1999; Kirby, 2004
McClelland, 1961; 1965; Hornaday and Aboud, 1971
Collins and Moore, 1964; Sapuan et al., 2009; Martin and Staines, 1994; Gasse et al., 1997
Maleki et al., 2009
Mars and Hoskinson, 2009
Hackman &
<table>
<thead>
<tr>
<th>Skill</th>
<th>Definition</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Need for autonomy</td>
<td>“The degree to which the job provides substantial freedom, independence, and discretion to the individual in scheduling the work and in determining the procedures to be used in carrying it out”.</td>
<td>Schjoedt, 2009</td>
</tr>
<tr>
<td>Need for feedback</td>
<td>“The degree to which carrying out the work activities required by the job results in the individual obtaining direct and clear information about the effectiveness of his or her performance”.</td>
<td></td>
</tr>
<tr>
<td>Belief in effect of personal effort on outcomes</td>
<td>The belief that personal efforts are the most important factor influencing personal success.</td>
<td>Timmons (1979); McGhee and Crandall, 1968</td>
</tr>
<tr>
<td>Need for power</td>
<td>The tendency to desire a position of power for its own sake which may involve a focus on the individual need to be in control above the needs of others.</td>
<td>Barkham, 1994</td>
</tr>
<tr>
<td>Decision making ability</td>
<td>The mental processes resulting in the selection of a course of action among several alternative scenarios. Every decision making process produces a final choice. The output can be an action or an opinion of choice.</td>
<td>Cantillion, 1700 (Cited in Kilby, 1971); Kumar Jha, 2008</td>
</tr>
<tr>
<td>Estimation skills</td>
<td>“A rough calculation of the value, number, quantity, or extent of something”</td>
<td>Nekka and Fayolle, 2010</td>
</tr>
<tr>
<td>Opportunity identification, grasping, evaluation</td>
<td>Relatively sophisticated skills of counterfactual thinking which can result in reorganization and capitalization on opportunities.</td>
<td>Krueger, 2009; Weaver et al. 2009; Macosko et al., 2009; Rasmussen et al., 2011; Mitton, 2009</td>
</tr>
<tr>
<td>Category</td>
<td>Definition</td>
<td>Reference(s)</td>
</tr>
<tr>
<td>----------------------------------</td>
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</tr>
<tr>
<td>Innovation</td>
<td>“The entrepreneur either creates new wealth producing resources or endows existing resources with enhanced potential for creating wealth”.</td>
<td>Schumpeter, Carland et al., Roper, Martin and Staines, 1934; 1984; 1998; 1994</td>
</tr>
<tr>
<td>Risk bearing</td>
<td>The ability to bear the aggregate risks, rather than idiosyncratic ones.</td>
<td>Mill, 1848; Newman, 2007</td>
</tr>
<tr>
<td>Risk taking</td>
<td>“Willingness to engage in business ventures in which the outcome may be highly uncertain”.</td>
<td>Brockhaus, 1980; Leko-Šimić et al, 2007; Shaver, 2009; Martin and Staines, 1994</td>
</tr>
<tr>
<td>Persistence</td>
<td>“The fact of continuing in an opinion or course of action in spite of difficulty or opposition”.</td>
<td>Hornaday and Aboud, 1971; Schmitt-Rodermund, 2004</td>
</tr>
<tr>
<td>High extraversion</td>
<td>“Extraversion is characterized by positive emotions, surgency, and the tendency to seek out stimulation and the company of others”.</td>
<td>Schmitt-Rodermund, 2004</td>
</tr>
<tr>
<td>Pro-activity</td>
<td>“It relates to aggressive posturing relative to competitors, with emphasis on execution and follow-up of tasks in pursuit of the company's objectives.”</td>
<td>Leko-Šimić et al, 2007; Booijhawon et al, 2007</td>
</tr>
<tr>
<td>Responsiveness to local environmental conditions</td>
<td>Being aware of and responsive to local environmental conditions.</td>
<td></td>
</tr>
<tr>
<td>Global vision</td>
<td>Having a universal point of view in the life and work.</td>
<td></td>
</tr>
<tr>
<td>Information seeking ability</td>
<td>Having the initiative and ability necessary to seek out information in response to current needs.</td>
<td>Gholipor et al., 2009</td>
</tr>
<tr>
<td>Competency</td>
<td>Description</td>
<td>Reference</td>
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<td>-----------------------------</td>
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<tr>
<td>Challenge ability</td>
<td>Preference to select hard goals, recommend effective ways for solving difficulties, solving ambiguous and complex problems and dealing with scarce or rare organizational resources.</td>
<td>Sadeghi and Steki, 2010</td>
</tr>
<tr>
<td>Visionary</td>
<td>“Catalysing new, big visionary ideas in the process of performing any action; big ideas that are uncommon and untouchable.”</td>
<td>Sadeghi and Steki, 2010</td>
</tr>
<tr>
<td>Strategic thinking</td>
<td>“Strategic thinking extends both to the formulation and execution of strategies by business leaders and to the strategic performance of the total enterprise. It includes strategic analysis, strategic planning, organization and control and even strategic leadership. Therefore, strategic thinking basically covers all those attributes which can be labelled ‘strategic’.”</td>
<td>Lans and Gulikers, 2010; Liedtka, 1998</td>
</tr>
<tr>
<td>Stress and failure coping</td>
<td>The ability to cope well in response to stress and failure, which often involves problem-focused coping (i.e., acting on the problem which is the source of failure).</td>
<td>Haglind, 2004</td>
</tr>
<tr>
<td>Implementation abilities</td>
<td>Putting a plan or system into operation.</td>
<td>Green, 2009</td>
</tr>
<tr>
<td>Independence</td>
<td>The ability to live your life without being helped or influenced by other people.</td>
<td>Collins and Moore, 1964; Badri et al., 2006</td>
</tr>
<tr>
<td>Self-evaluation</td>
<td>The ability to reflect with honesty and openness on oneself and one’s behaviour in context.</td>
<td>Hansemark, 2003; Wong et al, 2005; Sapuan et al., 2009</td>
</tr>
<tr>
<td>Internal locus of control</td>
<td>The perceived control over the events of one’s life.</td>
<td></td>
</tr>
<tr>
<td>Tolerance for ambiguity</td>
<td>Refers to the extent to which one is comfortable and able to function in situations where there is a high degree of</td>
<td>Pearson and Chatterjee, 2001; Amiri et al.,</td>
</tr>
<tr>
<td>Characteristic</td>
<td>Description</td>
<td>Source</td>
</tr>
<tr>
<td>---------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
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<tr>
<td>Desire to have high earning</td>
<td>The desire to have high earnings.</td>
<td>Pistrui et al., 2001</td>
</tr>
<tr>
<td>Competitiveness</td>
<td>The long-term performance of the subject related to its competitors, which is the result of being competitive.</td>
<td>Timmons, 1979; Hornaday and Aboud, 1971; Man et al., 2002</td>
</tr>
<tr>
<td>Physical health</td>
<td>The soundness of the body and freedom from disease or abnormality.</td>
<td>Hornaday and Aboud, 1971</td>
</tr>
<tr>
<td>High level of drive and energy</td>
<td>Having high levels of energy, working the long hours associated with the founding and management of new innovative businesses.</td>
<td>Thomas and Mueller, 2000; Timmons, 1979; Begley and Boyd, 1987</td>
</tr>
<tr>
<td>Willing to have productive collaboration with others</td>
<td>Willing to have productive collaboration with others.</td>
<td>Timmons, 1979</td>
</tr>
<tr>
<td>Willing to learn from failures</td>
<td>Willing to learn from failures.</td>
<td>Timmons, 1979</td>
</tr>
<tr>
<td>Long-term vision</td>
<td>Having a long-term point of view in the life and work.</td>
<td>Timmons, 1979</td>
</tr>
<tr>
<td>Goal-driven</td>
<td>Entrepreneurs have high but realistic and achievable goals and try to earn their goals.</td>
<td>Timmons, 1979</td>
</tr>
<tr>
<td>Embracing</td>
<td>Entrepreneurs are not threatened by others more talented than themselves. Instead, they actively attract competent people and employ them to advantage.</td>
<td>Mitton, 1989</td>
</tr>
<tr>
<td>Seeing a Big Picture Perspective</td>
<td>Entrepreneurs can see the forest as well as the trees. They see the total scene as well as its parts and how the parts affect each other.</td>
<td></td>
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<tr>
<td>Making a Total Commitment to Their</td>
<td>Entrepreneurs have a strong sense of mission. Simply seeing opportunity isn't.</td>
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<tr>
<td>Cause</td>
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<tr>
<td>enough. The opportunity requires action. Consequently, they tackle their projects with an unrelenting zeal and persistence.</td>
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<table>
<thead>
<tr>
<th>Need for Total Control</th>
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<tbody>
<tr>
<td>Entrepreneurs prefer to take and hold unmistakable command. They enjoy mastery, posture indispensability and position themselves so as to control the flow of information, dispense rewards and punishments, and allocate critical resources.</td>
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</table>

<table>
<thead>
<tr>
<th>Having a Utilitarian View of What's Right</th>
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<tbody>
<tr>
<td>Entrepreneurs tend to see what works as right, within limits. As a result, they do not always adhere to conventional morality. They view the legitimacy of their actions in utilitarian rather than moral dimensions.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Using Contacts and Connections</th>
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<tbody>
<tr>
<td>Since entrepreneurs are bent on action, they need to get where they are going as quickly and easily as possible. Consequently they use contacts and connections to both open doors and pave the way for events to unfold to their advantage.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Approachability</th>
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<tbody>
<tr>
<td>Having an outgoing personality to being approachable and being good with people.</td>
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<table>
<thead>
<tr>
<th>Commercial experience</th>
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<tr>
<td>Having a satisfactory commercial performance as a result of possessing critical commercial skills.</td>
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<tr>
<th>Production and marketing experience</th>
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<tr>
<td>Having an experience of the relevant production and market.</td>
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<tr>
<th>Previous contact with venture capitalists</th>
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<tr>
<td>Having an experience in convincing potential investors as to the merits of the proposal and particularly the investee management team.</td>
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<thead>
<tr>
<th>Social abilities</th>
</tr>
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<tbody>
<tr>
<td>Abilities and skills facilitating</td>
</tr>
</tbody>
</table>

Martin and Staines, 1994

Murray, 1996

Murray, 1996

Gasse et al., 1997
As can be seen in Table 2.1, many studies have been undertaken in attempt to identify the competencies which should be possessed by entrepreneurs to distinguish them from non-entrepreneurs. The previous studies were cited to give only an overview of the research on entrepreneurial competencies, certainly not as a conclusive list of studies and competencies. Diffley (1982) concluded that there is no such all-inclusive list of entrepreneurial characteristics because entrepreneurs are indeed individuals.

Rather than attempt an exhaustive narrative and critical review of all competencies in Table 2.1, which was not the purpose of our review of the literature, below we describe some of the competencies that are most commonly referred to in the literature.

**Locus of Control**

Locus of control is defined as the perceived control over the events of one’s life (Sapuan et al., 2009). Research suggests that entrepreneurs who believe they control what happens to them (i.e., those with an “internal” locus of control) are likely to have higher motivation, greater job satisfaction and less anxiety than those who believe that outside influences control their fate (i.e., those with an “external” locus of control) (Pearson and Chatterjee, 2001). Research also suggests that individuals who score highly on measures of internal locus of control tend to carry out more product-market innovation, take more risks and behave more proactively than those who score lower on measures of internal locus of control (Entrialgo et al, 2000).

**Innovation**
Innovation is one of the most cited entrepreneurial competencies, originally highlighted by Schumpeter (1934, 1942), and is often used to refer to the process of creative destruction. Specifically, Schumpeter noted that wealth is often created when change occurs, either by the introduction of a new asset or a new production method, the opening of a new market, the conquest of a new source of provisioning or the creation of a new organization. Several decades later, Drucker (1994) identified innovation as a key factor in sustaining business (Wong et al., 2005) and argued that innovation is the specific function of entrepreneurship and the means by which the entrepreneur either creates new wealth producing resources or endows existing resources with enhanced potential for creating wealth (see also, Roper, 1998). In recent years, there has been considerable interest and debate about innovativeness and many scholars have identified innovativeness as one of the essential and enduring characteristics of entrepreneurs and the focal point of entrepreneurship (Tajeddini and Mueller, 2009).

**Tolerance for ambiguity**

Tolerance for ambiguity refers to the extent to which one is comfortable and able to function in situation where there is a high degree of uncertainty and ambiguity as to the nature of the rules governing success or the nature of the problem one is faced with. There is some anecdotal evidence that entrepreneurs express greater ambiguity tolerance than either senior executives or general managers (Pearson and Chatterjee, 2001). Furthermore, Milton (1989) asserts that entrepreneurs do not only operate in an uncertain environment but they eagerly undertake the unknown and willingly seek out and manage uncertainty. Hence, entrepreneurs have higher tolerance for ambiguity than others (Sapuan et al., 2009). Entrialgo et al. (2000) argued that those people who best tolerate ambiguity are those who ultimately obtain greater success. Those individuals who aim to increase their market share face more uncertain settings than those seeking to maximize their profitability in their existing market niche and the implementation of an expansionist strategy in conditions of uncertainty requires a greater tolerance of ambiguity.

**Need for achievement**

The construct of need for achievement was firstly defined in Murray's (1938) personality system. He defined it as the need “to accomplish something difficult. To master, manipulate or organize physical objects, human beings, or ideas. To do this as rapidly and as independently as possible. To overcome obstacles and attain a high
standard. To excel one's self. To rival and surpass others. To increase self-regard by the successful exercise of talent” (Murray, 1938, p. 164). Several decades later, McClelland (See Entrialgo et al, 2000) argued for the importance of the construct in the entrepreneurship literature by positing that a high need for achievement predisposes a young person to seek out an entrepreneurial position to attain more achievement satisfaction than could be derived from other types of positions. Consequently, need for achievement is one of the most cited entrepreneurial competencies and has been found to be related to many other entrepreneurial characteristics (See Entrialgo et al, 2000).

**Communication skills**

Researchers have long recognised communication skills as critical to job performance, career advancement and organizational success. Many previous studies have examined the relationship between communication skills and job performance (Roebuck et al., 1995). Also, Izquierdo and Deschoolmeester (2010) argue that communication is important for entrepreneurship as entrepreneurs have to be able to persuade people and communicate with various stakeholders, including customers, clients, suppliers, competitors, service providers etc. Furthermore, Baum et al. (2007) found that the ability to communicate a vision affected subsequent venture growth amongst entrepreneurs.

**Decision making**

The existing literature highlights the importance of decision making competency as crucial for success as an entrepreneur. To be successful, entrepreneurs are constantly required to make quick decisions due to the accelerated changes in demand, competition and technology (Izquierdo and Deschoolmeester, 2010). Decision making ability is often related in complex ways to other entrepreneurial competencies. For instance, Busenitz (1999) examined the relationship between strategic decision making and entrepreneurial risk taking and concluded that entrepreneurs use representativeness heuristics more in their decision making and are more overconfident than managers in large organizations. As such, risk taking ability and confidence may be interrelated and may be a function of the particular decision-making strategies that entrepreneurs adopt.

**Opportunity identification**

Opportunity identification is another often-cited entrepreneurial competency. Byrne (2010) argues that a firm’s entrepreneurial success is positively associated with its
efforts to put key individuals in a position to detect opportunities, train them to be able to do so and reward them for doing so. Also, Weaver et al. (2009) found that successful entrepreneurs have the capability and willingness to distinguish and capitalize on opportunities. Ardichvili et al. (2003) formulated a theory in relation to opportunity identification, highlighting in particular the relationship between opportunity identification and entrepreneurial alertness, social networks, prior knowledge of markets, prior knowledge of customer problems, prior knowledge of ways to serve markets and knowledge domains (special interest knowledge and industry knowledge).

Leadership and Management ability

The management school of thought describes entrepreneurs as people who organize, own, manage and assume the risk of an economic venture, while the leadership school of thought views entrepreneurs as leaders of people who have the ability to adapt their style to the needs of people (Sapuan et al., 2009). On the basis of his empirical work, Barkham (1994) found that only those entrepreneurs with some experience in the management of people are likely to take on significant numbers of workers in the early years of the firm.

Self-confidence

It has been shown in studies that entrepreneurs have a higher degree of “self-confidence” relative to non-entrepreneurs. Some scholars posit that the entrepreneur must believe that he is able to achieve the goals that they set as entrepreneurs or business owners (Sapuan et al., 2009). Entrepreneurs have confidence in their own ability to both accomplish any goal they set for themselves, overcome odds and succeed where others may fail (Tajeddini and Mueller, 2009). Examining self-confidence as an entrepreneurial competency was the subject of many prior studies. While many studies, including Kumar Jha (2008), Hynes et al. (2009), Kordnaeij et al. (2007), Schmitt-Rodermund (2004) and Jahangiri (2008) found that self-confidence is an important entrepreneurial competency, some studies (e.g., Gürol and Atsan, 2006) have reported that self-confidence is not found to be higher in entrepreneurially inclined students, as compared to entrepreneurially non-inclined students.

Risk perception and risk-taking propensity

“Risk perception” is an individual’s assessment of how controllable uncertainty is,
and “risk propensity” is defined as an individual’s existing tendency to take or avoid risk, or a company's willingness to engage in business ventures in which the outcome may be highly uncertain (Petrakis, 2010; Leko-Šimić et al, 2007). Cantillon (1755) who is one of the first authors to formally use the term ‘entrepreneurship’ indicated that the main factor that distinguishes entrepreneurs from employed workers is the uncertainty and risk taken on by the former (Entrialgo et al, 2000). Two hundred years later, McClelland (1961) observed that entrepreneurs exhibited moderate risk taking propensity (Pearson and Chatterjee, 2001). Since then, as Tajeddini and Mueller (2009) believe, it can be claimed that perhaps the most widely cited description of entrepreneurs is the willingness to assume risk. Many scholars (e.g., Rezaei and Rahsepar, 2009; Lans and Gulikers, 2010; Shaver, 2009; Petrakis, 2010) have noted the importance of risk-taking as an entrepreneurial competency, while others argue that risk-taking propensity is not strongly linked to entrepreneurial effort and outcomes (Izquierdo and Deschoolmeester, 2010). The latter group of scholars believe that successful entrepreneurs are not gamblers; they are more inclined to take moderate than high risks and they tend to assess and calculate risks carefully (Izquierdo and Deschoolmeester, 2010).

2.2.4. Classifying entrepreneurial competencies

After providing the list of entrepreneurial competencies presented in Table 1, a panel of 6 entrepreneurship experts grouped 83 competencies into the categories that they considered to be most fitting and conceptually related. For specifying the headings of these categories, the ideas of Ghoshal (1997), Stuart and Lindsay (1997), Lau et al. (1999) and Sánchez (2011) were implemented. They believe that entrepreneurial competencies have been understood in terms of three groups including attributes/traits, skills/abilities and knowledge/experience. Therefore, the entrepreneurial competencies were categorised into these three categories. At the beginning of the focus group, the experts agreed on the definition of each category as below:

- Attributes / Traits: A distinguishing quality or feature regarded as a characteristic or inherent part of someone.

- Skills / Abilities: The ability and expertise to do something well.

- Knowledge / Experience: Facts, information, and talent acquired through education OR Practical contact with and observation of facts/events; the theoretical or practical understanding of a subject.
The purpose of this categorisation was to facilitate understanding the nature of the competencies. Furthermore, as Li (2009) mentioned, this categorisation of entrepreneurial competencies could provide more focus on training of these competencies. The results of this categorisation can be seen in Table 2.2.

Table 2-2 Categorisation of entrepreneurial competencies identified by the literature

<table>
<thead>
<tr>
<th>Category</th>
<th>Entrepreneurial competency</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Accepting of responsibility</td>
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<td></td>
<td>Adaptability and flexibility</td>
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<td>Self-confidence</td>
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<td></td>
<td>Applied in orientation</td>
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<td>Non-traditional</td>
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<td></td>
<td>Optimistic</td>
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<td>Conceptual skills</td>
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<td></td>
<td>Creativity</td>
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<td></td>
<td>Determination</td>
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<td></td>
<td>Ability to motivate others</td>
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<td>Integrity</td>
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<td>Seeing the market from a different angle</td>
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<td>Intuitive ability (sixth sense)</td>
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<td></td>
<td>Need for achievement</td>
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<td>Leadership/Management</td>
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<td>Job involvement</td>
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<td>Need for Variety</td>
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<td>Need for autonomy</td>
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<td>Need for feedback</td>
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<td></td>
<td>Belief in effect of personal effort on outcomes</td>
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<td>Need for power</td>
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<td>Risk bearing</td>
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<td></td>
<td>Risk taking</td>
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<td></td>
<td>Persistence</td>
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<tr>
<td></td>
<td>High extraversion</td>
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<tr>
<td></td>
<td>Visionary</td>
</tr>
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<td></td>
<td>Internal locus of control</td>
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71
<table>
<thead>
<tr>
<th>Skills / Abilities</th>
<th>Tolerance for ambiguity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Competitiveness</td>
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<tr>
<td></td>
<td>Physical health</td>
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<td></td>
<td>High level of drive and energy</td>
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<td></td>
<td>Need for Total Control</td>
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<td>Having a Utilitarian View of What's Right</td>
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<td></td>
<td>Approachability</td>
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<td></td>
<td>Idea generation</td>
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<td></td>
<td>Communication skills</td>
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<td></td>
<td>Commercial understanding</td>
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<td>Negotiation</td>
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<td>Assertiveness</td>
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<td>Engineering skills</td>
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<td>ICT proficient</td>
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<td></td>
<td>Marketing and sales skills</td>
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<td>Goal-setting skills</td>
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<td>Time-management skills</td>
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<td>problem solving ability</td>
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<td>Analytical ability</td>
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<td></td>
<td>Networking &amp; Team-building</td>
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<td></td>
<td>Decision making ability</td>
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<td>Estimation skills</td>
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<td>Global vision</td>
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<td>Information seeking ability</td>
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<td>Stress and failure coping</td>
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<td></td>
<td>Independence</td>
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<td></td>
<td>Self-evaluation</td>
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<td></td>
<td>Using Contacts and Connections</td>
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<td></td>
<td>Social abilities</td>
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<td></td>
<td>Critical Thinking</td>
</tr>
<tr>
<td>Knowledge / Skills</td>
<td>Multi-experience identity</td>
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<tr>
<td>Experience</td>
<td>Practical work experience</td>
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<td></td>
<td>Self-understanding</td>
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<td>Venture and career evaluation</td>
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<td>Finance management</td>
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<td></td>
<td>Experiential learning</td>
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<td></td>
<td>Opportunity identification, grasping, evaluation</td>
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<td></td>
<td>Innovation</td>
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<td></td>
<td>Pro-activity</td>
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<td></td>
<td>Implementation abilities</td>
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<tr>
<td></td>
<td>Willing to learn from failures</td>
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<td>Task motivation</td>
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<td></td>
<td>Concern for high quality of work</td>
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<td>Responsiveness to local environmental conditions</td>
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<td>Embracing</td>
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<td></td>
<td>Production and marketing experience</td>
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<td></td>
<td>Previous contact with venture capitalists</td>
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</tbody>
</table>

Figure 2.1 shows the distribution of the identified competencies across the three categories including: Attributes/Traits, Skills/Abilities and Knowledge/Experience.
According to the classification of those competencies based on the three categories above, and as can be seen in Figure 2.1, while the majority of the entrepreneurial competencies (42%) are allocated to the “Attributes/Traits” category, the remaining ones are equally labelled as “Skills/Abilities” (24%) and “Knowledge/Experience” (24%). This categorisation provides an introduction to the next section of this chapter, which seeks to review the literature on entrepreneurship education. While the majority of the entrepreneurial competencies identified by the literature are defined as attributes or traits, there is a doubt about the educability of these traits. This doubt is reviewed and discussed in the next section of this chapter.

2.2.5. Analysis of previous studies on entrepreneurial competencies
As can be seen above, there is a large number and a huge inconsistency in profiling the competencies associated with entrepreneurs. Apparently, there is a lack of consensus amongst authors investigating the concept of entrepreneurial competencies. Gartner (1988) argued that the startling number of competencies that had been attributed to the entrepreneur would result in the portrait of someone larger than life, full of contradictions and full of traits, and, as a result, he/she would be seen as a sort of generic "Everyman" (p.57). The question here is why such a huge variety and inconsistency exist in the entrepreneurship literature in identifying entrepreneurial competencies.

In justifying the huge variety of identified competencies, different reasons are pointed out by the previous studies, for example, different views on the application of competencies,
including starting the businesses or sustaining and developing the businesses (Man et al., 2002; Chandler and Hanks, 1994; Bird, 1995; Colombo and Grilli, 2005) or further enhancing the profitability of the business (Chandler and Jansen, 1992). Other factors that may influence the set of entrepreneurial competencies identified include the development stage of businesses (Churchill and Lewis, 1983; Gasse et al., 1997), the size of businesses (Winterton, 1999) and the context of business (Capaldo et al., 2004). Also, different stakeholders (Mitchelmore and Rowley, 2010), different theoretical starting points and varied use of quantitative versus qualitative research methods may also influence how entrepreneurial competencies are identified and studied (Entrialgo et al., 2000; Robinson et al., 1991) and, thus, constitute to the variety and potential inconsistency in the range of entrepreneurial competencies identified in the literature.

Further to the issue of the huge difference in identifying entrepreneurial competencies, the distinction between the different competencies of entrepreneurs is often fuzzy and difficult to distinguish. Certain entrepreneurial competencies, such as innovation and creativity or tolerance for ambiguity and risk-taking, may be seen as interdependent and, therefore, may not be distinguished from each other by experts stakeholder groups when it comes to the way they talk about ‘competencies’. The ambiguity is further fuelled by the use of the ‘entrepreneurial competency’ by a range of stakeholders with differing objectives (Mitchelmore and Rowley, 2010). A variety of different stakeholders is involved in research studies that sought to investigate and identify entrepreneurial competencies. For instance, ‘educators’ (Onstenk, 2003), ‘policy makers’ (Mukhtar and Redman, 2004), ‘entrepreneurs’ (Man, 2006), ‘small business owners’ (Smart and Conant, 2011), ‘managers’ (Dixon et al., 2005) and ‘students (DeTienne and Chandler, 2004) were involved in previous studies as the stakeholders of entrepreneurial competencies.

In this context, the use of qualitative and collective intelligence (CI) methods can help to elucidate the way key stakeholder groups understand important entrepreneurial competencies and their interdependencies, and this collective intelligence may be critically useful intelligence that informs how best to influence entrepreneurial competencies in educational contexts.

Another important limitation of the previous literature is the tendency to identify entrepreneurial competencies without also exploring their interrelationships and relative importance. Reviewing 89 published studies in the area of entrepreneurial competencies, Mitchelmore and Rowley (2010) concluded that while it is often acknowledged that there
are inter-relationships between competencies, these interrelationships are generally ignored in studies investigating entrepreneurial competencies. Moreover, Rezaei-zadeh et al. (2014) pointed out that while more than hundreds of studies over past decades were conducted to identify entrepreneurial competencies and dispositions, few of them were dedicated to exploring the interdependency amongst these competencies. Therefore, they suggest that further work is needed to understand the relationship between different entrepreneurial competencies. A variety of previous studies have used structural equation modelling to evaluate the direct and indirect effect of entrepreneurial competencies on entrepreneurial behavioural intentions and behaviours and related outcomes, such as problem identification for different types of new venture (Gartner, 1984), growth of personal entrepreneurial resources and business idea generation (Obschonka et al., 2010), business creation (Rauch and Frese, 2007), internationalisation (Ruzzier et al., 2007), organisational performance (García-Morales et al., 2007), entrepreneurial performance (Luthans and Ibrayeva, 2006) and venture growth (Baum and Locke, 2004). Despite the significant attention paid to the interrelationships between entrepreneurial competencies, entrepreneurial behaviours and related outcomes, we found no study examining interrelationships between the entrepreneurial competencies. The current study makes use of a collective intelligence methodology, Interactive Management (IM), which allows for the innovative development of consensus models describing the interdependencies between highly ranked entrepreneurial competencies. The use of IM method as a qualitative method is also consistent with the advice of previous studies such as Gartner and Birley (2002), Hindle (2004), Molina-Azorín et al. (2012), Chandler and Lyon (2001) and Nummela and Welch (2006), highlighting the necessity and importance of implementing qualitative research methods in the field of entrepreneurship.

2.3. Enhancing entrepreneurial competencies by education:

2.3.1. Introduction:

Entrepreneurship Education (EE) and its four consistent themes in the literature, including ‘the definition of EE’, ‘educability of entrepreneurship’, ‘the range of entrepreneurial competencies which could be taught’ and ‘how entrepreneurship could be taught’, are briefly discussed in the first chapter of this study. The ‘entrepreneurial competencies’ theme has also been outlined in the previous section of this chapter. Hereafter, further details into the remaining three themes above and also a review of different perspectives about the place of conducting EE programmes (within or beyond the business schools)
have been detailed.

In terms of ‘definition’, the differences between entrepreneurship education and enterprise education are discussed in Chapter 1. One of the debates in entrepreneurship education concerns the extent to which there is a difference between graduate “enterprise” and “entrepreneurship”, and similarly between “enterprise” and “entrepreneurship” education. For instance, Kirby (2004) asks are EE programmes trying to develop enterprising or entrepreneurial graduates. While enterprise and entrepreneurship are interrelated, the answer has critical implications for university-initiated programmes in terms of which tools and capabilities they seek to develop (Hytti and O’Gorman, 2004; Kirby, 2004). These implications are addressed in one of the next sections of this chapter (see section 2.3.3.6: “Entrepreneurship teaching approaches”).

Here, another difference within the EE framework is addressed. Scholars such as Laukkanen (2000), Fayolle (2008), Haase and Lautenschläger (2011) and Rasmussen and Sørheim (2006) divided EE into two dimensions: “education about entrepreneurship” and “education for entrepreneurship”. While the first perspective refers to learning about entrepreneurship as a phenomenon (such as theories on entrepreneurs, firm creation, economic effects of entrepreneurs, their success and failure factors), the latter one aims at stimulating the entrepreneurial process and providing all the necessary tools for new venture start-up by current and potential entrepreneurs. Consistent with the latter category, Shepherd and Douglas (1997) (as cited in Kabongo and Okpara, 2010) defined EE as: “The essence of entrepreneurship is the ability to envision and chart a course for a new business venture by combining information from the functional disciplines and from the external environment in the context of the extraordinary uncertainty and ambiguity which faces a new business venture. It manifests itself in creative strategies, innovative tactics, uncanny perception of trends and market mood changes, courageous leadership when the way forward is not obvious and so on. What we teach in our entrepreneurship classes should serve to instill and enhance these abilities” (p.297).

Different categories are provided to define entrepreneurship education in terms of its audiences. For instance, Jamieson (1984) categorised entrepreneurship education into three groups: education about enterprise, education for enterprise and education in enterprise. The first category, education about enterprise, aims to train students on the various aspects of setting up and running a business in order to increase their theoretical awareness about launching a business. Education for enterprise, the second category, has a
more practical nature and wants to prepare aspiring entrepreneurs in order to set-up and run their own business. Finally, education in enterprise aims to ensure the growth and future development of the current businesses by providing management training for established entrepreneurs.

Garavan and O’Cinneide (1994) provided a broader view and divided ‘entrepreneurship education’ into four main types as below:

- ‘Education and Training for Small Business Ownership’: As many new start-ups involve either replicating or acquiring an existing enterprise, this type of entrepreneurship education provides practical help in making the change from ordinary employment to self-employment.

- ‘Continuing Small Business Education’: This is a specialist version of adult continuing education designed to enable business owners to enhance and update their skills. This form of entrepreneurship training is available through many business schools in the form of one-day training modules.

- ‘Small Business Awareness Education’: It is aimed at increasing the number of people who are sufficiently knowledgeable about small business as an economic activity to consider it as a career alternative.

- ‘Entrepreneurial Education’: despite the other three types of entrepreneurship education, entrepreneurial education focuses on the creation of new economic entities centred on a novel product/service. Because entrepreneurial education is a highly creative process, there may even be doubts that conventional forms of education are always helpful or supportive.

Educability of entrepreneurial competencies was the second consistent theme in EE. Many empirical studies address such as these questions over the last decades: Are entrepreneurs educable and entrepreneurial competencies developed by education? Can entrepreneurship be taught? After a lengthy period of disagreement amongst scholars about the possibility of enhancing entrepreneurial competencies through training, the general opinion is now that entrepreneurs can indeed be trained, at least to some extent. This perspective has been confirmed by many empirical studies, e.g. Blenker and Christensen (2010), Ronstadt (1987), Lendner and Huebscher (2009), Timmons (1990), Klandt and Volkmann (2006) and Solomon and Fernald (1991).
Looking more closely from the educability perspective, it was already mentioned in section 2.2.1 that Haase and Lautenschläger (2011) proposed a classification of entrepreneurial competencies including ‘Know-what’ (hard facts), ‘Know-how’ (soft competencies) and ‘Know-why’ (convictions) competencies. In terms of pedagogic transferability of these three groups of competencies, they pointed out that while the ‘know-what’ can be easily taught, the conveyance of ‘know-how’ is a difficult but possible and important undertaking. Furthermore, educability of ‘know-why’ depends upon the target groups: “If education of potential entrepreneurs is intended, the efforts must be higher than for training real entrepreneurs” (p.154). Figure 2.2 shows the extent of difficulty to teach each of these three groups of entrepreneurial competencies as well as their relevance and pedagogical effectiveness for EE.

![Figure 2-2 The matrix of pedagogical transferability and relevance of entrepreneurial competencies in EE (Source: Haase and Lautenschläger, 2011)](image)

As can be seen in Figure 2.2, while know-how (such as creativity, pro-activeness, leadership, risk taking propensity and wakefulness) is the most difficult group of entrepreneurial competencies to be taught, at the same time, it is the most effective and relevance group of entrepreneurial competencies which could enable students to create their own innovative jobs.

As an example of educability of know-how entrepreneurial competencies, Clark and Mayer (2011) pointed out that hundreds of training programmes for stimulating creativity
have been developed and quite a few of them have been evaluated. Scott et al. (2004) reviewed seventy research papers on creativity programmes that measured their results by divergent thinking tests, production of original solutions to novel problems or generating of creative products. By aggregating the results across these criteria, they found that creativity training programmes have an overall positive effect on students: “Well-designed creativity training programmes typically induce gains in performance, with effects generalising across criteria, settings, and target populations” (p.361).

Confirming the educability of entrepreneurial competencies (at least to some extent) leads immediately to the next question, as proposed by Kuratko (2005): What should be taught in EE and how should it be taught? This question includes the third and fourth consistent themes emerging from the literature on EE, which addresses the range of entrepreneurial competencies that should be the focus of training and the different approaches of training them. These two themes constitute the main focus of the current thesis. The third theme (range of entrepreneurial competencies) was described in the previous section, and therefore, the next section of this chapter addresses the fourth theme (how these competencies should be cultivated in students through an entrepreneurship curriculum design). However, to gain a better understanding of this curriculum, it is necessary to, first, review where this entrepreneurship curriculum could be placed: within or beyond the business schools?

2.3.2. Entrepreneurship education; within or beyond the business school?

Can entrepreneurship be extended to business schools? Does it have a legitimate place in the study of different fields, e.g. history, literature, psychology, sociology, religion, science, communication, music, nursing or education? In recent years, with some reservation, there is a general perspective that EE should be addressed across the university by different departments and not only within the business schools. To have a better understanding of this issue, a brief review of the arguments and reservations made about the necessity of extending EE beyond the business schools is provided here.

Solomon (2007) pointed out that while the EE programs exist most generally within established university business schools, they have come under increased criticism for failing to be relevant to the needs of today’s changing business environment. Solomon et al. (1994a) highlighted two common criticisms on business education: a) that it has
become too functionally oriented – that it does not stress the cross-functional complexity of business problems, and b) that it suffers from the “lack of creativity and individual thinking required at both undergraduate and graduate levels. Furthermore, Sexton and Bowman (1984) noted that most business school courses are highly structured and do not often pose problems which require novel and flexible solutions. Some commentators go even further, noting that business schools were not successful even in their other educational programmes such as the MBA. They believed that the MBA fails to correlate with career success and to evolve as quickly as the business world itself (Pfeffer and Fong, 2002). Bailey and Ford (1996) stressed that business schools’ focus on academic research pushed them away from the subject they are purporting to teach, and left them hopelessly out of touch with the realities and challenges of everyday management.

On the other hand, one of the reservations about these criticisms was outlined by Lambert (2003). He pointed out that there is evidence that the criticisms above are applied to the universities since they also fail create and sustain an environment favourable to technology transfer and the commercialisation of university-based intellectual property. This highlights a growing concern that universities and business schools are falling short in their attempts to provide an entrepreneurial learning environment. If we accept this concern to be increasingly true, how can universities direct their programmes to ensure that entrepreneurial learning is taking place? Gibb (1996) stressed that moving towards a more entrepreneurial focus within conventional structures of business schools will not be without major difficulties. Kirby (2004) goes further and argues that universities and business schools can develop entrepreneurs if they employ a radical change in their intellectual and educational priorities. This includes initiating and employing effective non-traditional teaching techniques in learning environments. Further discussion about this reform is presented in the next sections of this chapter.

However, the issue of retaining entrepreneurship courses or extending upon courses in business schools has been seen from another perspective as well. Green (2009) argues that entrepreneurial courses allow students to experience how discrete academic disciplines must interact to make a phenomenon comprehensible, and to see and learn to ask about how some human beings imagined, invented, conceived, built, advanced, assessed, discarded and improved the institutions, products and services that shape our collective life. West et al. (2009) also sees entrepreneurial thinking and skills as broadly used in the world outside academia. They argue that the business environment calls for those who
have an interest in, knowledge of and practice in entrepreneurial thinking and skills. Who will move into these jobs and career paths? It is not just business school students who enter this world beyond going into flavours of graduate education. It is evident that industry requires a graduate who is not just trained as a subject-specific expert, but increasingly there is a need for graduates to have skills beyond their core discipline, such as ability to adopt a flexible, creative and innovative approach to work, and to perform as a member of a team using people management skills (Hynes et al., 2009). Therefore, in university learning, entrepreneurship can extend beyond the business curriculum to become a way of thinking, an approach to problems, a framework for interpretation, a viewpoint for discernment and, more importantly, a habit of mind (Green, 2009). “We can look at any human activity and ask how entrepreneurial it is. What is the idea, the innovation? Where is the transformation? Where is the enterprise? Where is the benefit to others? Where is the value? In short, we in universities can use entrepreneurship as a basic category of understanding and analysis” (Ibid, P.19).

According to the discussions above, it can be claimed that entrepreneurship as a blossoming field that cuts across different disciplines (Janssen et al., 2009) displays eclectic and pervasive benefits and for that reason attracts scholars from diverse disciplines (Fendt and Bureau, 2010). Therefore, after a long struggle with business schools and felling into a "general management" category and later into a "small business management" category, neither of which allowed the field to become distinctive (Plaschka and Welsch, 1990), nowadays, entrepreneurship is a legitimate area of scholarly inquiry and curricular component for the entire university and not only business schools (Hines, 2009). Specifically, entrepreneurial curricula has been formally introduced into technical as well as liberal arts-oriented disciplines and new entrepreneurship courses, minors and less structured certificates have woven entrepreneurial principles into the disciplinary fabric of higher education (Mars and Hoskinson, 2009). This is reverberated by Kauffman’s College Entrepreneurship website, which points out: “interest in entrepreneurship education has spread to non-business disciplines, where students in engineering, life sciences, and liberal arts are interested in becoming entrepreneurs” (Hines, 2009, p. 223).

However, there is a need to develop more appropriate definitions for entrepreneurship education in creative disciplines; to make it inherent to effective creative practice and more explicit in the curriculum and to reform funding and quality assurance mechanisms
to increase the value of entrepreneurship education in these fields (the Higher Education Academy Art Design Media Subject Centre and the National Endowment for Science, Technology and the Arts, 2007). This definition has to be in a manner unique to their intended goals and institutional culture (Beckman and Cherwitz, 2009).

2.3.3. Entrepreneurship Curriculum

This section of the study seeks to explain the literature relevant to the second part of Kuratko’s question: How entrepreneurship should be taught? This question highlights the dominant importance of Entrepreneurship Education (EE). Significant emergence of EE as a distinct field began in the 1980s (Fendt and Bureau, 2010). Nowadays, the number of university institutions throughout the world offering entrepreneurship educational programmes has increased from one to more than 1500 (Carrier, 2007). Also, more than 2200 courses are offered at over 1600 schools across the US and, then, more recently, in Europe, most entrepreneurial education programmes have been created in the last decade (Janssen et al., 2009).

To enhance the quality and effectiveness of EE, optimal entrepreneurship curriculum must be constructed as the assurance (Hai-zong and Yu-dan, 2010). This entrepreneurship curriculum is supposed to be the main vehicle of delivering EE learning objectives to students (Hai-zong and Yu-dan, 2010; Li et al., 2013; Kirby, 2007). Entrepreneurial curriculum is considered as the core concept of entrepreneurial education which helps to realize the objective of entrepreneurial education and cultivation (Li et al., 2013). The goal of this curriculum is to “produce not just people who can observe, describe and analyse, as has been traditional, but people who can see opportunity, cope with uncertainty and ambiguity, make sense out of chaos, initiate build and achieve, in the process not just coping with change but anticipating and initiating it” (Kirby, 2007, p.23). However, while the atmosphere of responsibility for implementing entrepreneurship education is developing, a basic question remains unanswered: What should be done to enhance entrepreneurship development throughout the curriculum? (Seikkula-Leino, 2011).

Following the criticisms of business education, there is a high expectation from entrepreneurship curriculum to be geared toward creativity, multidisciplinary and process-oriented approaches, learning by doing (experiential), theory-based practical applications, and a more pro-active, problem-solving and flexible approach rather than the rigid and
passive-reactive concept (Plaschka and Weisch, 1990; Haase and Lautenschläger, 2011). However, as can be seen from current situation of entrepreneurial education in domestic universities and colleges, a mature and effective entrepreneurial curriculum has not yet been developed (Li et al., 2013). That is why despite an explosion of entrepreneurship programmes in universities, they still lack wide acceptance across the breadth of academia (Gustafson, 2009) and there are concerns about the effectiveness of past entrepreneurship education efforts (Todorovic, 2007; Badri et al., 2006).

Entrepreneurship commentators believe that these deficiencies partly originated in 1) using traditional methods in teaching entrepreneurship (Carrier, 2007); 2) not obtaining the full extent of stakeholders’ involvement in EE curriculum design (Matlay, 2009); and 3) lack of use of educational technologies in EE programmes (Kuratko, 2005). These three challenges of EE are reviewed in the continuing section.

2.3.3.1. Challenge 1: Entrepreneurship teaching approaches

While many global institutions are teaching entrepreneurship courses and programs across the world, there is little uniformity amongst them in terms of their educational approaches. This may be a function of an emerging academic field with a limited, but growing, body of knowledge (Solomon, 2007). It is clear from the literature that the teaching approaches employed in EE vary considerably from traditional methods such as lectures, reading, hand-outs, presentations, business plan writings, case studies and class discussions to non-traditional approaches such as simulations, student business start-ups, problem solving methods, consultation with practicing entrepreneurs, role-plays and multimedia-based training approaches.

In this context, three questions should be asked: 1) How traditional (conventional) and non-traditional (unconventional) can be differentiated? 2) Which of these methods are more effective to be employed in EE programmes? 3) Which of these methods are most implemented in EE programmes? The following sections address these three questions.

1. Differentiating traditional and non-traditional teaching approaches

Entrepreneurship commentators provided some criteria to illustrate the differences between traditional and non-traditional educational modes (See Table 2.3).
Table 2-3 Traditional versus entrepreneurial (non-traditional) teaching approaches  
(Source: Garavan and O’Cinneide, 1994, Carrier, 2007)

<table>
<thead>
<tr>
<th><strong>Traditional teaching approaches</strong></th>
<th><strong>Entrepreneurial teaching approaches</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical judgement after analysis of large amounts of information</td>
<td>“Gut feel” decision making with limited information</td>
</tr>
<tr>
<td>Understanding and recalling the information itself</td>
<td>Understanding the values of those who transmit and filter information</td>
</tr>
<tr>
<td>Assuming goals away</td>
<td>Recognize the widely varied goals of others</td>
</tr>
<tr>
<td>Seeking (impersonally) to verify absolute truth by study of information</td>
<td>Making decisions on the basis of judgement of trust and competence of people</td>
</tr>
<tr>
<td>Understanding basic principles of society in the metaphysical sense</td>
<td>Seeking to apply and adjust in practice to basic principles of society</td>
</tr>
<tr>
<td>Seeking the correct answer with time to do it</td>
<td>Developing the most appropriate solution under pressure</td>
</tr>
<tr>
<td>Learning in the classroom</td>
<td>Learning while and through doing</td>
</tr>
<tr>
<td>Gleaning information from experts and authoritative sources</td>
<td>Gleaning information personally from any and everywhere, and weighing it</td>
</tr>
<tr>
<td>Evaluation through written assessment</td>
<td>Evaluation by judgement of people and events through direct feedback</td>
</tr>
<tr>
<td>Success in learning measured by knowledge-based examination pass</td>
<td>Success in learning by solving problems and learning from failure</td>
</tr>
<tr>
<td>The goal is to transmit intellectual and cognitive knowledge</td>
<td>The goal is to ensure that skill-related knowledge is acquired.</td>
</tr>
<tr>
<td>The role of teacher is to teach</td>
<td>The role of teacher is to provide activities that will help the students to broaden their own fields of entrepreneurial competency</td>
</tr>
</tbody>
</table>

Moving from the left to right of Table 2.3, that is moving from a ‘traditional, teacher-centred, individualistic, competitive and theoretical’ focus towards a more ‘non-traditional, student-centred, group-based, cooperative and experience-based’ learning environment. For example, in a traditional teaching environment, there is often a high emphasis on memorising and recalling information. Therefore, most of the assessment schemes measure students’ learning by written and knowledge-based exams. In contrast, non-traditional learning requires students to understand the values of those who transmit
and filter information. Therefore, students’ success in an entrepreneurial environment measured by their ability to solve problems, learn from their failures and judge other people and events. Another important difference between traditional and entrepreneurial learning refers to the environment that learning takes place. While traditional learning takes place within the classroom, entrepreneurial learning encourages students to go outside of the class and do practical tasks in order to learn. There was also a shift from an individualistic to group focused learning activities. It was argued by Heinonen and Poikkijoki (2006) that entrepreneurial learning does not take place in a vacuum and is usually associated with the activities of the group, the organisation and even of society.

The difference between traditional and non-traditional teaching methods can be seen from a neuropsychological perspective also. Kirby (2007) described that a brain is divided into two hemispheres as below:

- The left side handles language, logic and symbols and processes information in a step-by-step and highly focused, systematic and logical fashion from one point to the next.

- The right side takes care of the body’s emotional, intuitive and spatial functions and processes information intuitively, relying heavily on images. Therefore, right-brained thinking is lateral, unconventional, unsystematic and unstructured.

Kirby (2007) argued that right-brained thinkers are at the heart of the creative process and they have ability to see opportunity and cope with chaos and ambiguity. They tend to: challenge custom, routine and tradition; be reflective and often deep in thought; play mental games; try to see an issue from a different perspective; realize that there may be more than one ‘right’ answer; and see mistakes and failures as pit stops on the route to success. In contrast, left-brained thinkers require hard facts before reaching a conclusion, specialize in precise descriptions and exact explanations, and demand structure and certainty (Lewis, 1987).

This neuropsychological perspective has a role in the context of learning also. Lewis (1987) characterised traditional teaching approaches as a means of developing students’ left-brain capabilities. He pointed out some characteristics of traditional teaching, such as requiring students to acquire knowledge one step at a time, adding methodically to their storehouse of facts until they have sufficient to pass an examination, expecting students to solve problems which demand an analytical rather than an intuitive approach, requiring
them to learn by listening, keeping notes and reading books. He concluded that all of these are tasks which the left hemisphere specializes in. In contrast, Kirby (2003) and Nieuwenhuizen and Groenwald (2004) pointed out that successful entrepreneurs prefer right-brain thinking, which may explain why most of well-known entrepreneurs have not succeeded in the formal traditional education system. Some other scholars argued that while the traditional teaching methods emphasise on the left-hemisphere of the brain, both intuitive and rational thinking are needed in order to develop students’ entrepreneurial competencies. Intuitive thinking as the result of right-brain and rational thinking as the outcome of left-brain develop what may be termed the ‘balanced brain’ (Kirby, 2004, 2007).

2. Effectiveness of traditional and non-traditional teaching approaches in the context of EE

The second question is which of these methods are more effective to be employed in EE programmes? As Carrier (2007) mentioned, it cannot be simply said that the non-traditional approaches are better than the traditional ones. Something that is new or original is not necessarily better. Instead, as it was mentioned by Gibb (2005), we do need to consider how effective each of these methods is at helping students acquire entrepreneurial competencies, such as creative problem-solving, strategic thinking, networking, negotiating and opportunity seeking and grasping.

A few of entrepreneurship commentators such as Shepherd and Douglas (1997) criticised the use of the less traditional teaching methods, such as case study, role play, simulation and problem solving teaching methods. They argued that in the confines of the classroom where guidelines are provided and outcomes are known, such less traditional methods are actually promoting logical rather than creative or entrepreneurial thinking. Consistent with this view, Fiet (1997) and Jack and Anderson (1999) proposed that if we are to improve the substance of what we teach to students in entrepreneurship field, we need to:

- pursue theory-driven research agendas and be actively seen to do so; and
- expose students to theoretical explanations of why some entrepreneurs succeed and others fail.

In contrast, Gibb (1987a) criticised the traditional theory-based EE arguing that it is very much based on the past, with a focus on the understanding and analysis of large amounts
of information. However, in reality, entrepreneurs are focused on the present, with little time for critical analysis of such information loads. They spend most of the time dealing with real cases and problems and learn through their own experiences. Moreover, while the traditional methods involve a high level of dependence on authority and on ‘expert validation’, in the real world the entrepreneurs must rely on the validity of their own knowledge, expertise and personal values. Moreover, Plaschka and Weisch (1990) pointed out that if entrepreneurship is an integrative activity based upon the capacity to understand very complex dilemmas regarding purpose, possibilities and tools, then we must follow non-traditional processes in designing entrepreneurship programs. Such non-traditional processes help tutors and students to deal with overwhelming complexity, multi-functional roles, multi-dimensional problem solving, unpredictability, uncertainty and ambiguity.

As it can be seen from the comparison above, non-traditional teaching approaches in the context of entrepreneurship values learning in real work situations. Consistent with this view, studying 100 established entrepreneurs attending a management programme at Harvard Business School, Timmons and Stevenson (1985) concluded that entrepreneurs’ critical skills, such as judgement, handling people, patience and responsibility, can only be learned in the real world. In another attempt, Jones and English (2004) designed an action-oriented and student-centred learning environment at the University of Tasmania by implementing case studies, peer-assessment, personal development programmes, and by requiring students to interact with an external environment (workplace). They found that the applied teaching methods above positively affect some key entrepreneurial skills, such as students’ belief in their ability to take control of the future, communication, problem solving, teamwork, self-management and planning.

In another attempt, Strydom and Adams (2009) reported on the positive results of implementing a practical and experience-based approach in their entrepreneurship curriculum. They required their students to write an assignment to start and grow an actual business. Their lecturers guided students through the entrepreneurial process, from finding an idea to launching the business. They evaluated the learning experience of the students exposed to the unconventional teaching method and suggested that despite the fact that students were coming from different fields of reference and different syllabi, they acquired business skills and knowledge about the entrepreneurial process and created potentially sustainable, profitable business ventures.

The effectiveness of traditional and non-traditional EE programmes could be seen from
another perspective as well. As it was mentioned in the last section of this chapter, Garavan and O’Cinneide (1994) categorised EE programmes into four groups: Education and Training for Small Business Ownership, Continuing Small Business Education, Small Business Awareness Education and Entrepreneurial Education. Hytti and O’Gorman, (2004) and Kirby (2004) pointed out that these categories have implications for university-initiated programmes. While the first three categories address some general skills and knowledge which are transferable by traditional teaching methods, the last group (Entrepreneurial Education) needs a range of soft ‘know-how’ competencies such as creativity, pro-activeness, leadership, risk taking propensity and wakefulness. These competencies could be stimulated by implementing non-traditional teaching methods in EE programmes.

3. Traditional and non-traditional teaching approaches in practice

However, as John Maynard Keynes mentioned, “The greatest difficulty in the world is not for people to accept new ideas, but to make them forget about old ideas” (Kuratko, 2003, p.21). While the value of implementing entrepreneurial learning is obvious, scholars reported that tutors may hesitate to experiment with such an entrepreneurial-directed approach for the following reasons: It is time-consuming, because tutors need to give continuous feedback to students, and it needs significant institutional resources and money in order to provide smaller class size and greater physical facilities (Garavan and O’Cinneide (1994); Mwasalwiba, 2010).

Consequently, there is a historical complaint about implementation of traditional educational approaches in the context of EE. For instance, Ronstadt (1990) reported that in the early 1990s the main focus of EE programmes was requiring students to write a business plan. In another attempt during the same period of time, Béchard and Toulouse (1991) noted that traditional teaching approaches which focused on content rather than learning were still the dominant model in university-level entrepreneurship courses. Solomon et al. (2002) also showed that the most common teaching methods used in entrepreneurship education were still the business plan, lectures by well-known professors and supervised reading programmes. Furthermore, Honig (2004) pointed out that 78 of the top 100 universities in the US considered the development of a business plan by students as the most important feature of their provision in the area of entrepreneurship. Finally, Solomon (2007), after surveying the current state of entrepreneurial education in the United States and internationally during the 2004-2005 academic year, reported that the
traditional teaching method of requiring students to create ‘business plans’ and participate in ‘class discussions’ still exists as a foundation for teaching the nuts and bolts of entrepreneurship and small business management.

As it can be seen in the brief historical review of the traditional teaching methods applied in the EE context, the persistence of the business plan as a teaching method is fascinating and there is good reason to question the enthusiasm it generates amongst entrepreneurship tutors. This is important especially because the cause-and-effect relationship between entrepreneurs’ success and providing a good business plan is not well-established (see: Reid and Smith, 2000; and Carrier et al., 2004). Audet (2004) goes further and contends that requiring students to produce a business plan could ultimately have a detrimental effect on their perception of the desirability of an entrepreneurial career because they found the experience of launching a business difficult and complex. It does not mean that business plan writing should be eliminated from the EE teaching approaches. Despite the prior arguments, Marion and Sénicourt (2003) pointed out that preparing a business plan helps students to a) learn to anticipate, b) develop the contacts they need to realize their project, c) identify their own weaknesses, d) understand the interdependency of their decisions and e) learn about information sources. To help entrepreneurship students and tutors to achieve these outcomes, Carrier (2005) criticised the fact that the business plan is often used too soon in entrepreneurship curriculum and suggested several ways of maximizing its use. These suggestions are discussed in Chapter 5 of this thesis.

Overall, it seems that entrepreneurship scholars criticised the widespread presence of traditional teaching methods, such as the inclusion of a business plan project in EE programmes. These traditional methods should be partly used in a wider educational methods spectrum, which would use mostly non-traditional methods. Therefore, in line with Solomon et al. (1994b), we argue that we are still facing an urgent need to trade more traditional forms of teaching for more unique and unconventional ones. Therefore, it should be asked which educational approaches could be used to enhance students’ entrepreneurial competencies at university level, in addition to traditional lectures and the business plan. This thesis provides some answers to this question by exploring the ideas of the main stakeholders of EE programmes. In doing so, the next section of this chapter reviews the literature in terms of EE stakeholders, trying to identify the main gaps in this area.
2.3.3.2. Challenge 2: Entrepreneurship curriculum stakeholders

This section seeks to provide brief answers to these questions: What does ‘stakeholder’ mean and who are EE stakeholders? What are the benefits of engaging stakeholders in EE curriculum design? How could they be involved in EE curriculum design? And, finally, can we expect to meet all of the requirements of EE stakeholders?

“Plaschka and Weisch (1990) suggested three methods for collecting information for entrepreneurship curriculum design: a) Attendance at professional conferences at which curriculum structures are compared and discussed; b) Written historical reviews which cover the origin, evolution, and maturation of a discipline as it becomes "professional" and accepted in the academic community; c) Practitioners and stakeholders as the integral parts of entrepreneurship education.

‘Stakeholder’ from a higher education perspective could be defined as “a person or entity with a legitimate interest in higher education and who, as such, acquires the right to intervene” (Amaral and Magalhaes, 2002, p. 2). Based on this definition, it is important to know who has the legitimacy and right to intervene in education as its stakeholder. In response to this question, Robinson and Long (1987) classified higher education stakeholders into primary (students), secondary (employers and educational authorities) and tertiary (validating bodies, alumni, parents and extended families) groups. Matlay (2009) and Kickul and Fayolle (2007) categorised these stakeholders in the context of EE as ‘internal’ (faculty, students, research staff, administrators and managers) and ‘external’ (entrepreneurs, parents, employers, alumni, and various representatives of business, commerce, professional bodies, government and the community). In the context of entrepreneurship, the two recent issues that have already discussed in this chapter (extending EE beyond the business schools and the impact of technology on EE) affect EE stakeholder groups. EE is increasingly made available in a wide range of non-business oriented departments across the universities (Matlay and Carey, 2008). Furthermore, the significant increase in the use of educational technology and electronic delivery platforms resulted in widening access to, and the variety of, EE programmes as well as enhancing and enriching related student experiences (Carey et al., 2007). Therefore, it could be argued that these recent expansions in EE through non-business departments and educational technologies extended the variety and number of EE stakeholders.

An effective approach in curriculum design provides activities that encourage the various
stakeholders of the curriculum to become involved in the design and implementation process of an educational programme and reveal their perceptions of what the central goal is and how it can be achieved (Kessels, 1999). Many studies such as McKenney et al. (2006), Abdullah et al. (2009) and Smith and Demichiell (1996) see stakeholders’ view as a necessary component of producing a robust curriculum design. Engagement of stakeholders in entrepreneurship curriculum design has been seen from different perspectives. For example, Mitchelmore and Rowley (2010) highlighted the role of EE stakeholders in shaping the meaning associated with the entrepreneurial competency concept. Some studies involved stakeholders for identifying objectives of entrepreneurship education programmes (see, for example, Hisrich and Peters, 1998; Hills, 1988). They sought to classify EE programmes in terms of their objectives. Furthermore, some other studies involved EE stakeholders to evaluate the progress and effectiveness of entrepreneurship programmes (see, for instance, Vesper and Gartner, 1997). Assessing participants’ perception and attitude about EE programmes (Peterman and Kennedy, 2003; Kourilsky and Walstad, 1998) and examining EE participants’ entrepreneurial intention (Lüthje and Franke, 2002) are the examples of other studies which involve EE stakeholders in entrepreneurship research.

These studies involved different stakeholder groups in the process of EE curriculum design. Educators, students, policy makers and entrepreneurs are some of these stakeholder groups involved in EE curriculum design. Hills (1988), for example, surveyed 15 leading entrepreneurship educators in the USA to identify EE objectives. In another attempt, Hisrich and Peters (1998) considered these objectives from the viewpoint of students. University administrators (Vesper and Gartner, 1997), politicians (Burgoyne, 1993), parents (McKenney et al., 2006) are the examples of other stakeholder groups addressed by EE studies so far.

With regard to the benefits of involving stakeholders in EE curriculum design, Vollmers et al. (2001) point out that obtaining feedback from stakeholder groups help curriculum designers to determine how to best meet their needs. Moreover, by involving their external stakeholders in the curriculum design they could understand what graduating students will be expected to know when they enter the workforce, and what skills and abilities will be valued and serve them well in their career. Consistent with this view, Czuchry et al. (2004) stress that cooperation between internal (e.g. entrepreneurship academics) and external stakeholders (e.g. business, industry and professional communities) has yielded tangible
benefits for both stakeholder groups.

However, it is mentioned that it is not always possible to meet all of the requirements and preferences of different stakeholder groups at the same time. For instance, Streeter et al. (2002) reviewed the alternative models of EE in the US and categorise them into ‘magnet’ and ‘radiant’ programmes. While the magnet type of EE tended to direct university applicants to entrepreneurship courses provided by business schools, the radiant programmes focused on contexts of specific interest to non-business students. They found that while the magnet programmes had university wide appeal and the radiant ones were extremely appealing to students, parents and alumni, the magnet model was easier to administer and represents the pathway of least resistance. Here a conflict could be seen between the preferences of EE different stakeholders. Streeter et al. (2002) argues that although the EE magnet model might be simpler to implement, in the long-term it leads to conflict amongst various stakeholders and therefore might not be widely shared across a university.

Despite the recent expansion in entrepreneurship research, the full extent of stakeholders’ involvement and their impact on entrepreneurial outcomes remains unclear (Matlay, 2009). Gibb (1987a) indicated that very little is known about the knowledge transfer process between trainers and entrepreneurs, and it is not entirely clear how participants in EE programmes prefer to learn. That is why Matlay (2006) concluded that “there is an urgent need for empirically rigorous research to bridge the knowledge gap that persists between the interests of various stakeholders in this area of policy intervention and actual entrepreneurial outcomes. Such research would offer a realistic benchmark against which stakeholders could evaluate progress in entrepreneurship education and nascent entrepreneurship at all levels of economic activity” (p.712).

2.3.3.3. Challenge 3: Educational technology in entrepreneurship Curriculum:

When computers first appeared that were small, powerful and affordable enough for use in classrooms, many excited educators saw the possibility of a new medium for education that would present some entirely new educational possibilities and approaches (Walker, 2003) and gives the impression of innovation and effectiveness in education (Malouf, 2001). Later on, the use of educational technology in curriculum development has been evolved by a more comprehensive definition of ‘Educational Technology’ provided by Commission on Instructional Technology (1970) as following: “A systematic way of
designing, carrying out and evaluating the total process of learning and teaching” (Molenda, 2004, p.341). This “Systematic” approach has been addressed as the main feature of educational technologies in curriculum development by the subsequent studies e.g. Rowntree (1982).

The outcomes of implementing technology in entrepreneurship curriculum can be seen from both ‘general’ and ‘specific’ perspectives. From the general perspective, since a user-centred focus is the basis for an online and technological based course, students as the users of these educational settings became actively involved in the curriculum design process (Porter, 2004). Furthermore, it facilitates curriculum development for a better understanding and more effective learning by students with disabilities (Woodward et al., 2001; Todis, 2001) and provides the possibility to deliver courses at convenient locations and at times conducive to working professionals (Kuratko, 2003). From the specific perspective of entrepreneurship, computer simulations as a form of educational technologies provide entrepreneurial students with multiple experiences of simulated new venture complex decision-making (Van Clouse, 1990) and affords them realistic entrepreneurship experiences that offer instant feedback (Solomon, 2007).

Kuratko (2003) go further and contend that, in many respects, EE may actually transform the educational setting. For example, George Washington University developed and applied a unique technological application entitled, “Prometheus.” In addition to offering students and teachers the opportunity to interact via e-mail, bulletin boards and live discussion formats, Prometheus also integrates multimedia options into the course content. Using this software, students can access a course site, download a posted journal article, watch an instructional video and return a completed assignment from any Internet connections. It also provided educators the facility to follow up with individualized online coaching and feedback to students.

Another example of a leading role of entrepreneurship departments in using technology through 1990s was also described by Kuratko (1996). He presented a closed-circuit television network called the Indiana Higher Education Telecommunications System (IHETS). Using this network, entrepreneurship classes were taught in a state-of-the-art television studio by attending on-campus students; and then, off-campus students including some business employees attended class at designated reception sites in Indiana, Kentucky and New Jersey. Both the on-campus and the distance learning MBA programs are fully accredited by The American Assembly of Collegiate Schools of Business
Againt this context, while it was supported by entrepreneurship commentators that the growing use of technology tends to develop more autonomous ways of learning outside of the classroom and far from the more traditional methods of learning (Fayolle and Gailly, 2008), one of the challenges of entrepreneurship education is that it is far from using educational technologies (Kuratko, 2005). Solomon et al. (2002) report that only 21% of entrepreneurship education programmes use e-learning technologies. While Solomon’s national survey of entrepreneurship in 2004-2005 illustrates an increase in the use of technology by 41% of EE programmes across the US, there is still a lack in the use of technology and e-learning in EE.

This lack of use of educational technology is criticised by entrepreneurship scholars. Kuratko (2003) pointed out that entrepreneurship cannot be a field that succumbs to stagnation. It must recognize and apply educational technologies in the class. It was concluded that entrepreneurship tutors must become more competent in the use of educational technology in order to expand their pedagogies to include new and innovative approaches to the teaching of entrepreneurship (Kuratko (2005).

2.3.4. Analysis of previous studies on entrepreneurship education

There is growing consensus amongst policy makers and other stakeholders that education can increase both the quality and the quantity of graduate entrepreneurs entering economy (Matlay, 2006; European Commission, 2006). Entrepreneurs with higher educational attainments, in most cases, tended to do better, and their firms survived longer than their counterparts who lacked education (Bates, 1995). Therefore, EE is promoted and implemented into university curricula in many of the United States (Kuratko, 2005) and the European countries (European Commission, 2006). However, literature highlighted a number of challenges for education in relation to entrepreneurship.

In relation to the first challenge, Kyro (2003) suggested that the bridges between entrepreneurship and education should be stronger in order to make the latter as relevant to the process as to the subject. In line with Kirby (2007), it can be concluded that the education system is being required to go beyond the ‘traditional’ methods of teaching students ‘Know-what’ competencies ‘about’ entrepreneurship. Rather, it is being challenged to help create entrepreneurs through instilling ‘know-how’ competencies and
educating them ‘for’ entrepreneurship through ‘non-traditional’ approaches ‘upon’ business schools. This movement should be geared toward creativity, proactive, problem-solving, multidisciplinary and process-oriented approaches and theory-based practical applications rather than the rigid, passive-reactive concept and theory-emphasized functional approach (Solomon, 2007). This approach equips them with a set of personal competences that enable them to see opportunities, bring them to fruition, initiate change, create wealth and/or improve the quality of life.

Conducting a longitudinal evaluation of stakeholder involvement in entrepreneurship education in UK HEIs over an eight-year period (2000-2007), Matlay (2009) highlighted the second challenge of EE and concluded that future initiatives in this area of EE curriculum development should focus narrowly on the needs and expectations of the primary (academics and students) and secondary stakeholders (such as entrepreneurs and business representatives) involved in entrepreneurship education. In line with Henry et al. (2005a) and Jennings and Hawley (1996), it could be concluded that despite the increase in the amount of research conducted into the area of EE, many of these initiatives do not actually address the real needs of entrepreneurs. Indeed, there is often a significant gap between the perceptions of the stakeholders of the EE programmes in terms of training ‘needs’ and ‘approaches’. In terms of training needs, what sometimes appear as key problem areas to EE curriculum designers and educators, may have little importance for students and entrepreneurs and vice versa. In terms of training approaches, what is valuable and feasible to educators may not be in the interest of students as the potential entrepreneurs.

Kuratko (2003) highlighted the third challenge of EE by pointing out that, for EE to embrace the 21st century, professors must become more competent in the use of educational technology in order to expand their pedagogies to include innovative teaching methods. For example, the use of video conferencing, streaming of video case studies and the ability to bring new ‘live’ perspectives from different geographic locations and schools show promise as viable uses of educational technology and will add to the richness of the educational experience.

Against this context, we will use a qualitative collective method (focus group) in an effort to address key challenges in our understanding in relation to EE, specifically, from the perspective of stakeholders interested in EE in both Iran and Ireland. The qualitative method applied to this study is important since the EE literature suffers from the lack of
qualitative studies. Matlay (2002) believed that much of the EE research relies upon quantitative “snap shot” surveys, which can involve biased samples and methodologies. He advised conducting qualitative research on graduate nascent entrepreneurs.

Although there may not be a uniform standardised, one-size-fits-all approach that works (Nabi and Holden, 2008), and while it remains to be proven that a given pedagogical approach is better than another (Fayolle and Gailly, 2008), the current study seeks to address both training ‘needs’ and ‘approaches’ from the perspective of three stakeholder groups of EE, including students, tutors, and entrepreneurs. It does not mean that all of the requirements of different stakeholders of EE programmes have to be met. In line with Jack and Anderson (1999), we believe that there are many dimensions to EE and we should not aspire to satisfy all the different requirements of stakeholders with an interest in EE. However, we could try to identify the common and the most important requirements pointed by these stakeholders and take them into account at the time of designing entrepreneurship curriculum.

2.4. Entrepreneurship and culture

2.4.1. Introduction

While a cross cultural comparison is not the primary aim of this study, since it is conducted in two different contexts (Iran and Ireland), an overview of the contextual and cultural impacts upon entrepreneurial capabilities is briefed here.

Culture is a set of shared values, beliefs and expected behaviours (Herbig, 1994). Hofstede (1991) defined culture as “a collective programming of the mind which distinguishes the members of one group or category of people from another” (P.5). Hayton et al. (2002) mentioned that cultural values determine the degree to which a society considers entrepreneurial behaviours and competencies. Therefore, understanding cultural influences on the development of entrepreneurship is crucial to the internationalization of entrepreneurship development and implementation of policy initiatives to encourage entrepreneurship in various areas of the globe (Thomas and Mueller, 2000).

Tan (2002) pointed out that the terms “culture” and “nation” are used by researchers interchangeably. Therefore, the majority of ‘cross-cultural’ studies tend to be ‘cross-national’ studies that are confounded with the influence of the national environment. The current study also found the interchangeable use of these two terms in the literature.
Therefore, it should be noted, from the outset, that the ‘cross-cultural’ and ‘cross-national’ are used interchangeably in this section.

2.4.2. Entrepreneurship; Universal, National, or Regional?

Some entrepreneurship commentators believed that entrepreneurs have more in common with their counterparts in other countries than with non-entrepreneurs. For instance, analysing survey responses from over 700 entrepreneurs in nine countries, McGrath and MacMillan (1992) found that even amongst culturally very different societies there is a core set of perceptions common across those countries that entrepreneurs hold above others in their countries. Another major study in this area is conducted by McGrath et al. (1992). They compared 1217 entrepreneurs to 1206 non-entrepreneurs (career professionals) in eight countries and concluded that entrepreneurs are more like each other than non-entrepreneurs, and they score consistently higher that non-entrepreneurs in power-distance, individualism and masculinity, and lower in uncertainty avoidance. This perspective represents ‘universal’ entrepreneurship.

On the other hand, most of other entrepreneurship scholars believe that cultural factors affect entrepreneurship in many ways. For instance, surveying large samples of 35–40 years old inhabitants in different regions, Davidsson and Wiklund (1997) conclude that both values and beliefs of the kind investigated do have an effect on regional new firm formation rates. This perspective represents ‘national’ or ‘contextualised’ entrepreneurship which highlights the impact of national differences upon entrepreneurship.

Dodd and Hynes (2012) highlight the importance of ‘regionality’ in the context of cross-cultural entrepreneurship studies. They defined ‘regional economy’ as the assets of several neighbouring communities which includes human and financial capital; research and development institutions; business and policy infrastructure; culture; legal and regulatory environment. Using the dataset arose within the EUROPE project along with semi-structured interviews with entrepreneurship education stakeholders (teachers, students, entrepreneurs, parents, and university administrators) in six European countries, they concluded that regionality shapes the context and, in turn, regional context influences entrepreneurship education in terms of its objectives, outcomes, resources and opportunities. It also shapes the institutions within which enterprise education is embedded and affects local narratives of entrepreneurial identities and careers.

Perhaps one underpinning fact that not only legitimates but encourages cross-national
studies of entrepreneurship is how people in different countries understand entrepreneurship. For example, Anderson et al. (2009), tapping into the metaphors that people in six European countries employ to understand entrepreneurship, found that across the European schools’ environment the ‘entrepreneur’ is a conflicted social archetype that is simultaneously perceived as an aggressor and winner, a victim and an outsider. They believed that while the scope and capacity of entrepreneurship has most likely contributed to its popularity as an economic panacea, they are socially constructed and cannot arise independently of the social circumstances in which they are formed or interpreted. Therefore, it was advised that these contextual divergences and social constructions in the different countries and even in diverse stakeholder groups must be taken seriously if entrepreneurship education is to be effective. Consistent with this view, Hofstede et al. (2002) asked 1814 business managers from 16 countries to respond to a questionnaire about business goals and found a huge difference between perceived goals of successful businesspersons in those countries. They concluded that globalization is often more a wishful thinking than a reality and the national origin of an enterprise continues to matter precisely in the management of the enterprise and the goals held by its leaders.

As noted by Dodd and Patra (2002), a resolution to this dilemma may be emerging through new developments in cognitive processes suggesting that while some cognitive scripts may be broadly generic across cultures, the values that shape and give rise to those scripts nonetheless vary considerably. If both ‘universal’ and ‘national’ perspectives are seen as two opposite sides of a ‘spectrum’, another resolution to this conflict is provided by Oviatt and McDougall (2005). They generated a model (see Figure 2.3) to show the forces influencing internationalization speed of entrepreneurship. They showed that the speed of entrepreneurial internationalization is determined by four types of forces: (1) enabling, (2) motivating, (3) mediating and (4) moderating. With regard to the first category, transportation, communication and digital technology appear to be the foundation enabling rapid internationalization of such an entrepreneurial opportunity. Regarding the second category, technology makes accelerated internationalization feasible, while the presence of competitors or potential competitors motivates or strongly encourages it. The third group describes that accelerated or retarded international entrepreneurial behaviour cannot be explained through some objective measure of technology and competition, but only by understanding how the opportunity, the enabling forces and the motivating forces are interpreted, or mediated, by the entrepreneurial actor. Therefore, personal characteristics (e.g. years of international business experience) and
psychological traits (e.g., risk-taking propensity) affect entrepreneurs’ observation and interpretation of the potential of the opportunity, the potential of communication, transportation and computer technology to enable internationalization and the degree of threat from competitors. With regard to the fourth group, two types of moderating forces are seen to largely influence the speed of internationalization: knowledge-intensity of the opportunity plus the characteristics of the entrepreneur’s international network. Dodd and Seaman (1996) highlight another factor influencing entrepreneurship. They argue that ‘religion’ affects believers' entrepreneurial activity, influencing the decision to become an entrepreneur, enterprise management and the entrepreneur's contact network. Comparing this finding with the four types of forces proposed by Oviatt and McDougall (2005), religion could be categorised as a ‘mediator’ of the impact of culture on entrepreneurship since it affects entrepreneurs’ worldview, and in turn, affects entrepreneurs’ observation and interpretation of the potential of other enablers, motivators and mediators on his/her entrepreneurial activity.

![Figure 2-3 A model of forces influencing internationalisation speed of entrepreneurship](image)

If the ‘spectrum’ perspective of nationalisim, universalism and regionalism of cross-cultural entrepreneurship studies is to be accepted, and the broad range of factors which enable, motivate, moderate or mediate the place of different countries and studies on this spectrum to be close to one of the three –isms above is to be considered, then, in alignment with Dodd and Hynes (2012), we could argue that regional and perhaps national and international development is relative and not absolute.
2.4.3. Entrepreneurial competencies and cross-cultural studies

The international interest in finding the applicability of entrepreneurial competencies across cultural contexts has been increasing. Therefore, the following question becomes of important interest to entrepreneurship researchers in the different countries: "Are entrepreneurial attributes universal or do they vary systematically across cultures?" (Thomas and Mueller, 2000). Hayton et al. (2002) identify two distinct approaches in the previous studies for addressing the association between culture and entrepreneurial competencies. The first group address the research question of whether national culture is associated with different entrepreneurial competencies, while the second group seek to determine whether entrepreneurs are similar to or different from their non-entrepreneurial counterparts across cultures.

In the framework of the first group, some commonalities and differences in different cultural contexts in terms of entrepreneurial competencies are found. For instance, Thomas and Mueller (2000) found that while internal locus of control, moderate risk-taking propensity and high energy level are associated with cultural aspects, innovative orientation, however, does not appear to vary with cultural distance. Consistent with part of this finding, Herbig (1994), as well as Herbig and Miller (1992), confirmed that cultures that reinforce conformity, group interests and control over the future are not likely to foster and reward risk-taking in the society. Mitchell et al. (2000) also confirm that cognitive scripts associated with venture creation decisions are affected by individualism and power-distance as two important cultural aspects in the different societies. Lee and Peterson (2001) also mentioned that culture could positively or negatively affect some entrepreneurial competencies such as: Autonomy, Innovativeness, Risk-taking, Pro-activeness and Competitive Aggressiveness.

In the second group of entrepreneurial-competencies-based studies, scholars tried to compare entrepreneurs and non-entrepreneurs’ competencies in the different cultures. One of the main studies in this area is conducted by McGrath et al. (1992). They compared entrepreneurs to non-entrepreneurs (career professionals) in 13 countries and concluded that entrepreneurs are consistently higher in some cultural dimensions such as power-distance, individualism and masculinity and they are lower in uncertainty avoidance. In another attempt, surveying a total of 867 entrepreneurs, managers and production employees in Russia and Georgia to respond a survey based on Hofstede’s work-related cultural values framework, Ardichvili and Gasparishvili (2003) found that significant
differences between entrepreneurs and non-entrepreneurs existed on three of five cultural dimensions: Power Distance, Masculinity and Long-term Orientation. Furthermore, it was found that entrepreneurs were, in some cases, different from managers but similar to employees and, in some other cases, similar to managers but different from employees. Therefore, they concluded that making a distinction between entrepreneurs and non-entrepreneurs is not as fruitful as contrasting entrepreneurs with specific occupational and status groups.

The differences seen across the different countries in terms of entrepreneurial competencies, activities, rates, etc. are interpreted and based on the different contextual and cultural factors, such as cultural and religious factors (Weber, 1904), socialisation factors, such as parental influences (McClelland, 1961), and level of individualism (Shane, 1992). Furthermore, some frameworks are designed and used over the past decades, providing the possibility of interpreting cultural differences in the national and international levels. Four of these frameworks are presented here.

2.4.4. Cultural frameworks for interpreting entrepreneurial differences

2.4.4.1. Hofstede's cultural dimensions theory

Hofstede's cultural dimensions theory originally proposed four dimensions along which cultural values could be analysed: individualism-collectivism, uncertainty avoidance, power distance and masculinity-femininity. These four dimensions were initially identified through a comparison of the values of employees and managers in sixty-four national subsidiaries of the IBM Corporation. Having written a paper entitled “Cultural Constraints in Management Theories” in 1993, he added the fifth dimension, long-term orientation, to cover another aspect of cultural values not discussed in the original paradigm. Using recent World Values Survey data from representative samples of national populations, Minkov (2010) suggested another dimension named “Pragmatic versus Normative” (PRA) which is strongly correlated with Long-Term Orientation (LTO). Therefore, PRA and LTO are used interchangeably used by cross-cultural studies. Finally, in the third edition of “Cultures and Organizations: Software of the Mind”, Hofstede (2010) added the sixth dimension, “indulgence versus self-restraint”, to explain why some nations have a higher percentage of very happy people. He described these six dimensions as below:
- **Power Distance**: “The degree of inequality among people which the population of a country considers as normal: from relatively equal (that is, small power distance) to extremely unequal (large power distance). All societies are unequal, but some are more unequal than others”.

- **Individualism**: “The degree to which people in a country prefer to act as individuals rather than as members of groups. The opposite of individualism can be called Collectivism, so collectivism is low individualism”.

- **Masculinity**: “The degree to which tough values like assertiveness, performance, success and competition, which in nearly all societies are associated with the role of men, prevail over tender values like the quality of life, maintaining warm personal relationships, service, care for the weak, and solidarity, which in nearly all societies are more associated with women's roles”.

- **Uncertainty Avoidance**: “The degree to which people in a country prefer structured over unstructured situations. Structured situations are those in which there are clear rules as to how one should behave. These rules can be written down, but they can also be unwritten and imposed by tradition”.

- **Long-term versus Short-term Orientation**: “On the long-term side one finds values oriented towards the future, like thrift (saving) and persistence. On the short-term side one finds values rather oriented towards the past and present, like respect for tradition and fulfilling social obligations”.

- **Pragmatism**: This dimension describes how every society has to maintain some links with its own past while dealing with the challenges of the present and future, and societies prioritise these two existential goals differently. Normative societies who score low on this dimension, for example, prefer to maintain time-honoured traditions and norms while viewing societal change with suspicion.

- **Indulgence versus self-restraint**: “The extent to which members in society try to control their desires and impulses. Whereas indulgent societies have a tendency to allow relatively free gratification of basic and natural human desires related to enjoying life and having fun, restrained societies have a conviction that such gratification needs to be curbed and regulated by strict norms”.

Based on Hofstede's cultural dimension indices, Kogut and Singh (1988) developed a measure of cultural distance between countries. While Hofstede’s cultural dimensions theory was generated and expanded in the management field, the majority of cultural-entrepreneurial studies have been relied on this theory (for example, see Williams and McGuire, 2010; Brinckmann et al., 2010; Gupta et al., 2004; Hofstede et al., 2002; Mueller and Thomas, 2001, Thomas and Mueller, 2000; Mitchell et al., 2000; Steensma et al., 2000; Shane, 1993; Baum et al., 1993; McGrath et al., 1992). However, there are some criticisms with regard to applying this theory in entrepreneurial studies in the context of cultural comparisons.

Hayton et al. (2002) pointed out that Hofstede's broadly defined dimensions were originally developed in the context of formal organizations and do not directly address aspects of culture that are most significant to entrepreneurship. Therefore, it is not appropriate to use Hofstede's theory to interpret entrepreneurial differences in the context of culture. They mentioned that an ideal measure would independently examine aspects of culture that relate to entrepreneurship and go beyond normative aspects of culture to consider institutional dimensions. Moreover, Busenitz et al. (2000) point out that while most of the entrepreneurial studies in the context of different cultures were conducted and interpreted based on Hofstede's dimensions of culture to countries' entrepreneurial tendencies, with particular interest in the dimension of individualism, there are strong empirical evidences indicating that a limited correlation between countries' levels of individualism and the strength of small companies and entrepreneurship exists. Therefore, they argued that Hofstede's measures of culture alone do not adequately describe cross-country differences in entrepreneurial activity. More recently, Baughn and Neupert (2003) list some other critics of Hofstede's cultural dimensions as: concerns regarding the survey-based quantitative methodology used, the sampling process employed, the stability of the observed cultural dimensions over time and the failure to address additional critical aspects of culture.

2.4.4.2. GLOBE Cultural Dimensions

Engaging one hundred and seventy social scientists and management scholars from 61 countries, The Global Leadership and Organizational Behavior Effectiveness (GLOBE) Research Project is a program of cross cultural research which is examining the inter-relationships between societal culture, organizational culture and organizational leadership (House, 1999). National cultures are examined by GLOBE in terms of nine dimensions:
performance orientation, future orientation, assertiveness, power distance, human orientation, institutional collectivism, in-group collectivism, uncertainty avoidance and gender egalitarianism (House et al., 2002). House et al. (2010) defined these 9 dimensions as below:

- Institutional collectivism: “The degree to which organisational and societal Institutional practices encourage and reward the collective distribution of resources and collective action”.

- In-group collectivism: “The degree to which Individuals express pride, loyalty and cohesiveness in their organisations or families”.

- Power distance: “The degree to which members of a society expect and agree that power should be stratified and concentrated at higher levels of an organisation or government”.

- Performance orientation: “The degree to which an organisation or society encourages and rewards members for performance improvement and excellence”.

- Gender egalitarianism: “The degree to which a society minimises gender role differences while promoting gender equality”.

- Future orientation: “The degree to which individuals in organisations or societies engage in future-orientated behaviours such as planning, investing in the future, and delaying Individual or collective gratification”.

- Humane orientation: “The degree to which members of a society encourage and reward individuals for being fair, altruistic, friendly, generous, caring and kind to others”.

- Assertiveness: “The degree to which members of a society are assertive, confrontational or aggressive in social relationships”.

- Uncertainty avoidance: “The extent to which members of a society seek certainty in their environment by relying on established social norms, rituals and bureaucratic practices”.

GLOBE cultural dimension has been used by a series of entrepreneurial studies. For instance, Zhao and Seibert (2006) chose two dimensions of GLOBE (uncertainty
avoidance and performance orientation) to moderate the relationship of Neuroticism and achievement motivation. Another study was done in this area by Papalexandris and Galanaki (2009). They implemented GLOBE cultural dimensions to identify similarities and differences between the leadership practices of managing entrepreneurs and professional CEOs and to investigate how these impact on their immediate subordinates’ satisfaction, commitment, motivation and effectiveness. Furthermore, relying on GLOBE indices, O’Neill and his colleagues (2009) used a case study to examine cultural influences on sustainability entrepreneurship through venture creation, operation and evolution. Some other studies which used GLOBE cultural dimensions in the context of entrepreneurship are: Chand and Ghorbani (2011), Raab et al. (2005), Laspita et al. (2012) and Hisrich and Gratchev (2001).

2.4.4.3. Trompenaars and Hampden-Turner’s cultural dimensions

Another analysis of cultural dimensions has been carried out by Trompenaars and Hampden-Turner (1998). They identified seven fundamental dimensions of culture which can be used to understand in what ways do the cultural differences impact on organisations and the conduct of international business. These dimensions are described as below:

- Universalism versus Particularism: “The universalist approach is roughly: "What is good and right can be defined and always applies." In particularist cultures far greater attention is given to the obligations of relationships and unique circumstances”.

- Individualism versus Communitarianism: “Do people regard themselves primarily as individuals or primarily as part of a group? Furthermore, is it more important to focus on individuals so that they can contribute to the community as and if they wish, or is it more important to consider the community first since that is shared by many individuals?”

- Neutral versus Emotional: “Should the nature of our interactions be objective and detached, or is expressing emotion acceptable?”

- Specific versus Diffuse: “When the whole person is involved in a business relationship there is a real and personal contact, instead of the specific relationship prescribed by a contract. In many countries a diffuse relationship is not only preferred, but necessary before business can proceed”.

106
- Achievement versus Ascription: Achievement means that you are judged on what you have recently accomplished and on your record. Ascription means that status is attributed to you, by birth, kinship, gender or age, but also by your connections (who you know) and your educational record”.

- Future-oriented versus Past-oriented: “The way in which societies look at time also differs. In some societies what somebody has achieved in the past is not that important. It is more important to know what plan they have developed for the future”.

- Internal versus external environment: “Some cultures see the major focus affecting their lives and the origins of vice and virtue as residing within the person. Here, motivations and values are derived from within. Other cultures see the world as more powerful than individuals. They see nature as something to be feared or emulated”.

Few entrepreneurship studies, such as Lee et al. (2006), Lee and Peterson (2001) and Muzychenko (2008) use Trompenaars and Hampden-Turner’s cultural dimensions to understand the impact of culture on the entrepreneurship issues. However, same to Hofstede's dimensions of culture, this perspective is also reliant on an organisation and management field. Lee and Peterson (2001) mentioned that only achievement/ascription and universalism/particularism dimensions of Trompenaars and Hampden-Turner’s cultural dimensions are relevant to the study of entrepreneurship.

### 2.4.4.4. Country Institutional Profiles for Entrepreneurship

Criticising Hofstede's measures of culture, Busenitz et al. (2000) developed and validated a measure of a country institutional profile for the domain of entrepreneurship. This three-dimensional profile clarifies the distinct roles that the “regulatory”, “cognitive”, and “normative” dimensions play to determine levels of entrepreneurship across countries. They defined these three dimensions of the institutional profile as following:

- The regulatory dimension: “Consists of laws, regulations, and government policies that provide support for new businesses, reduce the risks for individuals starting a new company, and facilitate entrepreneurs' efforts to acquire resources”.

- The cognitive dimension: “Consists of the knowledge and skills possessed by the
people in a country pertaining to establishing and operating a new business”.

- The normative dimension: “Measures the degree to which a country's residents admire entrepreneurial activity and value creative and innovative thinking”.

Based on the three dimensions above, Busenitz et al. (2000) developed and empirically validated a survey instrument including 13 propositions for measuring the institutional profile of entrepreneurship across six countries. This instrument, unlike Hofstede’s cultural dimensions, is specially designed and validated in the domain of entrepreneurship. This measure provides a valuable resource for exploring why entrepreneurs in one country may have a competitive advantage over entrepreneurs in other countries and how specific country-level institutional differences contribute differently to levels and types of entrepreneurship.

2.4.5. Analysis of previous studies on entrepreneurship and culture

Despite the growing interest in cross-cultural studies in the area of entrepreneurship, there are a number of limitations and gaps in our knowledge. One such gap, which is addressed in this study, is the lack of cross-cultural entrepreneurial studies comparing developed and developing countries. Most of the entrepreneurship research has been conducted in the US and Western Europe countries, with a few exceptions (e.g. Kiggundu et al., 1983). For instance, the differences and similarities between samples of entrepreneurs from the USA and Italy were examined by Aldrich et al. (1989). Freytag and Thurik (2007) used data of the 25 member states of the European Union as well as the US to investigate and compare the determinants of entrepreneurial attitudes and activities in those countries. It could be argued that the generalizability of these research findings to developing countries is open to question (Thomas and Mueller, 2000; Thomas et al., 1994; Alder, 1991). Therefore, Thomas and Mueller (2000) highlighted the importance of conducting comparative entrepreneurship research in the context of different cultures including industrialised and developing countries. Consistent with this view, Dodd and Patra (2002) in an effort to explore national differences in entrepreneurial networking, criticised the fact that many of the countries reviewed by cross-cultural entrepreneurship studies (the USA, NI, Sweden, Canada, especially, and to a lesser degree Northern Italy) have a fairly high degree of cultural commonality. Therefore, without minimizing the relevance of their differences, they are all developed Western democracies with dominant Anglo-Saxon/Nordic Protestant majorities and high levels of education. They suggested that a comparison with
a culturally independent country could throw into sharper focus the differences in the context of entrepreneurship and, thereby, clarify whether universalism or contextualism might better explain the entrepreneurial phenomenon.

Moreover, two methodological limitations of the previous cross-cultural entrepreneurship studies are highlighted by the literature. The first one, which addresses the ‘sample’ of those studies, is highlighted by Westhead (2005) and Zahra (2005). They point out that despite the growing appreciation that the individual entrepreneur or entrepreneurial teams can provide the knowledge to create and/or identify opportunities, the majority of cross-cultural entrepreneurship studies focus on the ‘firms’ as their unit of analysis. Therefore, it is argued that to gain a better insight into the process of cross cultural entrepreneurship studies, they ought to further probe the entrepreneur’s sense-making mechanisms and behavioural drivers, such as entrepreneurial intent, motivations, mind-set, perceptions and self-efficacy (Muzychenko, 2008). The second methodological limitation is highlighted by Engelen et al. (2009). They reported that studies on cross-cultural entrepreneurship have recently been criticized for their lack of methodological maturity since they mostly offer quantitative survey-based studies. They suggested that some qualitative research studies such as structural equation modelling need to be applied for further advancement of cross-cultural entrepreneurship.

Another potential limitation of cross-cultural research to date is the use of frameworks for interpreting cultural differences which are not necessarily appropriate for the field of entrepreneurship. Different cultural frameworks have been used in the cross-cultural entrepreneurship research, including Hofstede's cultural dimensions theory (Hofstede, 1993, 2010), GLOBE Cultural Dimensions (House et al., 2002), Trompenaars and Hampden-Turner’s cultural dimensions (Trompenaars and Hampden-Turner, 1998) and Country Institutional Profiles for Entrepreneurship (Busenitz et al., 2000). Hofstede’s cultural dimensions theory has dominated much of the literature on entrepreneurial culture (e.g., Williams and McGuire, 2010; Brinckmann et al., 2010; Gupta et al., 2004; Hofstede et al., 2002; Mueller and Thomas, 2001, Thomas and Mueller, 2000; Mitchell et al., 2000; Steensma et al., 2000; Shane, 1993; Baum et al., 1993; McGrath et al., 1992). However, there have been some criticisms with regard to applying this theory in cross-cultural entrepreneurial studies, including the argument that it was originally developed to understand management practices and may thus be less relevant to the field of entrepreneurship (Hayton et al., 2002). Moreover, Busenitz et al. (2000) point out that
while a particular interest of Hofstede's theory is in the dimension of individualism, research indicates a weak correlation between levels of individualism across countries, levels of entrepreneurship and the strength of small companies. Therefore, they argued that Hofstede's measures of culture alone do not adequately describe cross-country differences in entrepreneurial activity.

This argument is supported by Freytag and Thurik (2007) who compared ‘latent’ and ‘actual’ entrepreneurship in relation to cross-cultural differences. They defined latent entrepreneurship as ‘to want to be an entrepreneur’ and measured it using the declared preference for self-employment over employment. On the other hand, they defined actual entrepreneurship as ‘to be an entrepreneur’ and measured it by using Eurobarometer survey data (some 8,000 respondents) from the 25 member states of the EU as well as the US for the year 2004. They found that, in their particular sample, the considered country specific cultural and institutional variables seem to explain the preference for entrepreneurship (latent entrepreneurship), but not actual entrepreneurship. It was concluded that while the preference for self-employment can be traced back to some cultural variables, the actual decision is determined rather by hard economic factors such as tax rates, direct regulatory burden and the level of unemployment. This is, again, in line with the argument made by Dodd and Hynes (2012) that cross-cultural and regional development is relative rather absolute.

Against this context, and in an effort to advance the literature in regards to the conflict between ‘universal’ and ‘national’ perspectives in entrepreneurship, the current study seeks to examine similarities and differences in the nature of entrepreneurial competencies and competency systems that are identified, ranked and structured by stakeholders in Iran and Ireland. As it was suggested by Thomas and Mueller (2000) and Dodd and Patra (2002), the selection of these two countries offers possibility to study the cross-cultural dimensions of entrepreneurship in two contrast contexts. As has been illustrated in Figure 1.3, Iran and Ireland have huge cultural differences. According to Hofstede (2014), there are five differences between Iranian and Irish cultures as below:

- While Iran receives an intermediate score on Power Distance dimension so it is relatively a hierarchical society, Ireland sits in the much lower rankings of Power Distance and hierarchy is established in Ireland for convenience.

- Iran is considered a collectivistic society which fosters strong relationships where
everyone takes responsibility for fellow members of their group, while Ireland is an individualistic culture and Irish employees are expected to be self-reliant and display initiative.

- Iran is a relatively feminine society in which the focus is on “working in order to live”, managers strive for consensus, people value equality, solidarity and quality in their working lives. On the other hand, Ireland is a masculine society – highly success oriented and driven in which behaviour in school, work, and play are based on the shared values that people should “strive to be the best they can be” and that “the winner takes all”.

- Iran has a high preference for avoiding uncertainty in which precision and punctuality are the norm, innovation may be resisted and security is an important element in individual motivation. In contrast, Ireland has a low score on uncertainty avoidance in which Irish businesses embrace creativity and are always looking for new ways to approach problems.

Finally, Iran has a culture of restraint in which do not put much emphasis on leisure time and highly value social norms. However, Irish culture is one of indulgence in which people place a higher degree of importance on leisure time, act as they please and spend money as they wish.

This study used an exploratory collective intelligence methodology, Interactive Management, to obtain a deeper understanding of the context of entrepreneurship in different countries. Engaging the collective intelligence of key stakeholders in each country in relation to the entrepreneurial competencies and their interdependencies will help to advance understanding in this area. Information obtained from Global Entrepreneurship Monitor (GEM) is also implemented to achieve a better understanding of those ‘relative’ cultural differences. The stakeholder groups involved in this study are students, academics and entrepreneurs. Comparing these three stakeholder groups is also in line with argument made by Hayton et al. (2002), who mentioned that there is a lack of comparing entrepreneurs with non-entrepreneurs across cultures. They highlighted the necessity of identifying both the similarities and differences among entrepreneurs from different cultures and between entrepreneurs and non-entrepreneurs across cultures, using a common conceptual framework.
2.5. Conclusion:

Despite the gaps identified in the literature of cross-cultural entrepreneurship education, this study uses Interactive Management (IM) as a qualitative and collective intelligence method to cope with:

- The generic ‘Everyman’ profile of an entrepreneur (Gartner, 1988) by portraying the specific competencies of a university graduate entrepreneur as a ‘novice’ entrepreneur;
- the fuzzy and overlapped definition of the different entrepreneurial competencies (Mitchelmore and Rowley, 2010) by providing a clear and precise definition of entrepreneurial competencies;
- ignoring the interrelationships amongst the entrepreneurial competencies (Rezaei-Zadeh et al., 2014) by exploring the interdependencies between highly ranked entrepreneurial competencies;
- using traditional methods in teaching entrepreneurship (Carrier, 2007) by generating non-traditional solutions which activate both left and right hemispheres of students across university in order to educate them for entrepreneurship;
- lack of obtaining the full extent of stakeholders’ involvement in EE curriculum design (Matlay, 2009) by involving both ‘internal’ (students and academics) and ‘external’ (entrepreneurs) stakeholders in the process of EE curriculum design;
- lack of using educational technologies in EE programmes (Kuratko, 2005) by paying specific attention to the affordances of educational technologies for implementing the solutions generated by this study;
- relying entrepreneurship studies mostly upon quantitative “snap shot” surveys (Matlay, 2002) by using a novel qualitative and collective intelligence method;
- lack of cross-cultural entrepreneurial studies comparing developed and developing countries (Dodd and Patra, 2002; Thomas and Mueller, 2000) by studying two;
- not paying enough attention to ‘entrepreneurs’ as the ‘unit of analysis’ in entrepreneurship cross-cultural studies (Westhead, 2005) by involving entrepreneurs as one of the stakeholder groups of this study;
- relative insufficiency of cultural frameworks (e.g. Hofstede, and GLOBE) for interpreting entrepreneurial differences and commonalities across cultures (Freytag and Thurik, 2007) by using economic and entrepreneurship factors extracted from
Global Entrepreneurship Monitor (GEM) to interpret those differences and commonalities;
- the conflict between ‘universal’ and ‘national’ perspectives in entrepreneurship (Dodd and Patra, 2002) by examining similarities and differences in the nature of entrepreneurial competencies and competency systems that are identified, ranked, and structured by stakeholders in Iran and Ireland.

These drawbacks significantly affect entrepreneurship education in many ways. In light of these shortcomings it can be better understood why most of the successful entrepreneurs did not follow formal entrepreneurship education in universities. Instead, they preferred to learn by practice and experience in their real environments. It can be concluded that if universities want to have a role in educating future entrepreneurs, they do need to address these gaps and try to reduce their distance with the real requirements and needs of potential entrepreneurs. In the current situation – taking into account the gaps above – entrepreneurship academics and students are living in a world completely different with real entrepreneurs. This is very dangerous for both entrepreneurship academia and entrepreneurs because they lose each other’s capabilities. This literature review presented in this chapter helped us to have an initial understanding of some of the gaps existing in entrepreneurship education literature. These gaps built the basic foundation for doing the current study. They provided a structure for designing and conducting the research in different stages. For instance, both academic (including tutors and students) and entrepreneurs are involved in the current study in order to provide an opportunity for exchanging their ideas and involving them in building an entrepreneurship education programme.

Last but not least, at the end of the current study, the extent of addressing these gaps by contributions of the study could help us to examine whether the study meets its initial expectations or not. In the other words, these gaps could be seen as reliable criteria for assessing the contributions of the study.
3. Chapter three: Research Methodology:

3.1. Introduction:

The purpose of the current chapter is outlining the methodology and methods used in the different stages of this study and presenting the rational for implementing those methodology and methods. Therefore, first, a description of the different research methodology (purposes) is provided. Then, it is clarified that each research question of this study is fitted into which methodology. Then, the research methods of the current study are outlined, the rational for selecting them is described, and their reliability and validity are discussed.

In general, this study is classified as a qualitative exploratory research. Accordingly, the two research questions of the study are addressed by two qualitative research methods, entitled Interactive Management (IM) and Focus Group. Tables 3.2 and 3.3 illustrate the research questions and their relevant research methodology and method. The details of these implemented methodology and methods are provided in this chapter.

3.2. Research Methodology (Purpose):

Kaplan (1973) defined Research Methodology as a means to describe the methods, throwing light on their limitations and resources, clarifying their presuppositions and consequences, relating their potentialities to the twilight zone at the frontiers of knowledge. Therefore, the research methodology is to help researcher to understand the process rather than products of scientific inquiries. There are four major research methodologies which have been pointed out by scholars, including: Exploratory, Explanatory, Descriptive, and Emancipatory. Each of these research methodologies addresses one or more specific research purposes. Table 3.1 provides a brief description of each of these purposes alongside with some sample research questions in each of those areas.
<table>
<thead>
<tr>
<th>Type of Study</th>
<th>Purpose of the study</th>
<th>General research question</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Exploratory</strong></td>
<td>To investigate little understood phenomena</td>
<td>What is happening in this social programme?</td>
</tr>
<tr>
<td></td>
<td>To identify or discover important categories of meaning</td>
<td>What are the salient themes, patterns or categories of meaning for participants?</td>
</tr>
<tr>
<td></td>
<td>To generate hypothesis for further research</td>
<td>How are these patterns linked with one another?</td>
</tr>
<tr>
<td><strong>Explanatory</strong></td>
<td>To explain the patterns related to the phenomenon in question</td>
<td>What events, beliefs, attitudes, or policies shape this phenomenon?</td>
</tr>
<tr>
<td></td>
<td>To identify plausible relationships shaping the phenomenon</td>
<td>How do these forces interact to result in the phenomenon?</td>
</tr>
<tr>
<td><strong>Descriptive</strong></td>
<td>To document and describe the phenomenon of interest</td>
<td>What are the salient actions, events, beliefs, attitudes, and social structures and processes occurring in this phenomenon?</td>
</tr>
<tr>
<td><strong>Emancipatory</strong></td>
<td>To create opportunities and the will to engage in social action</td>
<td>How do participants problematize their circumstances and take positive social action?</td>
</tr>
</tbody>
</table>

Now, we do need to see our research questions are fitted into which of these research methodologies and purposes. Table 3.2 presents this map between our research questions and the research methodologies and purposes.
As could be seen in Table 3.2, three out of four of the research questions of this study are categorised as Exploratory and one of them is outlined as a variation of an Explanatory research methodology. The first research question tries to identify the most important entrepreneurial competencies. Therefore, it tries to “identify important categories of meaning” and it is fitted into the Exploratory research methodology. The second research question of this study sought to identify the interrelationship between the identified competencies in the previous stage. The purpose of this question is “generating hypothesis for further research” and it is similar to the sample question of this research purpose: “How are these patterns linked with one another?” Therefore, this question is also fitted into the Exploratory research methodology.
The third research question of this study wants to explain the cultural, economic and social patterns related to the identified entrepreneurial competencies when the two different contexts of Iran and Ireland are compared. Therefore, it is fitted into the Explanatory research methodology and it is similar to its sample question as well. The fourth research question of this study sought to identify the cultivating approaches of the identified entrepreneurial competencies in the specific context of e-learning environments. Therefore, same to the first research question, it is fitted into the research purpose of “identifying or discovering important categories of meaning” and it could be categorised as an Exploratory research methodology.

To sum up, most parts of this study – three out of four research questions – are categorised as the exploratory research methodology and one research question is fitted into the explanatory research methodology. The Research Methods which are used in this study are described next.

3.3. Research Methods:

Research methods refer to the range of approaches used to gather, analyse, and interpret data in a research study. While traditionally research method refers to the pre-determined questions, recoding measurements, describing phenomena and performing experiments (Cohen et al., 2000), it can also incorporate methods of normative research and qualitative research methods which focuses primarily on understanding and accounting for the meaning of human experiences and actions (Connolly, 2007).

In the current study, two qualitative research methods entitled “Interactive Management” (IM) and “Focus Group” are implemented. Table 3.3 shows a detailed narrative of the methods, techniques, and questions of the different stages of this study.
Table 3-3 Mapping Research Questions and Methods of this study with the standard Types of study

<table>
<thead>
<tr>
<th>Research Question</th>
<th>Research Method</th>
<th>Techniques</th>
</tr>
</thead>
<tbody>
<tr>
<td>What are the key entrepreneurial competencies associated with university students in a virtual learning environment?</td>
<td>Interactive Management (IM)</td>
<td>Nominal Group Technique (NGT) + Idea Writing</td>
</tr>
<tr>
<td>What are the interrelationships amongst these key identified entrepreneurial competencies?</td>
<td>Interactive Management (IM)</td>
<td>Interpretive Structural Modelling (ISM)</td>
</tr>
<tr>
<td>What are the similarities and differences between the models of entrepreneurial competencies generated by study participants across cultures, specifically, when Iran and Ireland are compared?</td>
<td>Interactive Management (IM)</td>
<td>Interpretive Structural Modelling (ISM)</td>
</tr>
<tr>
<td>How can these identified competencies best be cultivated in the context of the design of a virtual learning environment for higher education students?</td>
<td>Focus Groups</td>
<td>Idea Writing</td>
</tr>
</tbody>
</table>

The rational for implementing these qualitative methods could be seen from two general and specific perspectives. From the general perspective, since we sought to explore:

- the people’s (stakeholders) experience and ideas, and
- the impact of social and cultural context on the ideas generated by them,

The qualitative research methods could be best fitted to these objectives. Strauss and Corbin (1990) point out that the qualitative research methods describe and reveal people’s experience, behaviours, interactions, and social contexts without the use of quantification. Moreover, Stebbins (2003) points out that given the contemporary growth in popularity of qualitative research, need for a systematic, long-term approach to qualitative exploration has never been more acute. Furthermore, the importance of implementing qualitative methods is seen from another perspective by Greenbaum (1998). He pointed out that unlike quantitative methods, qualitative ones provide the possibility of deep probing into the causes of some observed behaviour.
From the specific perspective, IM alongside with ISM, Nominal Group Technique (NGT), and Idea Writing techniques are used to identify and rank the most important entrepreneurial competencies. Further to this identification and ranking, this study sought to explore and model the interrelationships between the identified competencies. Modelling entrepreneurial competencies by using qualitative IM method is in line with Dodd (2002) who reported that qualitative methodologies have most to offer in terms of theory and model building, as opposed to model-testing.

These interrelationships are supposed to help us in better understanding of the cause-effect nature of these competencies and also shed some light not only on the scope of the training programmes, also on the sequence of those programmes as well. Another benefit of implementing IM in this study is enhancing consensus between the expert groups participated in the study and minimising the intervene of the research facilitator in conducting the research and concluding the findings. All of these impacts are detailed and discussed in the next sections of this chapter.

For generating the cultivating approaches of the identified entrepreneurial competencies, Focus Group is used. The only difference between this part of the study with the previous ones is we did not need the interrelationships between the generated cultivating approaches at this stage. That question sought to explore participants’ concrete experiences and generate a set of approaches for cultivating the ranked entrepreneurial competencies in an e-learning platform. Greenbaum (1998) pointed out that Focus Group is a proper research instrument for idea generation by a group of experts. Therefore, Focus Group was more fitted to this aim. Table 3.4 summarised the main rational for selecting IM and Focus Group as the two main qualitative research methods of this study.
<table>
<thead>
<tr>
<th>Relevant Research Question</th>
<th>Relevant Research Method &amp; Techniques</th>
<th>Rational</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, 2, and 3</td>
<td>IM + ISM + Idea Writing + Nominal Group Technique (NGT)</td>
<td>possibility of getting experts’ experience regarding the research questions&lt;br&gt;enhancing consensus amongst the expert groups&lt;br&gt;identifying the interrelationships between the identified competencies&lt;br&gt;minimising the intervene of the research facilitator in conducting the research and concluding the findings</td>
</tr>
<tr>
<td>4</td>
<td>Focus Group + Idea Writing</td>
<td>possibility of getting experts’ experience regarding the research questions&lt;br&gt;enhancing consensus amongst the expert groups&lt;br&gt;minimising the intervene of the research facilitator in conducting the research and concluding the findings</td>
</tr>
</tbody>
</table>

### 3.3.1. Interactive Management

#### 3.3.1.1. Participants

Five groups as the stakeholders of an entrepreneurship education programme participated in the study. Seven Irish Entrepreneurs, 8 Irish postgraduate students, 6 Irish academics, 8 Iranian entrepreneurs and 6 Iranian postgraduate students were invited to participate in five separate Interactive Management (IM) sessions at the Enterprise Research Centre, University of Limerick and Faculty of entrepreneurship, University of Tehran. All of the postgraduate students and academics selected to participate in this research were studying/teaching in the area of entrepreneurship and had good knowledge and experience in the area of entrepreneurship education. Selected entrepreneurs in both countries also had valuable experience in the area of business start-up and all entrepreneurs had their own innovative businesses. Some of those entrepreneurs had the failure experiences in some of their start-ups. Those failure experiences were very important because they provided the opportunity of learning from those failures. All participants were informed about the study procedure and gave their consent at the
beginning of the IM sessions.

Consistent with Hynes and Richardson (2007), the entrepreneurship education stakeholders involved by this study are seen from two perspectives. From an internal educational point of view, the initiatives of this study could benefit the students in the first instance but also the academics. Furthermore, entrepreneurship education must extend outside of the classroom by interacting academics and students with entrepreneurs. Therefore, from an external practical perspective, entrepreneurs who start their own business are the third stakeholder of this entrepreneurship education study. Addressing external stakeholders’ needs and ideas in curriculum design helps universities to become more pro-active in addressing the needs of the business community when devising courses.

3.3.1.2 Method Description

The study sought to investigate the consensus view of the five groups, each of whom (1) evaluated the importance of a large set of entrepreneurial competencies derived from a large-scale systematic literature review, and (2) worked to build a consensus structural model as to the logical interdependencies between a selected set of entrepreneurial competencies. Advancing upon previous research in the area, the current study used Interactive Management (IM) to model interdependencies between entrepreneurial competencies.

Based on John Warfield’s (1994) science of generic design, the IM process is a system of facilitation and problem solving that helps groups to develop outcomes that integrate contributions from individuals with diverse views, backgrounds, and perspectives. Established as a formal system of facilitation in 1980 after a developmental phase that started in 1974, IM was designed to assist groups in dealing with complex issues (see Ackoff, 1981; Argyris, 1982; Cleveland, 1973; Deal & Kennedy, 1982; Kemeny, 1980; Rittel & Webber, 1974; Simon, 1960). The theoretical constructs that inform IM, developed over the course of more than 2 decades of practice, draw from both behavioural and cognitive sciences, with a strong basis in general systems thinking.

The IM approach carefully delineates content and process roles, assigning to participants responsibility for contributing ideas and to the facilitator responsibility for choosing and implementing selected methodologies for generating, clarifying, structuring, interpreting, and amending ideas. Emphasis is given to balancing behavioural and
technical demands of group work (Broome & Chen, 1992) while honouring design laws concerning variety, parsimony, and saliency (Ashby, 1958; Boulding, 1966; Miller, 1956). IM has been validated by many studies. For instance, Chang (2010) compared the results of IM with Structural Equation Modeling (SEM) and found a high degree of consistent between models generated by participants in an IM session and quantitative relationships confirmed in SEM. IM has been applied in a variety of situations to accomplish many different goals, including assisting city councils in making budget cuts (Coke & Moore, 1981), developing instructional units (Sato, 1979), designing a national agenda for pediatric nursing (Feeg, 1988), creating computer-based information systems for organizations (Keever, 1989), improving the U.S. Department of Defence’s acquisition process (Alberts, 1992), promoting world peace (Christakis, 1987), improving Tribal governance process in Native American communities (Broome, 1995a, 1995b; Broome & Christakis, 1988; Broome & Cromer, 1991), and training facilitators (Broome & Fulbright, 1995).

There were five steps involved in the process of an IM session: (1) generate and clarify ideas, (2) vote, rank order, and select elements for structuring, (3) structure elements using ISM software, (4) evaluate graphical representation of group logic with the group and amend if necessary, (5) transcribe the audio recorded group discussion and evaluate discourse and reasoning to further understand the nature of competencies and interdependencies (See Figure 3.1).
Figure 3-1 Steps involved in the Interactive Management (IM) process in the current study

IM utilizes a carefully selected set of techniques, matched to the phase of group interaction and the requirements of the situation. The most common techniques are the Nominal Group Technique (NGT), idea-writing, Interpretive Structural Modelling (ISM), and field and profile representations. The first two techniques are primarily employed for the purpose of generating ideas that are then structured using one or more of the latter three techniques. The current study used NGT, Idea-writing, and ISM to identify, clarify, and model a set of entrepreneurial competencies that were selected as critical competencies by five groups of experts in this area.

The nominal group technique (NGT; Delbecq, Van De Ven, & Gustafson, 1975) is a method that allows individual ideas to be pooled, and is best used in situations in which uncertainty and disagreements exist about the nature of possible ideas. NGT involves five steps: (a) presentation of a stimulus question to participants; (b) silent generation of ideas in writing by each participant working alone; (c) “round-robin” presentation of ideas by participants, with recording on flipchart by the facilitator of these ideas and posting of the
flipchart paper on walls surrounding the group; (d) serial discussion of the listed ideas by participants for sole purpose of clarifying their meaning (i.e., no evaluation of ideas is allowed at this point); and (e) implementation of a closed voting process in which each participant is asked to select and rank five ideas from the list, with the results compiled and displayed for review by the group. A modified version of the standard NGT method was used in the current study, with participants initially working to identify entrepreneurial competencies from a list of competencies made available by the IM facilitation team. However, much like standard NGT, participants were also allowed to generate their own unique items and add to the list of competencies derived from the scientific literature.

*Interpretive structural modelling* (ISM; Warfield, 1994) is a computer-assisted methodology that helps a group to identify relationships among ideas and to impose structure on those ideas to help manage the complexity of the issue. Specifically, the ISM software utilizes mathematical algorithms that minimize the number of queries necessary for exploring relationships among a set of ideas (see Warfield, 1976). ISM can be used to develop several types of structures depicting the relationships among a set of ideas, including influence structures (e.g., “supports” or “aggravates”), priority structures (e.g., “is more important than” or “should be learned before”) and categorizations of ideas (e.g., “belongs in the same category with”). The five steps of ISM are: (a) identification and clarification of a list of ideas (e.g., using NGT); (b) identification and clarification of a “relational question” for exploring relationships among ideas (e.g., “Does idea A support idea B?,” “Is idea A of higher priority than B?,” or “Does idea A belong in the same category with idea B?”); (c) development of a structural map by using the relational question to explore connections between pairs of ideas (see below); (d) display and discussion of the map by the group; and (e) amendment to the map by the group, if needed.

In the third step of developing a structural map, questions are generated by the ISM software and are projected onto a screen located in front of the group. The questions take the following form:

“Does idea A relate in X manner to idea B?”

“A” and “B” are pairs of ideas from the list developed by participants in the first step of ISM and the question of whether they “relate in X manner” is the statement identified in
the second step.

For example, if a group is developing an influence structure with problem statements, the question might read:

"Does problem A significantly aggravate problem B?"

However, in the current study, given our interest in examining the interdependencies between competencies, we focused on enhancement relations, specifically, by asking the following question:

"Does entrepreneurial competency A significantly enhance entrepreneurial competency B?"

In the final stage, since we wanted to summarise the most important competencies amongst a list of 37 identified competencies by categorising them, the question below was used in conjunction with the categorisation function of the IM software:

"Does entrepreneurial competency A belong in the same category with entrepreneurial competency B?"

Using the ISM technique, the group engaged in discussion about each relational question and a vote was taken to determine the group’s judgment about the relationship. A “yes” vote was entered in the ISM software by the computer operator if a majority of the participants judged that there was a significant relationship between the pair of ideas; otherwise, a “no” vote is entered.

The length of time required to complete discussion of all necessary pairs of ideas was 2 hours for each of our 6 IM sessions (12 hours in total). In the current study, a series of approximately 362 such decisions were made (70 decisions by Irish entrepreneurs, 65 decisions by Irish students, 82 decisions by Irish academics and 83 decisions by Iranian entrepreneurs, 62 decisions by Iranian students) when mapping out the interdependencies between a consensus set of highly ranked entrepreneurial competencies. The ISM software then generated information from which five structural maps and 1 categorisation table were constructed, showing the result of the group’s series of judgments about pairs of ideas. The length of time required to complete discussion of all necessary pairs of ideas was 2 hours for each of our 6 IM sessions (12 hours in total). Five of these IM sessions were conducted for generating and structuring the most important entrepreneurial
competencies in five separate group sessions, and the sixth IM session focused on categorising all ideas generated across all five sessions to highlight higher-order competencies identified across the sample as a whole.

The influence structuring work conducted with ISM can be considered an activity in “mapping perceptions” of the group members. Participants are given the opportunity to explore connections and links between ideas in ways that probably would have gone undetected without such structuring work. ISM can, thus, provide participants with useful insights into the relationships between ideas and it generates a product, a structural map of those relationships, which can guide their thinking as they design potential solutions (e.g., to the problem of how best to enhance specific entrepreneurial competencies). In the current study, many of the relations that appeared in the final structures (see Figures 1-5 and Table 3) were selected only after considerable discussion and participants were sometimes slow to arrive at a consensus view in relation to key structural interdependencies. Participants reported the IM session to be very challenging, but also rewarding as it afforded them significant insights into the core entrepreneurial competencies that sustain their productive activities on a daily basis.

### 3.3.2. Focus Group

#### 3.3.2.1. Participants

Participants of this study were selected from three expert groups including Postgraduate Students, Academics (Tutors) and Entrepreneurs from both countries Iran and Ireland. The criteria for selecting the participants at this stage was same to the previous one (IM participants) but the participants of IM and Focus Groups were not the same. In the student and academic groups, participants were selected based on their experience and knowledge in the field of entrepreneurship education. All of them participated in entrepreneurship classes as a tutor or student; therefore, they were aware of the explicit and implicit teaching methods implemented in the entrepreneurship classes. This criterion was not compulsory for entrepreneurs since most of them did not attend entrepreneurship classes. The most important criterion for selecting entrepreneurs was their both positive and negative experience in launching a business. Specially, their previous failures as their negative experience was taken into account in order to use those failures as rich opportunities to learn about how to prevent those failures in the future. Table 3.5 illustrates the number of involved experts in each of these focus groups.
Table 3-5 The number of experts in each of the focus groups

<table>
<thead>
<tr>
<th>Country</th>
<th>Expert group</th>
<th>Number of participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ireland</td>
<td>Postgraduate Students</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Academics</td>
<td>6 + 5</td>
</tr>
<tr>
<td></td>
<td>Entrepreneurs</td>
<td>6</td>
</tr>
<tr>
<td>Iran</td>
<td>Postgraduate Students</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Academics</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Entrepreneurs</td>
<td>5</td>
</tr>
</tbody>
</table>

Greenbaum (1998) points out that the more homogeneous group is, the better the participants will relate to each other and the higher the quality of the input they will generate therefore, we conducted separated focus groups with each group of experts mentioned in Table 3.5, trying to enhance the homogeneousness of the groups and achieve better quality of the output.

3.3.2.2. Method Description

Focus groups have become a part of the collective consciousness of the qualitative research community during the past 70 or more years (Kamberelis and Dimitriadis, 2013). A content analysis of the previous publications shows that published research papers using focus group, as their method, combined them with other methods e.g. Interviews, surveys (Morgan, 1996), experiments, and other qualitative or across the boundary between qualitative and quantitative methods (Morgan and Spanish, 1984). Regarding the degree of involving the focus group’s moderator in asking questions and managing group dynamics, Morgan (1996) argue that groups with a higher degree of control by a moderator should be termed “more structured” and vice versa. He found that, in general, marketing researchers, more than social science ones, tend to design their studies with high levels of moderator involvement that impose more structure with regard to both dimensions above. The point that moderated focus groups are more effective that un-moderated groups is approved by some other scholars as well (See Fern, 1982). Calder (1977) highlights three different types of focus groups, including Exploratory, Clinical and Phenomenological. Exploratory focus groups are used for generating hypotheses; Clinical ones provide insights into participants’ un-conscious motivations; and Phenomenological focus groups explore
participants’ common sense conceptions and everyday explanations.

Greenbaum (1998) provided another categorisation of the different types of focus group as: full group, mini group, and telephone group. The full group consists of approximately 90 to 120 minutes, led by a trained moderator, involving around 8 persons by the common demographics. In the case of mini group, it is essentially the same as a full group but with participation of around 4 persons. In the telephone group, individuals participate in a telephone conference call and the other features of this kind of focus group is same to the previous ones.

In this study, Focus Group was used as the main method for generating some cultivating approaches of the identified entrepreneurial competencies. These approaches were extracted from the real experiences of the experts which participated in this study. According to the categorisation of the different focus groups by Calder (1977) and Greenbaum (1998), our focus groups can be categorised as Full Exploratory focus groups.

3.3.3. Literature Review
A broad range of the literature in the area of entrepreneurial competencies was reviewed, classified and analysed in order to provide the necessity information and input for conducting the IM sessions of this study. This literature review was conducted in several stages as below:

- A set of keywords for searching in the literature was selected. These keywords were: entrepreneurial competencies/characteristics/features, university, students.
- Using those keywords, the initial search in the academic databases including: Web of Science, Eric, Sage, Wiley, Springer, Jstor, and Oxford reference online was done. As a result, more than 450 papers and book chapters were found and their digital copies were saved in a folder.
- The results of the initial search were reviewed and refined based on some criteria, including:
  o The originality of the research;
  o The relevance of the research to the subject and research questions of this study;
  o The impact factor of the journal which published the research;
  o The redundancy of the findings.
- Reducing the number of research studies found in the initial search to 63 peer-
reviewed papers and book chapters based on the criteria mentioned in the above.
- Classifying and archiving the final papers and book chapters based on the competencies identified and highlighted by those 63 selected resources.
- Reviewing the definitions of the entrepreneurial competencies provided by those final selected papers in order to assure the literature consistency for each of the identified competencies.

As a result of doing the stages above, a comprehensive list of entrepreneurial competencies and their definitions was prepared and given to the participants of IM sessions. This list can be seen in Table 2.1 of the current study.

3.3.4. Prototype Development

The current study sought to generate solutions which could be used for enhancing students’ entrepreneurial competencies in an e-learning platform. These solutions are theoretical and need to be fitted to the technical language of the e-learning platforms. To do so, some standard models in software development could be used to transfer and implement these theoretical solutions in an e-learning platform. One of these models is “Prototyping Development Model”. This is the approach that has been taken to transfer and build upon the knowledge and findings derived from the study. While the majority of this work is beyond the scope of the current thesis, a sampling of this e-learning platform design work is presented below.

Andriole (1992) describes the stages of the Prototyping model as follows: “Modern systems design and development first direct us to look at the requirements that the system is intended to satisfy. It then suggests that some kind of modelling of the mock system can redefine our requirements, which, in turn, will permit us to develop yet another functional description of the system, and so forth, until the model accurately represents and satisfies the requirements. Then – and only then – should we turn to software design and engineering, and these steps should, in turn, determine our hardware configuration” (p. 8).

Also, Boar (1984) suggests the following steps for software prototyping: identification of basic needs, develop a working model, demonstrate in context/solicit requirements and extensions, and revise the demonstration by comparing with the needs identified in the beginning (continue to iterate between demonstrating and revising until the functionality provided is satisfactory).
According to Andriole and Boar’s definitions, prototyping of the aimed e-learning platform can be done in five main stages, as detailed in Figure 3-2.

**Figure 3-2 The stages of software prototyping**

A brief description of each of these stages is presented below. Then, an example of this prototyping process based on one of the theoretical solutions generated by this study will be provided in the next section.

- **Writing functional specifications:**

  The end users of software must become involved in the system design process if the system is to have any chance of satisfying user needs (Andriole, 1992). Therefore, a requirements analysis has to be conducted in a structured way.

  In this study, we identified a set of different solutions for cultivating two specific entrepreneurial competencies. However, those solutions were developed in a theoretical context and they need to be transferred in an e-learning context. Therefore, using the guidelines provided by the Prototyping Development Model, each solution was used to write a ‘functional specification’ for a software-based solution. This functional specification consists of four different sections, including:

  o Educating (How can we promote and implement each theoretical solution in our e-learning platform?);

  o Motivating (How should users be encouraged to use each theoretical solution?);

  o Monitoring (How should users’ actions related to each theoretical solution be monitored?); and

  o Assessing (How should users’ actions in each theoretical solution be assessed?).
Two resources should be used to provide appropriate responses to the questions above for each solution. Firstly, the discussions of the participants of this study who generated the solutions were used to have a better understanding of what they proposed in this solution. Secondly, the capabilities and potential affordances of educational technologies for the solution could be extracted from the literature in order to complete the participants’ responses to the questions above.

- **Drawing Schematic Storyboards:**

There are a variety of ways to model a hypothetical software system concept, such as: the development of narratives, the development of flowcharts, and the methods that yield “Storyboards”. According to Andriole (1992), the screen display and storyboarding method is the most useful model that displays for users precisely what they can expect the system to do, at least hypothetically. Andriole (1992) defines Software Storyboarding as:

“A technique designed to generate consensus and closure via a tangible, interactive system concept. It permits users to participate in the requirements validation process, and it provides an audit trial of the requirements analysis process. The technique can be used to specify functional requirements, to design user-computer interface routines, and to explore non-functional system requirements. It is oriented to presenting to users (and managers) system capabilities as they have been conceived by the system analysis and design team” (P.39).

In this study, Schematic Storyboards are Schematic Workflow Depictions which show the different actions that take place in each account (student/Tutor/Administrator) in the e-learning platform for implementing the solutions which have been generated and refined in the last stage. These schematic storyboards should be carefully drawn based on the ‘functional specifications’.

- **Making interactive mock-ups (user-interfaces):**

A mock-up provides the customer with a set of helpful visual examples of inputs to and outputs from system processes without including any real data in the system (Connell and Shafer, 1989). These mock-ups could be manually prepared on paper or they could be interactively designed by some software. A variety of tools could be used for designing these interactive mock-ups, e.g. Cricket, Balsamic, Microsoft PowerPoint, Macdraw, FilmMaker, Macromind Director, Hypercard, Dan Bricklin’s Demo II Programme, C-Space, Vermont Views, Human Interface Manager, etc. In this study, Balsamic was used
because it is software which is compatible with Windows and has a good capability for providing mock-ups.

- **Conducting the Usability test of the designed mock-ups:**

Usability means that the end users of a product can quickly and easily accomplish their own tasks in the system (Dumas and Redish, 1999). Four main pillars of this process are described below:

  o the main focus of the usability is on the end users of the product (Software);
  
  o end users use product (software) to be more productive;
  
  o end users are busy people who are trying to accomplish tasks while they are not too familiar with the system;
  
  o end users judge when the software is easy to use.

Dumas and Redish (1999) provide a sequence of steps for conducting a usability test:

  o Planning and preparing for a usability test:
    
    ▪ Defining goals and concerns;
    
    ▪ Deciding who should be participants and recruiting them;
    
    ▪ Preparing test materials, measuring system, and task scenarios;
    
    ▪ Preparing the test environment and test team;
    
  o Conducting and using the results of a usability test:
    
    ▪ Caring for the test participants and conducting the test;
    
    ▪ Tabulating and analysing data;
    
    ▪ Recommending changes and communicating the results;
    
    ▪ Changing the product and the process.

In this study, we used the interactive mock-ups which have been created in the last stage as the inputs of the usability test. A questionnaire including open-ended and close-ended questions was designed to test the usability of the provided mock-ups.
- Revising the designed mock-up according to the feedback of the surveyed end-users:

The last stage of this prototyping development model is to revise the designed mock-ups according to the feedback which have been received in the last stage. The mock-ups were revised and the modified versions were produced again in Balsamic Software. At this stage, it could be contended that the software-based solution is prototyped and is ready to be coded by the software programmers.

An example of this prototyping process based on one of the theoretical solutions generated by this study (reviewing others’ stories) is provided here.

3.4. Research Ethics

As Polit et al. (2001) mentioned, research ethics refers to the research procedures quality with respect to their adherence to professional, legal, and social obligations to the research subjects. Therefore, every research involving human participants could raise some ethical issues.

Since the current study sought to explore the experience and idea of its participants, it was important to address the probable ethical issues prior to starting the research. Accordingly, the following the guidelines provided by University of Limerick Research Ethics Committee, the ethics application form is filled out and the necessary instruments such as the consent form, and the questions of the IM sessions and Focus groups were provided. Finally, the approval of the Ethics Committee has obtained prior to the study.

3.5. Reliability and Validity

Since a dominant theme of this study is in relation to experts’ perceptions and beliefs there may be a certain degree of bias, therefore Reliability and Validity of the different methods which have been used in this study must be considered. Gill and Johnson (1997) point out that the researcher needs to evaluate the internal and external validity and reliability of the research conducted.

While internal validity refers to the extent to which the research condition is controlled so that the independent variable causes an effect or change in the dependent variable (Berg and Wayne Latin, 2004), external validity refers to the degree to which the results of the
study can be generalised to a wider population and situations (Gravetter and Forzano, 2010). In the other word, the main question of the internal validity is: “Do the observed changes in the dependent variable actually relate to changes in the independent variable?” and the main question which external validity is concerned with is: “Do the results obtained from this particular sample of participants apply to all subjects in the population being studied?” (Bless et al., 2006).

The research findings must not only be valid, they must be reliable as well. Reliability refers to the extent to which another research can reach the same conclusions by following the same research processes (Kumar, 2008).

Since this study is conducted by a mixed method (both quantitative and qualitative methods) and mostly by qualitative methods, it is necessary to note that the description of reliability and validity which have ordinarily provided by non-qualitative social scientists rarely seems appropriate or relevant to the way in which qualitative research methods e.g. IM, Focus group etc. are conducted (Miller, 1986).

The supervision of the research, presentation to a broad range of panels, journals and conferences, and the objective manner of the researcher ensured the validity and reliability of this work.

3.6. Conclusion

The first part of this study employs Interactive Management (IM), as a novel research method in the area of entrepreneurship and education, to identify and rank the entrepreneurial competencies associated with university students; and moreover, to identify their interrelationships. IM provided an innovative means for enhancing the consensus between the participants, minimising the bias effect of the research facilitator in interpreting results, and identifying the cause-effect interrelationships between the ranked entrepreneurial competencies. To the best of our knowledge, this study is the first one in assessing entrepreneurial competencies’ interrelationships and using IM and ISM in the areas of entrepreneurship and education.

The second half of the study, which sought to generate the cultivating approaches of those entrepreneurial competencies, is conducted by implementing Focus Group method. The rational for implementing this method is same to the rational of using IM except the identifying interrelationships. In fact, since identifying the interrelationships between the
competencies was not required at this stage, Focus Group was more appropriate for the second half of the study.

The sequence and application of each of these methods in the different stages of the study is illustrated in Figure 3.3.

![Figure 3-3 Application of the different research methods in the different stages of the study](image)

Apparently, both methods used in this study are qualitative and based on engaging the collective intelligence of key stakeholders of an entrepreneurship education programme. The importance of implementing these qualitative methods can be better understood in the light of one of the gaps identified in the literature. As it was mentioned in Chapters 1 and 2, one of the drawbacks of the extant entrepreneurship research is undermining qualitative research methods. This was even reflected in the rate of entrepreneurship papers published in academic journals over the last decades. Therefore, it can be argued that one of the distinguishing methodological features of the current study is using qualitative research methods.

However, one of the critical points of qualitative research methods is to how make a consensus amongst the participants of the study. In the current study, this concern was responded by implementing Interactive Management (IM) as well as some techniques such as Interpretive Structural Modelling (ISM), Idea Writing, and NGT which were described in this chapter.

It can be argued that using these qualitative research methods with the effective support of the techniques above could assure the quality, reliability and deepness of the expected results of this study. This quality helps to make a more reliable bridge over the gaps...
identified in Chapters 1 and 2 of this study. In turn, addressing these gaps provide an opportunity for empowering students to effectively stimulate their entrepreneurial competencies and prepare themselves for a better future by creating their innovative jobs after graduation from university.
4. Chapter Four: A Cross Cultural Comparative Study of highly valued Entrepreneurial Competencies and their interdependencies

4.1. Introduction

What are the most important entrepreneurial competencies that need to be cultivated in university students? How are these competencies ranked and inter-related in structural models developed by different stakeholder groups? What are the similarities and differences between the models of entrepreneurial competencies generated by different groups across cultures? The current study seeks to address these questions using a collective intelligence methodology named Interactive Management (IM) that facilitates understanding of system interdependencies, specifically, by drawing upon the insights and logic of key stakeholder groups who possess knowledge of entrepreneurship and entrepreneurial competencies. Five stakeholder groups including Iranian students and entrepreneurs as well as Irish students, academics and entrepreneurs were involved in this study. As a result, five enhancement structures were drawn including the most important entrepreneurial competencies as well as their interdependencies. Finally, all of the competencies were weighted and ranked by generating an algorithm; and then, a sixth IM session was conducted to categorise the competencies identified by the previous five groups. Accordingly, two main entrepreneurial competencies entitled “Productive Thinking” and “Motivation” were identified as the most important entrepreneurial competencies which should be cultivated in students and two sets of sub-competencies were mapped to them.

4.2. The Entrepreneurial Contexts of Iran and Ireland

Since entrepreneurship plays an important role in economic growth and competitiveness, it has gradually become a major success factor for developing countries such as Iran. Fooladi and Spence (2009) argue that while much of the export activities of Iran centre on oil, Iran is trying to diversify the economy through entrepreneurship. In particular, more spin-off SMEs from the manufacturing and service sector are being encouraged by the government. According to the Iran Statistical Yearbook (2007), 76.2% of Iranian manufacturing was achieved with SMEs with 10-49 workers in 2006/7. Moreover, in the fourth and fifth 5-year socio-economic development plan of Iran (2005–2015), articles No. 48 and No. 21 highlight the need for the development of entrepreneurship programmes in
universities in order to enhance entrepreneurship amongst academics and graduates. Currently, 110 academic centres for entrepreneurship are researching and educating within Iranian universities (Mahdavi Mazdeh et al. 2012). As a result, and according to the “Global Entrepreneurship Monitor” (GEM) data, Iran was placed fourth in the world with respect to entrepreneurial education across vocational, professional, college, and university levels (Razavi et al., 2008).

Ireland, as one of the stronger emerging industrializing economies (Mac Sharry et al., 2000), experienced a significant increase in the number of SMEs during the 1990s and the Irish economy saw unprecedented growth in many sectors and the establishment of many multinational companies (Humbert et al., 2010). However, one of the main drawbacks of this growth, which continues to be a problem, is that much of the economic activity in Ireland has resulted from foreign companies operating within Ireland’s borders, as opposed to native enterprise. Foreign-owned multinational firms, mainly American, accounted for 91% of Ireland's tradable goods and exports in 2009 (The Forfás Annual Business Survey of Economic Impact, 2010). US companies spend over €13 billion in the Irish economy and contribute over 70 per cent of all corporation tax paid to the exchequer (Richardson, 2013).

Notably, even during periods of high gross domestic product growth, Ireland had the lowest rate of entrepreneurial activity of all 21 EU countries in the Global Entrepreneurial Monitor (GEM) 2000, accounting for only 1.2 per cent of GDP. Less than 1 in 100 Irish people invest in new business start-ups, the lowest amongst GEM participating European countries (Low, 2005). Also, it could be seen that while Ireland’s exports increased from €105bn in 2000 to €151bn in 2009, there was no net jobs growth in the SME sector (Hennigan, 2013). More importantly, GEM suggests that the recent economic recession has had a very severe negative impact on the Irish public's confidence and perception of business opportunities. It was reported that 46% of Irish people saw business opportunities in their local area in 2007, but this figure had fallen to 26% by 2012 (Independent.ie, 2013).

The same difficult situation could be seen in Iran due to the world-wide sanctions and recent subsidy reform plan implemented in December 2010. Compounding these struggles is mounting unemployment, soaring to a rate of 15 per cent (Berber, 2013) as factories and businesses lay off workers because they are unable to import vital goods and raw materials (Peterson, 2013). Also, inflation has been rising dramatically in Iran since 2010 and has
already approached 24% in 2012 (Berber, 2013).

Thus, one of the important issues in the current decline of economic confidence in the developing and developed countries is how confidence can be improved in the population of potential entrepreneurs. There is a huge amount of empirical evidence suggesting that one of the primary benefits of entrepreneurship education is to increase self-confidence (Gorman, et al., 1997; Oosterbeek et al., 2010; Fayolle et al., 2006). However, more research is needed to understand how different entrepreneurial competencies support one another as part of a system of strengths. The current study makes use of a system thinking methodology to advance understanding in this regard.

Notably, while entrepreneurship education is still in its infancy in Ireland, and lags behind Iran in many respects, provision is available at tertiary levels in the form of business modules and structured academic programmes (Faoite et al., 2003). Ireland is also second to Belgium in the EU for the proportion of young adults with university degrees, with six out of ten majoring in engineering, science or business studies (Low, 2005). Irish universities have had some initiatives to promote their students’ entrepreneurial competencies. For instance, the University of Limerick launched a course to encourage its graduates to look creatively at entrepreneurial opportunities (Low, 2005).

Additional information relevant for understanding entrepreneurship in both Iran and Ireland can be seen in Table 4.1.

Table 4-1 A general comparison between Iran and Ireland’s economical and entrepreneurial aspects

<table>
<thead>
<tr>
<th>Factor</th>
<th>Iran</th>
<th>Ireland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population, million</td>
<td>75.1</td>
<td>4.6</td>
</tr>
<tr>
<td>GDP (US$ billions)</td>
<td>357.2</td>
<td>204.3</td>
</tr>
<tr>
<td>Unemployment (%)</td>
<td>11.5</td>
<td>13.7</td>
</tr>
<tr>
<td>Nascent entrepreneurship rate</td>
<td>10.8</td>
<td>4.3</td>
</tr>
<tr>
<td>New business ownership rate</td>
<td>3.9</td>
<td>3.1</td>
</tr>
<tr>
<td>Early-stage entrepreneurial activity (TEA)</td>
<td>14.5</td>
<td>7.2</td>
</tr>
<tr>
<td>Established business ownership rate</td>
<td>11.2</td>
<td>8</td>
</tr>
<tr>
<td>Infrastructure (Rank – Out of 142)</td>
<td>67</td>
<td>29</td>
</tr>
<tr>
<td>Macroeconomic environment (Rank – Out of 142)</td>
<td>27</td>
<td>118</td>
</tr>
<tr>
<td>Financial market development (Rank – Out of 142)</td>
<td>123</td>
<td>115</td>
</tr>
<tr>
<td>Competency</td>
<td>Rank</td>
<td>Votes</td>
</tr>
<tr>
<td>--------------------------</td>
<td>------</td>
<td>-------</td>
</tr>
<tr>
<td>Technological readiness</td>
<td>104</td>
<td>17</td>
</tr>
<tr>
<td>Market size</td>
<td>21</td>
<td>56</td>
</tr>
<tr>
<td>Innovation</td>
<td>70</td>
<td>23</td>
</tr>
</tbody>
</table>


4.3. Findings

This section presents findings in relation to the core entrepreneurial competences identified by groups in the current study and their views in relation to inter-dependencies between these entrepreneurial competencies. In presenting our findings we begin by presenting individual group findings from entrepreneurs, students and academics, specifically, by focusing on the entrepreneurial competency enhancement structures generated by each group. We then present findings in relation to common categories of competencies identified by the sample as a whole, before examining commonalities and differences in category influence scores across groups.

4.3.1. Analysis of five enhancement structures across the five groups

As the result of idea generating, clarification, and voting, participants in the IM sessions identified five sets of the entrepreneurial competencies to be included in the structuring phase of the IM sessions. Figures 4.1 to 4.5 display the competencies selected by each group, their interrelationships and the number of votes each competency received. Using their consensus set of the most important entrepreneurial competencies, each group worked to build enhancement structures describing relations between competencies using Interpretive Structural Modelling (ISM). These structures can be seen in Figures 4.1-5. In each case, the structures are to be read from left to right and the arrows indicate 'significantly enhance'. Values in parenthesis reflect the number of votes the competency received. Items listed together in one box are reciprocally interrelated, with the significant enhancement relation working in both directions. Below we describe each structure in turn.
4.3.1.1. Irish Entrepreneurs:

Irish Entrepreneurs’ view Positivity and Competitiveness as critical drivers of other competencies in the system (see Figure 4.1). Determination is seen as both a highly valued characteristic (with 7 votes) and a key driver of many other skills and dispositions. Both Determination and a Questioning attitude significantly enhance a set of competencies that are reciprocally interrelated: Communication skills, Ingenuity, Leadership and management, and the Ability to manage your emotions. The discussion around Communication and Ingenuity, for example, focused on how both of these factors represent a skill structure that facilities leadership and management ability and overall levels of adaptability. Adaptability and Tolerance for ambiguity are placed in a cycle at stage 4 of the enhancement structure and thus, again, are viewed as interdependent competencies by our Irish entrepreneurs. The ability to make a decision is a characteristic of the individual that is driven by a Positive attitude, Determination and Inquisitiveness, and the interdependent cluster of Communication, Emotion regulation, Ingenuity, and Leadership skills. The outcome of this enhancement structure is the ability to take an idea and add value. It means that “Add value” competency is driven by a complex of other competencies mentioned by this enhancement structure and it cannot be achieved without paying attention to its drivers.

![Figure 4-1 Irish Entrepreneurs’ entrepreneurial competencies Enhancement Structure](image-url)
4.3.1.2. Iranian entrepreneurs:

Iranian entrepreneurs believe Self-Confidence is one of the critical drivers of all other competencies (see Figure 4.2). Persistence, Opportunity Identification as well as a set of 4 different competencies including Imagination, Emotional Quotient (EQ), Need for achievement, and Creativity are located in the second level of their model and influence other competencies and dispositions. Goal-making which is significantly enhanced by Opportunity Identification and the interdependent cluster including Imagination, Emotional Quotient (EQ), Need for achievement, and Creativity is located at level 3 in the structure and, in turn, affects Communication and Task Motivation at level 4. Communication and Task motivation in turn enhance Networking and Leadership and Management ability. Further comparisons and discussions about these findings are provided in the next sections of the current chapter.

Figure 4-2 Iranian Entrepreneurs’ entrepreneurial competencies Enhancement Structure
4.3.1.3. Irish students:

Unlike the Iranian Entrepreneurs’, Irish students regard networking ability as the most important driver of all other competencies, rather than being driven by other more fundamental competencies (see Figure 4.3). A set of four competencies including Risk taking, Stress and failure coping, Willing to take on challenges, and Change management are reciprocally interrelated and significantly enhanced by Networking ability. In turn, these four competencies enhance Independence and Communication at level 3. Finally, four separate competencies at level 3 significantly impact on Intuitive ability (6th sense), Information seeking ability and Strategic thinking at level 4, specifically, Communication, Independence, Seeing the market from a different angle and Opportunity identification.

Figure 4-3 Irish students’ entrepreneurial competencies Enhancement Structure
4.3.1.4. Iranian students:

Iranian students believe Tolerance for ambiguity is one of the critical drivers of all other competencies. Adaptability and flexibility, Risk-taking as well as a cluster of 4 interdependent competencies including Persistence, Negotiation, Initiative and Opportunity identification are located at level 2 in the structure (see figure 4.4). Creativity is significantly enhanced by all competencies at level 2, whereas the level 3 cluster of Need for achievement and Proactivity are enhanced by the cluster of Persistence, Negotiation, Initiative and Opportunity identification. Information seeking ability is seen as a level 4 competency in the structure. Interestingly, persistence is placed at level two in both Iranian entrepreneurs and students’ enhancement structures.

Figure 4-4 Iranian students’ entrepreneurial competencies Enhancement Structure
4.3.1.5. Irish academics:

Figure 4.5 represents the thinking of Irish academics. They believe that Belief in the effect of personal efforts on outcomes and Commercial Understanding are the two most fundamental competencies which affect all other competencies either directly or indirectly. Both of these competencies directly enhance Tolerance for ambiguity at level 2 in the enhancement structure, as well as the cluster of interdependent competencies at level 4. Persistence, Adaptability and flexibility as well as Proactivity and hardworking are three competencies at level 3 that are enhanced by Tolerance for ambiguity and in turn enhance a set of 5 competencies at level 4 including: Financial and Cash Management, Opportunity Identification, Enthusiasm, Creativity and Innovation, and Deal Making and Negotiation.

![Figure 4-5 Irish academics’ entrepreneurial competencies Enhancement Structure](image-url)
4.3.2. Scoring and Categorising selected competencies

Based on the results of the five groups combined a total of 37 entrepreneurial competencies were selected. Using ISM software and its outputs, an algorithm was generated for scoring and ranking competencies across the full sample of participants. This algorithm used the following formula:

\[
\text{The final Score (weight) of each Competency} = \text{Commonality} + \text{Votes} + \text{Level (Reversed)} + \text{Succedent interrelations}
\]

“Commonality” refers to the number of times each competency appears in the different Enhancement Structures. “Votes” refers to the total number of votes assigned to each competency by the groups. “Level” represents the location of each competency in each enhancement structure. Its score is reversed as competencies at level 1 have the highest influence in the enhancement structure, followed by competencies at level 2, 3, and so on. For an enhancement structure with 5 levels, those competencies located at level 1 receive a score of 5, competencies at level 2 receive a score of 4, etc. “Succedent interrelations” indicates the number of competencies that are influenced by a competency within the enhancement structure. Table 4.2 provides a definition for each element in the formula, shows scores for each of the 37 identified competencies, and ranks competencies according to their total score.

Table 4-2 Rank order list of the most important Entrepreneurial Competencies from across five IM sessions

<table>
<thead>
<tr>
<th>Rank</th>
<th>Competency</th>
<th>Commonality</th>
<th>Votes</th>
<th>Level (Reversed)</th>
<th>Succedent interrelations</th>
<th>Total Net</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Creativity, Innovation and ingenuity</td>
<td>4</td>
<td>4+6+3+2</td>
<td>1+3+4+2</td>
<td>4+7+8+1</td>
<td>49</td>
</tr>
<tr>
<td>2</td>
<td>Opportunity identification, evaluation and grasping</td>
<td>4</td>
<td>3+4+3+3</td>
<td>1+4+2+3</td>
<td>4+5+3+7</td>
<td>46</td>
</tr>
<tr>
<td>3</td>
<td>Tolerance for ambiguity and uncertainty</td>
<td>3</td>
<td>4+2+3</td>
<td>3+2+4</td>
<td>8+2+10</td>
<td>41</td>
</tr>
<tr>
<td>4</td>
<td>Persistence</td>
<td>3</td>
<td>3+2+4</td>
<td>2+4+3</td>
<td>7+4+7</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>Proactivity and Hardworking</td>
<td>Need for achievement</td>
<td>Communication skills</td>
<td>Adaptability and Flexibility</td>
<td>Risk taking</td>
<td>Networking</td>
</tr>
<tr>
<td>---</td>
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<td>-----------------------------</td>
<td>-------------</td>
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</tr>
<tr>
<td>5</td>
<td>3</td>
<td>3+3+3</td>
<td>2+3+2</td>
<td>7+11+2</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>3</td>
<td>3+2+2</td>
<td>5+4+2</td>
<td>3+8+2</td>
<td>34</td>
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<td>7</td>
<td>3</td>
<td>4+4+2</td>
<td>3+2+2</td>
<td>7+3+3</td>
<td>33</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>3</td>
<td>3+2+2</td>
<td>2+2+3</td>
<td>2+7+2</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>2</td>
<td>4+3</td>
<td>3+3</td>
<td>9+2</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>2</td>
<td>2+4</td>
<td>1+4</td>
<td>1+11</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>2</td>
<td>4+3</td>
<td>1+3</td>
<td>4+7</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>1</td>
<td>7</td>
<td>4</td>
<td>8</td>
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<td>19</td>
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<tr>
<td>14</td>
<td>2</td>
<td>2+3</td>
<td>3+1</td>
<td>7+1</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>1</td>
<td>2</td>
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<td>10</td>
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<td>4</td>
<td>4</td>
<td>8</td>
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<tr>
<td>18</td>
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<td>19</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>9</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>9</td>
<td>17</td>
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<td>5</td>
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<tr>
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<td>4</td>
<td>3</td>
<td>4</td>
<td>12</td>
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<tr>
<td>26</td>
<td>1</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>2</td>
<td>2+2</td>
<td>1+1</td>
<td>2+0</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>
Four competencies including Creativity and Innovation, Opportunity identification, evaluation and grasping, Communication skills, and Proactivity and Hardworking obtained scores greater than 30 and emerged as some of the most influential competencies across the five groups. Toward the bottom of Table 4.2 are competencies with lower scores ranging from 4 to 9, including Enthusiasm, Talent Management, Manage your emotions, Task motivation, Ability to make a decision, Intuitive ability (6th sense), Information seeking ability, and Add Value.

**Categorising Competencies**

Looking more closely at Table 4.2, it is possible neither for this study nor for other studies to focus on such a wide variety of competencies and design an educational programme for cultivating all of them. Therefore, it is necessary to condense the number of these competencies. Moreover, it is not rational to select a few of these competencies from the top of the ordered list of competencies in Table 4.2 and leave the remaining ones due to the overlap existing between those competencies. Hence, the focus of our sixth IM session was on categorising the full set of entrepreneurial competencies generated by our five expert groups. A total of 37 competencies were included in the set. The same question was asked of each pair of competencies in turn: Does competency A belong in the same category as competency B? After a series of over 100 decisions, 7 different categories were generated and labelled as follows: Productive thinking, Motivation, Interpersonal skills, Leadership, Positivity, Domain knowledge, and Emotional objectivity. All 37 competencies were distributed amongst these categories and, consequently, an influence
scores for each category was calculated by summing the scores of its component competencies using the data available (see Table 4.3).

Table 4-3 The final categorisation of the cumulative list of the most important entrepreneurial competencies

<table>
<thead>
<tr>
<th>Category Number</th>
<th>Category Name</th>
<th>Category Components</th>
<th>Component total score</th>
<th>Category total score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Productive thinking</td>
<td>Creativity, Innovation and ingenuity</td>
<td>49</td>
<td>297</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Opportunity identification, evaluation and grasping</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tolerance for ambiguity and uncertainty</td>
<td>41</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Adaptability and Flexibility</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Risk taking</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Questioning everything</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stress and failure coping</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Willing to take on challenges</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Imagination</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Initiative</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>See the market from a different angle</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Information seeking ability</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Intuitive ability (6th sense)</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Add value</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Motivation</td>
<td>Persistence</td>
<td>39</td>
<td>176</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proactivity and Hardworking</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Need for achievement</td>
<td>34</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Determination</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Belief in the effect of personal efforts on outcomes</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Task motivation</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Competitiveness</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Independence</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Interpersonal</td>
<td>Communication skills</td>
<td>33</td>
<td>99</td>
</tr>
</tbody>
</table>
From Table 4.3 the highest ranked competency category labelled Productive Thinking includes 14 competencies with a total score of 297; Motivation, the second-highest ranking competency category includes 8 components and has a total category score of 176. Interpersonal skills and Leadership also emerged as strong categories, with 99 and 65 votes, respectively.

4.3.3. Commonalities and differences across groups

A number of commonalities and differences in entrepreneurial competencies were identified by Iranian and Irish expert groups. While some competencies were selected by just one group, most were selected by more than one group. This can be seen in the commonality score in Table 4.2.

To further examine similarities and differences in how groups judged the relative influence of competencies, we focused on the enhancement structures and computed influence scores for the top four competency categories – productive thinking, motivation, leadership, and interpersonal skills -- for each group, separately. These analyses focused on both the total influence of competency categories within the enhancement by summing the structure scores for all elements in the category using the formula $Sum (Level score + \ldots)$.
Succeedent score), and also their average influence within the enhancement system, that is, correcting for the number of competencies in each category using the formula Sum (Level score + Succeedent score)/number of competencies in the category. The results of this analysis can be found in Figures 4.6 and 4.7, and includes, for the average influence figure, information in relation to the standard deviation of category influence scores and the number of competencies included in the calculation of these scores for each group. While the total influence scores provide an indication of the overall influence of competency categories in the system of enhancement relations, and variations across groups in the rank order of these influence patterns, the average influence scores provide an indication of the relative influence of each type of competency across groups, controlling for variation across groups in number of competencies in each category.

![Figure 4-6 Total influence scores for four categories of entrepreneurial competencies in the full sample and across five groups](image)

Figure 4-6 Total influence scores for four categories of entrepreneurial competencies in the full sample and across five groups
Analysis of the total influence scores for the full sample revealed a similar rank order as presented in Table 4.3. Specifically, by excluding information in relation to votes and commonalities across groups and focusing exclusively on the influence of competencies within the system of enhancement relations described by participants, it can be seen that productive thinking has the higher total influence score, with motivation, interpersonal skills, and leadership ranked as the second, third, and fourth most influential categories, respectively. While Irish entrepreneurs and Iranian students showed a rank order of competency categories similar to the group as a whole (excluding leadership, which was absent from the Iranian student influence structure and had a higher total influence score than interpersonal skills in the Irish entrepreneur influence structure) other groups showed different rank orders. For example, the total influence score for motivation was slightly higher than productive thinking for Iranian entrepreneurs and Irish academics. Conversely, Irish students’ interpersonal skills influence score was higher than their motivation influence score. Interestingly, controlling for the number of competencies in each category, an analysis of average influence scores in the full sample revealed that interpersonal skills had the highest average influence score, with motivation, productive thinking and leadership ranked second, third, and fourth, respectively. Although fewer interpersonal skills were selected for structuring, thus reducing their total influence, their average influence was higher than other competencies in the Irish and Iranian student.
groups and equally influential as motivation in the Irish entrepreneurs group. Productive thinking competencies did emerge as the most influential on average amongst the Iranian entrepreneurs, whereas motivation had the highest average influence amongst Irish academics.

4.4. Discussion

Over the last decades researchers have sought to identify and understand the most important entrepreneurial competencies that support entrepreneurial behaviour in different contexts. The current study used a collective intelligence methodology to identify, rank, structure, categorise, and examine the relative influence of entrepreneurial competencies that entrepreneurs, students, and academics believe need to be cultivated amongst students in a third level educational context. Set in Ireland and Iran, the study revealed a number of interesting findings that advance our understanding of entrepreneurial competencies.

Focusing first on key categories of entrepreneurial competencies and the voting, commonality, and influence scores across these categories, a consensus that emerged across groups in the current study is that Productive Thinking, Motivation, Interpersonal Skills, and Leadership are four of the most influential, high-level entrepreneurial competencies that need to be cultivated in students. These results are consistent with and build upon the findings of previous research. Each of these four competencies is discussed further below.

4.4.1. Productive Thinking

In our study, creativity, innovation and ingenuity were identified as the highest ranked component of Productive Thinking. The importance and central position of creativity and innovation for entrepreneurial endeavour has been highlighted in previous research by Schumpeter (1934), McClelland (1961), Martin (1982), and Carland et al. (2007). The other two top components of productive thinking, opportunity identification and tolerance for ambiguity and uncertainty, were also seen as highly important competencies by academics, students and entrepreneurs. Notably, opportunity identification is often highlighted in the entrepreneurial competency literature. For example, Byrne (2010) argues that a firm’s entrepreneurial success is positively associated with its efforts to put key individuals in a position to detect opportunities, train them to be able to do so, and reward them for doing so. Also, Weaver et al. (2009) point out that successful entrepreneurs are capable of recognizing and capitalizing on opportunities. In the current study, discourse analysis suggested that Opportunity identification and Add
value were conceptually related competencies, and looking more closely at the enhancement structures, a number of similarities were observed in the antecedents and succeedents of these conceptually related competencies. Notably, Opportunity identification and Add value were found to be driven by a similar set of competencies including Tolerance for ambiguity, Adaptability and flexibility. Furthermore, another set of conceptually overlapping competencies -- Tolerance for ambiguity, Tolerance for uncertainty, and Risk-taking -- were found to be similarly placed in the enhancement structures and influenced a number of common competencies, including Adaptability and Flexibility, Persistence, Creativity and Innovation. These findings highlight a number of important interdependencies between sub-competencies of productive thinking.

Tolerance for ambiguity, the third most highly ranked component of productive thinking, refers to the extent to which one is comfortable and able to function in situations where there is a high degree of uncertainty and ambiguity as to the nature of the rules governing success or the nature of the problem one is faced with. There is some evidence suggesting that entrepreneurs have a higher tolerance for ambiguity than either senior executives or general managers (Pearson and Chatterjee, 2001; Sapuan et al., 2009). Furthermore, Milton (1989) notes that entrepreneurs not only operate in an uncertain environment, they eagerly undertake the unknown and willingly seek out and manage uncertainty. In our study, tolerance for ambiguity was selected as important by three out of the five expert groups and was mostly placed at level 1 and 2 in the enhancement structures, which suggests that independent groups perceived it to be a critical driver of other entrepreneurial competencies. Tolerance for ambiguity was argued to enhance many other entrepreneurial competencies including Adaptability, Negotiation, Opportunity identification, Persistence, Creativity and Need for achievement. Our study participants also highlighted Competitiveness, Belief in the effect of personal efforts on outcomes, and Commercial understanding as three critical drivers of Tolerance for ambiguity.

Recognising the top three components of productive thinking identified in the current study may have implications for how entrepreneurial competencies are cultivated among university students. Traditional teaching approaches for entrepreneurship focused for example on developing a business plan may be inadequate in nurturing and developing entrepreneurial competencies. New approaches such as the lean start-up (LSU) approach may be more aligned to developing the top three components competencies of productive thinking. The LSU approach is tailored to the needs and demands of entrepreneurship, allows for active validation with customers, iterative experimentation, testing of
assumptions and it can be undertaken quickly, thus accelerating learning gains (Blank, 2013). Such a collective consensus amongst academics, students and entrepreneurs in both countries suggests the need for entrepreneurship teachers to experiment with new teaching approaches to develop these specific and important productive thinking entrepreneurial competencies (see Gately and Cunningham, 2014).

4.4.2. Motivation Competencies
In relation to motivation, a broad literature highlights the importance of both push and pull factors as motivators of entrepreneurs (Moore and Buttner, 1997; Duchêneaut and Orhan, 2000). While push factors are factors that are likely to drive people into entrepreneurship (e.g. the need for greater income, or dissatisfaction with their current employment), pull factors are factors that encourage people to become entrepreneurs, such as the desire for autonomy and independence. It is generally argued that a combination of both push and pull factors capture most of the fundamental entrepreneurial motivations (Orhan and Scott, 2001; Deakins and Whittam, 2000). Notably, all motivational competencies identified in this study belong to the pull category. Since the context of deliberation for working groups in this study focused on students’ intra-personal competencies it is not surprising that all of the motivational competencies identified are internal pull motivational factors. At the same time, a focus on these pull factors is important for entrepreneurship educators and policy makers. For example, it has been argued that it is important to promote the acquisition of “enterprise” skills and, more specifically, support venture start-up activity through human, physical and working capital provision (Dawson and Henley, 2012). Moreover, with persistence collectively ranked as the number one competence amongst all motivation competencies, a focus on persistence has implications for first time entrepreneurs and the training of persistence in entrepreneurship education programmes. Consequently, the educational environment and context of training and development created in a university setting through formal and informal supports may be essential in reinforcing entrepreneurial intent and persistence in the pursuit of entrepreneurial goals (Lee and Wong, 2004). Drawing upon the logic of participants in the current study, it may be that building confidence, promoting stress and failure coping, and sustaining tolerance for ambiguity in the face of dynamic and changing task demands may need to be critically integrated into the curriculum in order to foster persistence as a core motivational competency.
4.4.3. Interpersonal skills

Interpersonal skills identified by this study include Communication skills, Networking, Deal making and negotiation, and Emotional Intelligence. As noted above, although fewer interpersonal skills were selected for structuring across groups, an analyses revealed that interpersonal skills had the highest average influence score in the sample as whole, with the average influence of interpersonal skills being higher than other competencies in the Irish and Iranian student groups and equally influential as motivation amongst Irish entrepreneurs. Researchers have long recognised interpersonal skills as critical to job performance, career advancement, and organizational success. For example, many prior studies have examined the relationship between communication skills and job performance (Roebuck et al., 1995). Izquierdo and Deschoolmeester (2010) and Hynes et al. (2009) argue that communication is important for entrepreneurship as entrepreneurs have to be able to persuade people and communicate with various stakeholders including customers, clients, suppliers, competitors, and service providers. Furthermore, Baum et al. (2007) found that the ability to communication a vision affected subsequent venture growth amongst entrepreneurs. Networking has been identified as an important entrepreneurial competency by Boojihawon et al (2007) and Kumara and Sahasranam (2009). Moreover, competencies such as networking, deal making and emotional intelligence are aligned to the development of relational capital which emphasizes the development of productive business networks (Pena, 2002). Hormiga, Batista-Canino and Sanchez-Medina (2011) describe relational capital as the value generated by entrepreneurs via their relations with suppliers, customers, investors but equally with internal stakeholders in their organisation and friends and family. Research in this area highlights the value added through relational capital, for example, in building reputation with clients, suppliers and other stakeholders. Further, the emotional support and active participation by family, friends and the entrepreneur’s personal network are also linked to new venture success (Pena, 2002; Hormiga, Batista-Canino and Sanchez-Medina, 2011). A focus on cooperative learning methods (Johnson and Johnson, 1989, 1999) and experiential learning (Kolb, 1984) may be critical for building interpersonal entrepreneurial skills in an educational context. More generally, the network of proactive peers, engaged academics, and a wider business community involved in entrepreneurship training programmes could provide a crucial starting point for the further development of professional and personal networks that sustain entrepreneurial intentions and behaviours after students complete their university training.
4.4.4. Managerial (Leadership) Competencies
Notably, a number of previous studies conducted in the 1990s and early 2000s highlighted managerial and interpersonal skills as the most important entrepreneurial competencies (See for example, Man et al., 2002; Gasse, 1997). The emphasis on managerial competency has a long tradition in the literature on entrepreneurship and was highlighted in one of the earliest definitions of an entrepreneur: Cantillion (circa, 1700) described an entrepreneur as a rational decision maker who assumed the risk and provided management for the firm (See Kilby, 1971). Later, however, Schumpeter linked entrepreneurship with “Strategic Decision making” and many studies were conducted to demonstrate the usefulness of a distinction between managers and entrepreneurs (Hartman, 1959). It may be that historical trends in the literature reflect a tradition of focusing on different competencies at different times, possibly reflecting a change in perspective over time as researchers continue to conduct research in the area and as the social and cultural conditions of entrepreneurship change. In the current study, participants highlighted the importance of leadership and management ability, and also change management, goal making, talent management, and the ability to make a decision. The components of leadership and management skill identified in the current study align with Schumpeter’s focus on strategic decision making and highlight the importance of these skills in entrepreneurship education programmes. Amongst different educational paradigms, experiential and cooperative learning frameworks are deemed to be more appropriate for entrepreneurship education programmes (See Cope and Watts, 2000; Dhliwayo, 2008; Soriano et al., 2013).

4.4.5. Interrelationships between Sub-Competences and Similarities and Differences across Groups
Analysis of influence scores in the sample as a whole and across groups in the current study highlight a number of similarities and differences in the perceived interrelationships between sub-competences identified by participants in the current study. In the sample as a whole, the critical mass and total influence scores for categories of competencies suggest that a focus on productive thinking competencies may serve to significantly enhance specific motivation, interpersonal, and leadership competencies. At the same time, different groups showed different patterns. For example, while Irish entrepreneurs and Iranian students showed a total influence category score rank order that was similar to the sample as a whole, Iranian entrepreneurs and Irish academics had higher total influence score for motivation when compared with productive thinking. Furthermore, Irish
students’ interpersonal skills influence score was higher than their motivation influence score, suggesting that in the student group as a whole motivation was not considered as influential as other competency categories. It may be that an understanding of the critical importance of motivation develops later in life as entrepreneurs and academics learn from experience and by observing factors at play in the success and failure of entrepreneurial ventures. Focusing exclusively on average influence scores, although fewer interpersonal skills were highlighted, Irish and Iranian student groups judged interpersonal skills to be highly influential and fundamental drivers of other competencies. Conversely, productive thinking competencies emerged as the most influential competency category on average amongst the Iranian entrepreneurs, whereas motivation was the most influential on average amongst Irish academics.

A focus on specific competencies also revealed some interesting differences across groups. Some competencies such as Task motivation, Need for achievement, Imagination, and Talent management were only identified by Iranian entrepreneurs and were not identified by any of the Irish groups. Interestingly, with regard to Task motivation and Need for achievement, Pillis (1998) found no relationship between level of achievement motivation and entrepreneurial intentions in an Irish sample, suggesting that level of achievement motivation is not a critical marker of entrepreneurial activity in an Irish context. Also, while Irish people has a low score in uncertainty avoidance which encourages them to embrace creativity (Hofstede, 2014) and while a broad literature supports that Irish people are innovative in areas such as literature, drama, visual arts (Bayliss, 2004), and traditional dance and music (Cinneida and Henry, 2007), Pillis (1998) suggests that, in the Irish context “it may be difficult to conceive of venturing outside expected norms of behaviour to become an entrepreneur” (p.11). Finally, in relation to Talent Management, which refers to a deliberate effort by an organization to ensure leadership continuity in key positions and encourage individual advancement (Rothwell, 1994), one possible explanation for why Iranian entrepreneurs, but no Irish group, highlighted this competency as important is that the macroeconomic environment in Iran may support Talent Management to a greater extent than is the case in Ireland. According to the Global Competitiveness Report, while the world-wide rank of Iran’s macroeconomic environment is 27 out of 142, Ireland’s macroeconomic environment ranking is last out of all 142 countries in the sample (Schwab, 2011). Differences in entrepreneurship education across countries could also explain the focus on Talent Management in Iran, as large scale access to formal entrepreneurship courses through
universities and colleges is more common in Iran than in Ireland (Zali and Razavi, 2012). Moreover, compare to Irish individualistic culture, Iran is a collectivistic society that hiring and promotion decisions take account of the employee’s in-group, and management is the management of groups (Hofstede, 2014). Therefore, it can be argued that Talent management has a more importance in such collectivist society. In this study, Talent management was located at level three of the Iranian entrepreneurs’ enhancement structure and is seen to have a significant positive effect on Communication, Task motivation, Networking and Leadership. Interestingly, there is no driver for Talent management in this structure, which suggests that it is a fundamental feature of the environment that may be an important product of infrastructure design.

In contrast, some competencies were identified by Irish experts only, including Competitiveness, Independence and Financial and cash management. Competitiveness was defined by Irish experts as the ability of a person, firm or country to properly supply and sell goods and services in a competitive market. It was located at level 1 in the structure and was seen to significantly enhance Adaptability and flexibility, Tolerance for ambiguity, and Adding value. In relation to Independence, there are cultural differences between Iran and Ireland. For example, traditional Iranian culture values dependency and interdependency among youth and adults (Gable, 1959), and the Iranian National Curriculum Policy (Iranian Ministry of Education, 2012) does not seek to explicitly enhance students’ independence as such; in contrast, it focuses on highlighting the role of students’ family as a key factor in students’ educational success. This is consistent with Hofstede (2014) who pointed out that Iran’s score in individualism is relatively low. This is manifest in a close long-term commitment to the member ‘group’, be that a family, extended family, or extended relationships. Conversely, the stated objectives of Irish universities often includes fostering students’ independent thinking (Kenny et al., 2009) and the overall objective of Irish first level curriculum includes: “Fostering children’s natural curiosity to develop independent enquiry and creative action” (Irish Department of Education and Science, 2004). From Hofstede’s perspective, Ireland is an individualistic culture that, in the business world, encourages employees to be self-reliant and display initiative. Finally, the emphasis on Financial and cash management amongst Irish groups may be related to Ireland’s recent economic recession and the government’s bailout of the banking sector. It has to be noted that while the inflation rate in Iran is high due to the imposed global sanctions against Iranian companies, Iran’s economy has not yet been pushed into the recession (O’Sullivan, 2010).
On the other hand, there are many commonalities between Iranian and Irish experts’ ideas regarding the most important entrepreneurial competencies. Competencies which were generated by both Iranian and Irish experts include the following: Leadership and Management, Belief in the effect of personal efforts on outcomes, Determination, Need for achievement, Communication skills, Deal making and negotiation, Creativity and Innovation, Opportunity identification, evaluation and grasping, Persistence, Willing to take on challenges, Self-confidence, and Positive attitude. It may be that these competencies are necessary for entrepreneurs working in a variety of different contexts and are less determined by social and cultural environments. However, further research is needed to clarify this issue. Interestingly, there was some consensus in the level placement of these common competencies across different enhancement structures. For example, Communication was placed at levels 3 and 4 in three structures (i.e., Irish entrepreneurs, Irish students, and Iranian entrepreneurs) and it was driven by common motivational competencies -- Determination and Persistence -- in two of these structures. As noted above, persistence was ranked as the most influential motivational competency in the sample as a whole competencies, and there was a strong consensus across Iranian students and Irish academics, who suggested Persistence drives Proactivity, Opportunity identification, Creativity and Deal-making and Negotiation. Moreover, Tolerance for ambiguity was identified as a common driver of Persistence in both structures.

Tolerance for ambiguity and uncertainty provides another instance of consensus between Irish entrepreneurs and academics as well as Iranian students. All three groups argued that it significantly impacts Adaptability and flexibility. Furthermore, Irish entrepreneurs and academics saw two motivational factors including Competitiveness and Belief in the effect of personal efforts on outcomes as critical drivers of Tolerance for ambiguity.

Therefore, while many of our findings in relation to the importance of key entrepreneurial competencies are consistent with previous cross-national results, the current study moves beyond more static models of the connection between culture and entrepreneurship and suggests that dividing countries into “developing” and “developed” categories may cloud our understanding of the subtle similarities and differences across cultures. A similar argument has been made by Oyserman et al. (2009), who found that the gross distinction between individualist and collectivist mind-sets do not always hold true under close scrutiny. Further discussions about this issue are provided in Chapter seven.
4.5. Conclusion

To sum up, this study suggests a number of important high level entrepreneurial competencies, including Productive Thinking, Motivation, Interpersonal Skills, and Managerial and Leadership competencies which should be cultivated in university students who intend to become entrepreneurs. Interestingly, all of these competencies can be classified as ‘know-how’ competencies which are most effective for enhancing students’ entrepreneurial capability. However, these soft competencies are very difficult to be trained. Therefore, there is a need to design and implement efficient non-traditional cultivating approaches to stimulate these competencies in students. This need is considered and discussed in the next chapter of this study.

Furthermore, paying attention to the unranked competencies is also important in order to have a better understanding about why some competencies are selected and some of them not. For instance, while Positivity was mentioned as an important entrepreneurial competency by both Irish and Iranian expert groups, it was not selected in the final list of entrepreneurial competencies. Looking more closely at Table 4.3, it can be seen that fewer number of competencies are associated with Positivity in comparison with other selected competencies such as Productive Thinking, Motivation, Interpersonal skills, and Leadership. For instance, while Productive Thinking includes 14 and Motivation includes 8 sub-competencies, only 3 sub-competencies are categorised and labelled as Positivity. Therefore, it can be concluded that the number and variety of sub-competencies associated with a competency is an important factor in weighing the importance of that competency.

Further to identifying the most important entrepreneurial competencies, the interdependencies amongst them are also explored and the importance of this work in facilitating a deeper understanding of competency systems and how a curriculum could be designed to cover these competencies are discussed. Our study highlights the value of the IM methodology in generating consensus amongst experts working together to model interdependencies between entrepreneurial competencies and the method could be similarly applied to understanding how objectives or goals of entrepreneurship training programmes might work to enhance one another as part of a system of training goals. The IM methodology also provides a rigorous structure to facilitate a concatenation process whereby other researchers can systematically acquire further data to work towards a theoretical saturation that confirms (or denies) the centrality of Productive Thinking, Motivation, Interpersonal Skills, and Managerial and Leadership competencies in the
development of entrepreneurial competencies. The study also highlights the value of considering the cultural, social and economic contexts of entrepreneurship, which may have implications for understanding which competencies are valued in different contexts and what implications this might have for the design of training programmes.

It is suggested that the methodology employed in this study can facilitate the determination of the ‘scope’ and ‘sequence’ of entrepreneurship curricula, which represent two of the most significant challenges in designing curricula to promote entrepreneurial competencies (Nekka & Fayolle, 2010). These challenges address identifying a set of entrepreneurial competencies as valid targets for training (scope) and the optimal design of a logical, orderly, cumulative framework for developing the targeted competencies (sequence). This should allow for what Bruner refers to as the ‘courteous translation of knowledge’ (1960, cited in Lawton, 2011) that is reflective of the epistemology of the domain (entrepreneurship) and sequenced in a developmental process (derived from participant input) to support conceptual growth and the ability to demonstrate competencies. Determining the scope and sequence of preferred entrepreneurial competencies to be educated in universities has also the potential to enhance the coherence of related educational programmes in universities (Rezaei-zadeh et al., 2014).

Further research is needed to understand how social and cultural factors influence the development of entrepreneurial competencies and behaviours in different contexts. The current study is exploratory and further research is needed to confirm the models of entrepreneurial competency generated by groups in this study. While the study highlights the value of Interactive Management as a collective intelligence and systems thinking tool that may help us to further understand the cultural, social and economic contexts of entrepreneurship, further research is needed to examine the implications of this form of systems thinking on the design of entrepreneurship training programmes.
5. Chapter Five: Identifying the cultivating approaches of the selected entrepreneurial competencies

5.1. Introduction:

Chapter 4 identified and reported four important high level entrepreneurial competencies, including Productive Thinking, Motivation, Interpersonal Skills, and Managerial and Leadership competencies which should be developed in university students who intend to become entrepreneurs. The empirical work presented in this chapter focuses on identifying cultivating approaches, or solutions, for the top two competencies (Productive Thinking and Motivation), which received the vast majority of votes. It is important to point out in the beginning that two terms ‘cultivating approach’ and ‘solution’ are interchangeably used throughout in an effort to enrich the analysis of focus group content. However, when the term ‘solution’ is used it does not represent a simplistic, positivistic view of ‘solutions’. It does not mean that by implementing a specific ‘solution’ the targeted competency would be definitely cultivated. However, we tentatively argue that implementing these solutions together and with paying attention to other moderators and affordances in an entrepreneurial training context may influence the development of entrepreneurial competencies.

Developing curriculum options to promote the cultivation of key entrepreneurial competencies is a significant challenge. As part of the exploratory collective intelligence design methodology adopted in the current study, a series of six focus groups were conducted and included Irish and Iranian Academics, Entrepreneurs and Students with knowledge of entrepreneurship. These focus groups were organised in a structured way and each of them followed the nine steps outlined below:

1- Participants were provided with a brief description of the study, its objectives, previous findings and future plans;

2- A list of 14 Productive Thinking and 8 Motivation sub-competencies and relevant definitions generated in the previous stage of this study were presented to participants (See Appendix 1 & Chapter 4);

3- Participants were presented with sample ‘solutions’ for cultivating specific Productive Thinking and Motivation sub-competencies and were asked to review the sample solutions provided (see Appendix 2). Sample solutions were derived
from the literature and were described to participants. These examples served to help the participants to become familiar with the overall framework and focus on Productive Thinking and Motivation and what was expected of them when it came to generating their own unique solutions. Furthermore, since their understanding of the meaning of specific competencies is critical in terms of the solutions they generate, these sample solutions were designed to help focus group participants develop a better understanding of the competencies.

4- The following trigger question was then presented to the focus group: *How exactly might this type of training serve in a virtual learning environment to enhance ... in students (Based on your experiences)*? This question was separately and sequentially asked for the sub-competencies of Productive Thinking and Motivation. As part of the context for addressing this question, participants were asked to think beyond the sample solution provided and generate their own solutions based on their experience. Participants were informed that their ‘experience’ as primary stakeholders of the intended curriculum was critical as a valuable source of knowledge for designers thinking about e-learning solutions.

5- To support participants in responding to the trigger question a set of criteria were provided which had to be taken into account by the participants when generating solutions, each of which was described and elaborated upon by the focus group facilitator. Those criteria were:

- Based on your experience
- Applicable for different situations and courses
- Be precise and practical (Avoid general ideas)
- Try to identify “driver” solutions rather than “outcomes” of the solution itself
- Should be related to one or several components of each competency.

6- After participants had silently generated ideas in response to the trigger question, all participants were asked to share their ideas with their teammates to facilitate clarification of solutions and final wording of solutions in written form (see Appendix 3).

7- The final wording of each solution was provided by individuals after group discussion. This wording included: Title of the Solution; Description of the Solution; and the Targeted Competency.

8- All written solutions were then circulated amongst the focus group participants,
and they were asked to consider them and submit their final comments on the written solutions;

9. Final wording of the solutions are provided by their generators. The individuals who generated the solutions had the authority to accept comments and suggested edits or ignore them and persist with their initial ideas.

Each focus group took between 2-4 hours and a set of solutions were finalised at the end of each focus group. In sum, 65 solutions, 48 of which were non-redundant solutions, were generated by the focus groups for Productive Thinking sub-competencies. Similarly, 65 solutions, 47 of which were unique solutions, were generated for Motivation sub-competencies. Notably, 17 productive thinking solutions and 18 motivation solutions were classified as redundant based on the similarity of their titles and descriptions. The number of redundant solutions generated by the different expert groups can be seen in Tables 5.10 and 5.18. The issue of redundancy and overlaps between the solutions generated are discussed at the end of this chapter.

Table 5.1 provides a summary overview of the number of solutions for each competency generated by each expert group. It also shows the degree of redundancy and the number of unique solutions generated by the sample as a whole.

Table 5-1 Solutions for Productive Thinking and Motivation generated by six expert groups

<table>
<thead>
<tr>
<th>Experts</th>
<th>Number of Participants</th>
<th>Number of solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Productive Thinking</td>
</tr>
<tr>
<td>Irish Academics</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Irish Entrepreneurs</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>Irish Students</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>Iranian Academics</td>
<td>7</td>
<td>14</td>
</tr>
<tr>
<td>Iranian Entrepreneurs</td>
<td>5</td>
<td>19</td>
</tr>
<tr>
<td>Iranian Students</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>All 6 focus groups (with redundancies included)</td>
<td>43</td>
<td>65</td>
</tr>
<tr>
<td>All 6 focus groups (Unique solutions)</td>
<td>-</td>
<td>48</td>
</tr>
</tbody>
</table>
As noted, after removing all redundancies, the final number of unique solutions for Productive Thinking was 48 (see Table 5.10) and for Motivation it was 47 (see Table 5.19). However, a number of conceptual and thematic overlap between unique solutions were also identified. The key themes emerging can be seen in Tables 5.10 and 5.19.

To provide an understanding of the solutions generated by the participants, a description of solution alongside direct quotes from the participants is provided below. These quotes are indented using pseudonyms that indicate gender. In this way, ‘F’ stands for female participants and ‘M’ stands for male participants.

5.2. Cultivating Productive Thinking competencies

As noted above, 6 expert groups in Iran and Ireland generated 48 unique solutions for enhancing Productive Thinking competencies in students through their studies in an e-learning platform. The solutions generated by each group are presented below.

5.2.1. Cultivating Productive Thinking – Irish Academics

Irish Academics generated 7 solutions for promoting Productive Thinking sub-competencies in students. These solutions are listed in Table 5.2.

Table 5-2 Productive Thinking solutions generated by Irish Academics

<table>
<thead>
<tr>
<th>Solution Title</th>
<th>Solution Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connecting each module to the whole</td>
<td>Integrate elements of previous modules into the module being delivered where applicable.</td>
</tr>
<tr>
<td>programme</td>
<td></td>
</tr>
<tr>
<td>Encouraging students to take on</td>
<td>Make pre-requisites “soft”. For instance, if the student is willing to take on the work, they should be allowed to proceed. Credit system to fast track all our 1st years to take 2nd year module, they assume the risk although they have the second chance option on the 2nd year modules.</td>
</tr>
<tr>
<td>challenges and risks</td>
<td></td>
</tr>
<tr>
<td>Organising Guest lecturers – Site</td>
<td>Expose students to real life situations, let them see the type of competencies that are required in the real world.</td>
</tr>
<tr>
<td>visits</td>
<td></td>
</tr>
<tr>
<td>Implementing participatory and creative learning</td>
<td>Reward creativity from first year. Build a creativity culture, more interactive teaching, encourage team building, peer assessments, open-ended semi-structured questions in exams and assignments. Reward for informal out-of-box answers or at least do not penalised as long as it is not guess work.</td>
</tr>
<tr>
<td>Applying personal development programmes</td>
<td>Try to develop students’ personal traits such as: business writings, data analysis, team structures, Belbin models, monitoring, presentation skills, etc.</td>
</tr>
<tr>
<td>Embedding decision making simulators in the e-learning platform</td>
<td>Use business simulations which expose students to risky decision making and creativity (creative solutions)</td>
</tr>
<tr>
<td>Using difficult and open-ended questions</td>
<td>Ask more difficult questions; more open-ended questions; related to things like creativity, stress coping, risk taking, etc.</td>
</tr>
</tbody>
</table>

The main emphasis of this focus group was around providing some suggestions for academics to improve their teaching, learning and assessment methods. With regard to the assessment approach, using difficult and open-ended questions was one solution generated by Irish academics. The other 6 solutions listed in Table 5.2 address some suggestions for improving teaching methods in order to enhance students’ productive thinking sub-competencies. Some other solutions such as ‘Encouraging students to take on challenges and risks’ relates to challenging students to reconceptualise what they consider “learning” to be.

Since risk taking was one of the components of Productive Thinking in this study, Irish Academics, at the beginning of the session, started a discussion about how much risk should be taken by entrepreneurs. It was important for them because the level of the presumed risk affects the design of training approaches. They concluded that entrepreneurs tend to minimise risks and then take the risk and there are some techniques for minimising the risks. One of these techniques is described by one of the academics as follow:

F(1): “Student could enhance their risk-taking through role-play situations to give them a level of knowledge, understanding and awareness about the risk. I suppose you can bring in things like simulations to help students to do so.”
Notably, using ‘role play’ technique and ‘simulation’ solutions are suggested here in order to help students to minimise and take the risks. This idea was confirmed by another academic as follow:

M(1): “I suppose helping students deal with risk, is possible. I mean, what I do is, insurance of that is obviously a way of smoothing risk, or dealing with uncertainty. But I think the game theory approach, it’s better to have a scenario or simulation to help, rather than just ask them a straight question, what is your level of risk.”

As could be seen in the quotes above, the Irish Academics are arguing for experiential learning by requiring students to experience risk in order to learn more about risk taking. This solution is worded in Table 5.2 as “Embedding decision making simulators in the e-learning platform”. Simulators are seen as the experiential tools which expose students to risky decision making and creativity. This proposed solution is consistent with some recent empirical work. For example, the positive effect of computer-based interactive simulations and games on students’ creativity (DeHaan, 2009) and adaptability (Newswander and Newswander, 2012) has been reported in the empirical literature. These researchers defined these simulators as the educational environments, where students gain conceptual understanding of scientific ideas through interactive engagement with materials (real or virtual), working with each other, and with their instructors. However, implementing educational simulators in the class potentially has some drawbacks as well. For instance, Meij and Jong (2006) pointed out that learners, in these environments, are required to “relate disparate sources of information, which may generate a heavy cognitive load that may leave less resource for actual learning” (p.200). Moreover, it could be argued that if the solution above is to be effective, at least two additional issues need to be considered. First, we need to have a clear understanding of the ideal level of risk to be taken on by students. While students in this solution may be asked to take on minimal risks in a safe environment, there is a broad literature which supports encouraging students to take on moderate risks (McClelland, 1958; Atkinson and Litwin, 1960; Litwin, 1958). Second, further to paying attention to the experiential side of enhancing students’ risk-taking, the cooperative nature of risk-taking experiences needs to be considered. Previous studies proposed a number of cooperative techniques for stimulating students’ risk-taking, such as: promoting students’ social development skills (Boyer, 2006), and encouraging students to have more collaborative exercises inside and outside the classrooms (Childers and Lowry, 2004). However, it is unclear how best to
combine these elements of training in an e-learning environment and new e-learning design solutions may need to be created.

Above, the first affordance of cooperative and experiential learning for implementing the solution generated by this study was emerged. To have a better understanding of these two learning theories a brief description of them are provided here; and then, other solutions generated by Irish academics will be reviewed.

‘Cooperative learning’ is a student-centred, instructor-facilitated instructional strategy in which a small group of students is responsible for its own learning and the learning of all group members to acquire and practice the elements of a subject matter in order to solve a problem, complete a task or achieve a goal (Li and Lam, 2005). It comprises five key elements defined by Johnson and Johnson (1989, 1999) as below:

1- Positive interdependence: This element helps students to believe that others’ work benefits them and their work benefits others.

2- Individual accountability: Assessing each student’s performance and giving back the results to the group and individual.

3- Promotive interaction: Individuals promote each other’s success by helping, assisting, supporting, encouraging and praising each other’s efforts to achieve.

4- Social skills: Teaching students to enhance their interpersonal and small group skills such as: leadership, decision-making, trust-building, and communication.

5- Group processing: Group members’ discussion about how well they are achieving their goals and maintaining effective working relationships by describing what member actions are both helpful and unhelpful.

The distinguishing feature of ‘experiential learning’ is that the experience of the learner occupies central place in all considerations of teaching-learning environment. It comprises four cycles defined by Kolb (1984) as:

1. Concrete Experience (CE): learning by feeling

2. Reflective Observation (RO): learning by watching

3. Abstract Conceptualisation (AC): learning by thinking
4. Active Experimentation (AE): learning by doing

Each of these cycles place different demands on learners. In the EC stage, students must involve themselves fully, openly and without bias in new experiences. Then, during the RO stage, they must take a step back, think, review and reflect on the experience. Through the AC stage, they must understand and perhaps criticise their previous observations and integrate them into logically sound, relevant and existing concepts, theories and information. Finally, in the AE stage, students must test, apply and put into practice these theories and information and use them as bases for decision making, problem solving and planning for the future cases.

Now, let’s continue the discussion about the solutions generated by Irish Academics.

One of the other participants who had experience of directing academic courses for postgraduate students described his experience for enhancing students’ risk taking:

M(2): “sometime students are far from the reality. Students need to be exposed to some case studies and be asked to suggest what should be done in the next step by the case that is being studied. But these case studies should be based on the reality-based cases. There wasn’t that connection between the case study and reality, it’s like if you gave someone a case study about Apple, about to launch the iPod, they didn’t connect, they know the iPod exists and it’s out there.”

Exposing students to the real case studies is suggested by this academic here in order to stimulate students’ risk taking competence. This issue was confirmed by another of his colleagues:

M(3): “there is a disconnection between every section of what we do here, in academia and what actually happens in the outside world, in the real world as such.”

These case studies are supposed to help students to be aware of the potential consequences of taking risks around them. This awareness helps them to make a better decision in order to take or avoid the risk and also it helps them to prepare themselves for the potential consequences of taking the risk. Here it seems that the use of cases, while a good cognitive device, seems to lack the experiential nature of the discussion above because the problem is already solved in the eyes of the students. This lack is addressed by the next solution generated by another colleague in the group. He suggested “site-visits” to
stimulate students’ productive thinking competencies:

M(3): “Getting students to go out to companies is more important than bringing people in, I think. Because bringing people in, they become part of our world, which is a fantasy world in a lot of students’ minds. Where as you say...through business they see walls, they see structures”.

An interesting disconnect that the academics are remarking on here is that the real learning is out there, in the business environment. Accordingly, it was advised that site visits could help students to see the type of competencies that are required in the real world. Combining this suggestion with the previous one (case study), it can be argued that requiring students to do case studies in the real business environment should be more effective in cultivating their risk taking propensity. Academics are supposed, in this case, to support reflection and understanding of the practical experience and to simulate it through experiential learning. Another theme emerging from this analysis of the academics input is their perception of the insufficiency or inadequacy of their work with students. Taking even the example of Case Study work, while it may have the flaws described above it also has some strong affordances. It may not be essentially experiential in nature but it does give time and space to look anew at the potentially familiar case, to analyse the decision-making involved and to deepen understanding about the issue at hand. McDade (1995) highlighted some affordances of implementing a case study analysis method in the class as follow: it allows for critical thinking and provides an environment in which students can advance their critical thinking skills; it emphasises the process of analysing information, and it is contextually based; that is, students must understand contextual nuances and make references and analyses accordingly; it prompts students to identify and challenge assumptions about situations and their own life.

At the same time, it is reasonable to assume that simply using guest lectures and site visits may not significantly impact students’ productive thinking. These types of solutions may need some other pre-requisites to be effective. For instance, Filion (1994) mention that entrepreneurial tutors, first and before students, need to be immersed themselves in a creative culture by reading about creators, meeting and inviting them to present their life stories in the class. This study will come to explore how this creative culture can potentially be developed. Another study by Faiver et al. (2000) reported that inviting experienced and knowledgeable guest lectures can result in enhancing students’ creativity and intuition as two Productive Thinking sub-competencies in a counselling course. But,
in that case, they merged guest lectures with some other techniques such as experiential exercises, group discussion, and individual presentations. They invited four guest lectures and asked them to talk about the empirical basis for the existence of intuition, various methods of accessing intuition, potential practical uses of synthesized creative/intuitive energy, and infusing creative energy and intuitive awareness in students' works and lives. Moreover, Rayburn and Ramaprasad (2000) highlighted the role of technology in advancing the guest lecturer approach and pointed out that the creative use of distance learning environment tools such as multimedia can enhance student's experience when they participate in guest lectures.

Using difficult and open-ended questions was another solution formulated here by academics. One of the tutors mentioned that

\[ \text{F(2): “assessment is very important for productive thinking. And I believe that using open-ended tests in assessment is more effective for cultivating that thinking.”} \]

Another colleague, while he agreed with the impact of using open-ended questions, he believed that these open-ended questions have to be semi-structured and difficult as well:

\[ \text{M(4): “What we do have to do, it’s all adult learners, so they are very highly motivated, they choose to come back. But we are finding it’s hard to differentiate them, when you grade them. So that in the assessment paper, what we are trying to do is, put more structure in, so that you have level A questions. By reading the material, students should be able to answer level A open-ended questions and pass the exam. Get through level B questions that are a bit more difficult. And part C, is then people who are first class honour students, they will do good answers to those difficult questions. Half the people mightn’t be able to answer them at all”}. \]

This structured open-ended assessment scheme was supported by other colleagues in the group. They believed that further to stimulating students’ cognitive and productive thinking skills, this approach helps tutors to have a fair evaluation of their students. The impact of implementing open-ended and difficult questions in students’ assessment schemes on students’ questioning ability (Nystrand et al., 2003; Wells & Arauz, 2006), and creativity (Potts, 1994) was reported upon in previous studies. For instance, Potts (1994) pointed out that asking open-ended questions that do not assume the "one right answer" encourage students to think and respond creatively, without fear of giving the
"wrong" answer. However, if these open-ended questions are to be effective, they have to be standardized and structured in terms of the wording of the questions (Turner, 2010).

Another solution generated here was “Connecting each module to the whole programme”. One of the Irish Academics criticised his teaching method as follow:

M(2): “we interact with students at particular points, particular modules, whereas they have a different perception. And you see them as a group, who are taking this module this year. Whereas, they see themselves as people who are going to a programme to an end point. So there is probably an element of connecting the module, to that end point”.

It was interesting to see that they are criticising themselves. Another academic stressed that

F(3): “I don’t think the way we assess or the way we teach is very conducive to actually getting them to have a joined up approach to the modules. They don’t see the programmes as a whole, except as a series of jumps. They are just jumping over each one, once they have jumped, they have cleared it, they can wipe that from their mind. So I think if they had more of a joined up approach that would be very good, if you could build, so that you are gradually improving their ability to take risk and to assess risk. To look at being creative and innovated. But we don’t, we tend to treat it in isolation and that’s dangerous”.

Knight (2001) pointed out that connecting and scaffolding modules together helps to enhance curriculum coherence and students’ achievement in terms of the course learning outcomes. Here there is an issue connected with the fragmented nature of modular learning. There is a lack of connection between modules as student move from one lecturer to another, each starting anew with a very discrete focus. Cooperative learning has an affordance to diminish this drawback by facilitating the discussion between students and tutors about how well they are achieving their goals and maintaining effective working relationships by describing what member actions are helpful and unhelpful and making decisions about what behaviours to continue or change to solve the problems and work together effectively (group processing). Some of these considerations will be revisited in the next chapter.

Another solution generated by Irish academics was that tutors should not only pay attention to students’ professional development in the subject matter. They believed that
when the focus is exclusively on students’ subject matter knowledge, students’ achievement is not substantial. Likewise, if they, regardless of the subject of their course, help students to enhance their general skills such as business writings, data analysis, team structures, Belbin models\(^3\), monitoring, and presentation skills, they will be more successful in their subject matter as well. Consistent with this view, Schraw (1998) point out that promoting students’ general skills is a duty for universities. A number of studies have focused on identifying the general skills which universities should seek to develop in their students. Some of these skills are: Time-management (Lim et al., 2011), Stress and failure coping (Seiffge-Krenke et al., 2010; Al-Dubai et al., 2011), effective emotion regulation, self-leadership, positive affect and self-efficacy (Houghton et al., 2012), Imagination (Bland et al., 2009), extraversion (Tidwell and Sias, 2005), and Information seeking (Marchionini, 1997). As could be seen in the above, some of Productive Thinking sub-competencies such as stress and failure coping, imagination and information seeking were directly targeted by the personal development programmes. However, the indirect impact of implementing other personal development programmes on students’ Productive Thinking needs to be further investigated. Also, the coverage of personal development programmes should not be limited to students only. For instance, Yip (2004) proposed that universities have to provide a supportive climate and personal development programs for both students and staff.

\(^{3}\) Belbin model proposes an inventory to assess how an individual behaves in a team environment. He proposed 9 team roles for individuals who want to work together within a group. These 9 roles are: Plant, Resource Investigator, Co-ordinator, Shaper, Monitor evaluator, Team-worker, Implementer, Finisher, and Specialist (Belbin, 2014).
### 5.2.2. Cultivating Productive Thinking – Irish Entrepreneurs

Irish entrepreneurs generated 9 solutions for cultivating Productive Thinking competencies. These solutions can be seen in Table 5.3.

Table 5-3 Productive Thinking Solutions generated by Irish Entrepreneurs

<table>
<thead>
<tr>
<th>Solution Title</th>
<th>Solution Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reviewing stories of other entrepreneurs</td>
<td>Students need to be exposed to how entrepreneurial thinking works in the real world. In this regard, seeing some histories and stories about successful entrepreneurs is helpful.</td>
</tr>
<tr>
<td>Writing Business plan proposals</td>
<td>Students need to write 1-5 pages of business proposal to present a modular business plan build up.</td>
</tr>
<tr>
<td>Encouraging students to participate and evaluate the relevant events</td>
<td>Expose students to events and exhibitions in their particular field that require critical thinking.</td>
</tr>
<tr>
<td>Providing Semi-structured and flexible educational planning</td>
<td>Students need to have a degree of flexibility in their educational programmes. This means that they need to be able to customise their educational processes (teaching, assessment, etc.) according to their personal preferences.</td>
</tr>
<tr>
<td>Applying new Assessment approaches</td>
<td>Students’ assessment should be designed by using new initiatives which encourage their active and critical thinking, collaboration, and team-work.</td>
</tr>
<tr>
<td>Promoting students’ multi-dimensional perspective</td>
<td>Students should be encouraged to see an issue from different dimensions and perspectives through a structured approach.</td>
</tr>
<tr>
<td>Promoting self and peer-assessment</td>
<td>Students learn better if they evaluate themselves and their peers.</td>
</tr>
<tr>
<td>Promoting peer-teaching</td>
<td>Students learn better if they teach others.</td>
</tr>
<tr>
<td>Providing mentoring / counselling services for students</td>
<td>Students need to benefit from mentoring services which are provided by the experts. This mentoring should cover both their educational and personal life.</td>
</tr>
</tbody>
</table>

One of the dominant themes in this focus group was around the potential impact of peer-
teaching on students’ Productive Thinking. The discussion was started by one of the entrepreneurs:

M(1): “I have the history of doing an entrepreneurial master and I have been taught how to be an entrepreneur; and my opinion is that you keep it as far as way from the lectures as possible. I learnt more from my classmates than I did from people teaching”.

Notably, this entrepreneur highly valued peer-learning while he undermined formal lectures in the class. There is a serious question with regard to why this entrepreneur as a former student has such a bad experience with tutors’ lectures in the class. Perhaps the response of this question can be found in dominant teaching methods which tutors use in their classes. As it was already mentioned, most of the entrepreneurship tutors tend to use traditional teaching methods which stimulate students’ left-hemisphere in order to enhance their rationality. In contrast, entrepreneurs tend to mostly use their right-hemisphere which is the centre of their imagination. They do need to be trained by some non-traditional teaching methods which affect their imagination and creativity. That is why most of the entrepreneurs avoid formal studies in universities and prefer to learn in the real business environment.

At this stage, a question with regard to the approaches of peer-learning was raised by another entrepreneur:

M(2): “how we can learn from our classmates?” Therefore, the process of peer-learning was further described by the entrepreneur who started the discussion:

M(1): “Yes there were three people in my class. I was one of the older ones, there is a lot of people...I was 28 in the...there was 3 or 4 people who had businesses. And the guy who sold them and they either came back to education or they failed. Or there was one guy, an auctioneer, whose business was slowing down, so he was only working three days a week. So they had practical experience. So any questions and answer session within a class was dominated by them. And they were able to relate their own experiences to what we were learning. So the lecturers don’t have that. Most of them haven’t been outside of academia. That is, it’s just simple stories. I mean if I have a question, I actually go to them, and they are still people, I'm still in contact with...I haven’t talked to any of my actual lecturers, my supervisor, haven’t told them, since I left college, but I'm still talking to the guys who are off doing it.”
One of the conclusions of this discussion was students could learn from their peers due to their experiences:

F(1): “Entrepreneurship comes with experience and ability to take risks and if we want to bring them as competencies into a classroom then you need to bring those experiences in the classroom”.

The question then becomes “but how?”. There is a consensus that implementing peer-directed instruction in a scaffolded manner by having students interact with more advanced peers, and by promoting reflection through the use of small group discussions, journals, and self-reflection can result in enhancing students’ intuitive ability (Schraw and Graham, 1997) as well as flexibility and adaptability (Newswander and Newswander, 2012) as two Productive Thinking sub-competencies. As described earlier, this would seem to suggest simply exposing the students to such stories in a traditional mode, but how do we “bring them into the classroom” in such a way that maximises learning for all (including those who have the experience themselves)? How do we ensure that these learning groups are not dominated by students with experience? Notably, Irish entrepreneurs minimised the value or core input from the academy and highlighted the importance of experience and peer-learning. Interestingly, both Irish entrepreneurs and academics apparently recognise the limitations and potential irrelevance of higher education professional development programmes for entrepreneurship. This may present something of an existential crisis for the academics. It fundamentally questions what the purpose of education for entrepreneurship is and how it could be done in an effective manner. Franklin et al. (2001) highlighted a reason for this deficiency and pointed out that since academics are required by their employers to teach, research, and take on administrative roles such as heads of department or deans of faculties, they have no time and interest to be academic entrepreneurs; and therefore, they cannot teach entrepreneurship well. D’Este and Perkmann (2010) provided evidence based on survey data for a large sample of UK investigators in the physical and engineering sciences and found that most academics engage with industry to further their research rather than to commercialize their knowledge.

Moreover, there is also significant agreement between the two groups about a practical, experiential focus in entrepreneurship education. Here it seems that the purpose is to expose less experienced students to the wisdom of their elders but seemingly in a traditional, didactic mode. It could be argued that the structures of cooperative learning
can maximise the advantage of this experience while ensuring equal participation of all students. Educational technologies and e-learning can facilitate equal participation of all students in the process of class discussions. Jones et al. (2001) experienced that using educational technology in class allows all students to contribute in class discussions in some way. There was a particularly positive reaction from students with less communication ability who felt that they could contribute on more equal terms in the class discussions. Furthermore, given the minimal value placed in lectures (and perhaps traditional tutorials) and the emphasis on experiential learning highlighted in the focus groups, this may support the inclusion of e-learning structures that facilitate experiential, cooperative and enactive learning.

Requiring students in different fields to write business plans was another solution suggested by one of the entrepreneurs and it was tied with the peer-assessment and peer-teaching idea:

M(3): “We had a subject innovation and we learnt all about looking at things through the entrepreneurial lens and all this. But we didn’t actually become innovative or innovators, that we are taught about innovators and the theory behind innovation. But we weren’t taught how to be innovative. Then, we had one tutorial where we had to come up with the product and that was it. That was our only time that we actually thought outside, didn’t look away from the books and the stuff that we are given to learn. So my way and I was thinking it should be a year long aspect part of the course is that, you just come up with an idea, doesn’t matter what it is. It’s a project; it’s either a group project or an individual project. And these projects, it’s a business proposal and it could be reviewed and taught by the peers in the class.”

Again the tension between the “academic learning” and the “real world learning” can be seen here. Building on the previous commentaries, this reemphasises the need for concrete and extended experiential activities. This type of activity could be seen as providing a bridge between experience and the academy – where the knowledge of the latter could be seen to be more valuable. This is interesting and perhaps connecting training to the real world could offer a way to address the issue of fragmentation across modules highlighted by Irish academics. Perhaps each module could contribute towards realising a challenging, course-long, cooperative, real-world innovation task. In this case, e-learning and cooperative learning have significant affordances to help students in this challenging task. In terms of e-learning, it could facilitate the communications and
interactions between students and their tutors necessary for the task. In terms of cooperative learning, students’ tendency to promote each other's success by helping, assisting, supporting, encouraging, and praising each other's efforts (promotive interaction) could help students to effectively work with each other to achieve their individual and group goals together.

As another solution, Irish entrepreneurs highlighted the importance of increasing students’ autonomy in the learning-teaching environment. They pointed out that the educational environment has to be flexible enough enabling students to customise – at least to some extent – the assessment approaches, select the teaching-learning methods, and pick-up the learning outcomes applied to their modules according to their personal preferences and interests. One of the major concerns about this flexibility, as mentioned by another entrepreneur, was the coherence of the curriculum. It was argued different parts of the curriculum are rationally connected to each other. For instance, each ‘learning outcome’ is addressed by one or some syllabus. Therefore, if students select one learning outcome and eliminate the syllabus mapped to that learning outcome, the curriculum coherence will be weakened. It was concluded that tutors should highlight some learning outcomes, teaching methods and assessment approaches as compulsory and some other ones as optional. Moreover, it was suggested that rational behind the connections amongst the different parts of the curriculum should be shown to students. This needs a scaffolded structure that can be prepared prior to starting the semester. Experiential learning has some affordances for enhancing students’ autonomy in the class. Because, personalising learning could enhance the capability and interest of students to take on challenges and engage with experiences relevant to their studies. For instance, this solution is strongly tied with another solution generated by Irish academics with regard to using educational games in the class. As Peirce et al. (2008) mentioned, educational games provide a personalised learning experience – and they criticise the one-size-fits-all approach to education. Moreover, there is a broad literature confirming that students’ autonomy (Wang and Cheng, 2010; Çekmecelioğlu and Güsel, 2011; Parker et al., 2006, Qi, 2010, Forsyth and MaMillan, 1991, Greenberg, 1994; Dörnyei and Csizér, 1998; Dornyei, 1994; Sixsmith, 1986; Church, 2007) and their control over their courses and outcomes (Forsyth and MaMillan, 1991; Iifshitz, 1973; Levenson, 1973) have to be increased to support students’ learning and development. This autonomy and control includes different dimensions of students’ study such as selecting the topics of lessons (Brophy, 1987), syllabus of the course (Dornyei, 1994), teaching material (Dornyei, 1994), teaching approaches
(DeTienne and Chandler, 2007) and customizing the evaluation criteria of their various assignments (Childers and Lowry, 2004). This process, as Dörnyei and Csizér (1998) mention, can result in personalizing the learning process. This personalization could be facilitated by the effective use of e-learning. Gaeta et al. (2009) pointed out that virtual learning environment can be used to expedite personalized learning paths, for example, by providing learning object repositories in which learning objects are annotated with semantic information through standard metadata schema.

However, the impact of personalized learning on students’ productive thinking competencies needs to be investigated. Moreover, the results of a study conducted in the UK by Courcier (2012) shows that while teachers positively value the idea of personalized learning, they think that it is very difficult to implement it in their classes in practice due to the gaps between the practice in schools and the meta-level policy introduced by the English government. Also, a few teachers unconsciously adopted several components of personalized learning without a clear idea of the new style. It was mentioned that carrying out personalized learning without understanding it fully could be risky. Therefore, it could be argued that teachers’ understand and skill in relation to personalized learning methods is an important pre-requisite for the effectiveness of these methods of teaching and learning. The more clearly teachers understand what personalized learning is, the more easily students may become independent and lifelong learners.
5.2.3. Cultivating Productive Thinking – Irish Students

Irish students proposed 7 solutions for enhancing Productive Thinking in students. These solutions can be found in Table 5.4.

Table 5-4 Productive Thinking solutions generated by Irish Students

<table>
<thead>
<tr>
<th>Solution Title</th>
<th>Solution Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Requiring students to do Practical tasks</td>
<td>Students need to be engaged in different experiences at the same time as conducting their studies. For instance, some of their classroom tasks should be incorporate practical work rather than solely writing theoretical assignments.</td>
</tr>
<tr>
<td>Requiring students to use social Networks</td>
<td>Organising some social meetings amongst classmates or between students and academics or graduates is a useful tool for students. Nominate a social network platform and assign free time to meet other people from other departments. These meetings would be in both virtual and face to face environments.</td>
</tr>
<tr>
<td>Encouraging “Thinking and doing outside the box”</td>
<td>Tutors as well as college administrators should let students to complete some alternative experiences, not just regular course-work activities. As one of the pre-requirements for this solution, students need an academic environment free of any pre-judgements from their tutors, administrators etc. in fact the rule of “nothing right and wrong” has to be applied in the educational systems.</td>
</tr>
<tr>
<td>Avoiding preconceived beliefs</td>
<td>Tutors as well as administrators need to avoid any preconceived beliefs about their students at any stage of their studies. Also students, for their part should avoid it in their responses, activities and judgements.</td>
</tr>
<tr>
<td>Being a good and fair listener</td>
<td>Everybody in successful educational settings including students, academics and administrators should try to put themselves in the other person’s shoes. This policy helps them to be good and fair listener to others’ enquiries.</td>
</tr>
<tr>
<td>Practice “Thinking &amp; Understanding first”</td>
<td>Everybody needs to carefully think and understand first and before any reaction to his/her situations. This careful thinking and understanding helps them to avoid misunderstandings.</td>
</tr>
<tr>
<td>Defining more</td>
<td>Students with prior work experience should learn more effective than</td>
</tr>
</tbody>
</table>
sophisticated system and filters for student recruitment

One of the main concerns of Irish students was about their tutors’ listening ability. They argued that tutors usually tend to only talk and expect their students to listen to them. From a theoretically perspective, tutors often confirm that they need to listen to their students as well as talk, but in practice, they usually don’t do that. For instance, one student argued that

\[ F(1): \text{“in one of my classes, I got a little bit annoyed when I saw that my tutor underestimates his students’ knowledge and capabilities. So, I tried to talk in the class around the subject which was under discussion. However, my tutor was not listening to me carefully, and consequently, he refused my arguments without expressing any reason. I tried to repeat my arguments again but he also recapped his position with its incomplete evaluation of my position over and over again instead of listening and responding to my points. I felt bad especially amongst my classmates and I had no self-confidence to raise any more questions, to be creative, and to take on challenges in the class.”} \]

Other students also confirmed that they had similar experiences during their university studies, and it prevented them from taking on challenges in the class by taking part in the group discussions. Again, a disconnection between the traditional academy and effective learning can be seen here. In fact, they find themselves trapped in the university system of lectures and tutorials and the traditional role of disciplinary expertise where knowledge is to be transmitted and not constructed. Obviously, lack of tutors’ ‘active listening’ skill has potential huge disadvantages for students and learning environments. Therefore, it is necessary to have a plan for solving this problem. Again, maximizing the benefits of a small group environment and positive mutual interdependence of cooperative learning may have huge affordances here. Students in this focus group suggested that everybody in successful educational settings including students, academics and administrators should try to put themselves in the other person’s shoes. This policy would help them to be a good and fair listener to others’ enquiries. They believed that since the potential of virtual communications for creating misunderstanding is greater than in face-
to-face environments, it is important to encourage all people engaged in the e-learning platform experience to actively engage themselves with an active listening approach. Once more, e-learning would seem to have affordances here, if structured through experiential and cooperative learning.

Consistent with this view, another student pointed out that good-listening should be a prerequisite for stimulating students’ creativity as well:

M(1): “I recall that when my tutor in one of the modules was very open to listen to her students and respect their ideas, we all felt that we could bring more novel ideas into the class. She was always supportive of students’ initiatives and tended to encourage them to think outside-the-box. Some of my business ideas came to mind during our free discussions in that class and I later applied them for many years after my graduation from the university.”

The good-listening skill suggested here is may be connected in important ways with productive thinking and indeed motivation. This reveals a fascinating dilemma or tension in teaching. On the one hand students need to be facilitated in the social construction of valuable knowledge that implies that they must see themselves as the primary resource. On the other hand, academics make a claim to valuable knowledge on the basis of their expertise. So academics have to facilitate knowledge construction while at the same time being ready to step in with appropriate expertise where necessary. But the question was how good-listening skills and encouraging free discussions in the class act as a pre-requisite of generating creative ideas. Another student argued that:

M(2): “good listening is strongly tied with the ‘nothing right and wrong’ principle. It means that we need to avoid judging others’ ideas at the first instance. It encourages people to freely bring their ideas forward and to not fear being wrong amongst others in the class.”

Active listening is one of the pre-requisites for implementing cooperative learning in the class. In fact, without active listening, which refers to suspending judgement, people cannot discuss the nature of the concepts being learned and exchange knowledge with classmates (Promotive interaction) and also they cannot discuss how well they are achieving their goals (Group processing). However, similar to the argument made about the necessity of training tutors for implementing personalised learning, they also need to be trained to be active-listeners as well. It could be expected that tutors, without that
training, cannot efficiently play the role of an active listener in the learning environment. In the context of a pre-test–post-test control group design, McNaughton (2008) examined the effect of instruction on the active listening skills of pre-service education professionals and provided evidence that active listening skills can be taught in an efficient and effective manner.

The discussion above resulted in the generation another solution entitled “avoiding preconceived beliefs”. It was argued that tutors and students need to avoid any preconceived beliefs about each other at any stage of the teaching-learning process. Again, it may be that cooperative learning has affordances for the ability to avoid preconceived beliefs. In fact, it is very difficult to affect people’s reasoning and conclusions (Promotive interaction) if either member in the exchange process has pre-conceived beliefs. The discussion amongst the students continued and they tried to respond to this question in relation to how tutors and students can be helped to avoid pre-conceived beliefs. They pointed out that if students and tutors learn to not immediately react, and instead, think carefully first, most of these misunderstandings will not be created. Consistent with this theme, Lyman’s (1981) think-pair-share approach (See Tlenken et al., 2009) highlights the importance of thinking before responding, whereby “after the teacher asks a question, students take a minute or two to think about their responses” (P.43). Furthermore, Potts (1994) pointed out that students should be allowed to have adequate time to reflect on the questions asked or problems posed. Since critical thinking seldom involves snap judgments, posing questions and allowing sufficient time before soliciting responses helps students understand that they are expected to deliberate and to ponder, and that the immediate response is not always the best response.

Encouraging students to think and do outside the box is another solution suggested by Irish students in this study. Again, ‘experiential learning’ has some affordances for this solution. As can be seen in Figure 5.1, Kolb proposed four cycles for students’ experiential learning: 1) Concrete Experience (CE), 2) Reflective Observation (RO), 3) Abstract Conceptualisation (AC), and 4) Active Experimentation (AE). Kolb simply defined CE as learning by feeling, RO as learning by watching, AC as learning by thinking, and AE as learning by doing (Kolb, 1984; Kolb et al., 2001; further definitions of these experiential cycles are provided in chapter 6). The solution above (thinking and doing outside the box) is consistent with, possibly, all steps in experiential learning, assuming they get a chance to experience, observe, reflect, and act. But, it is too vague and general. The question here
is how this thinking and doing outside the box can be promoted in the class. Noone and Cartwright (2005) and Egan (2005) suggested that removing students from their everyday school environment by providing an element of surprise or fun and providing opportunities to jar them out of their usual ways of thinking as well as disrupting the expected educational routines in the class by an unexpected process can help students to cultivate their Imagination. The impact of this adventure on other Productive Thinking sub-competencies and also the approaches that could implement this solution in the class need to be more thoroughly investigated.

Figure 5-1 Experiential learning cycles (Source: Murphy et al., 2012)

Last but not least, requiring students to do practical tasks was another solution generated by Irish students. While the nature of many other solutions generated by this and other focus groups were valuing the practical and experience-based teaching-learning approaches, this solution, specifically, targeted the assessment approaches of students in the class. Irish students believed that they should be expected to do some practical work rather than solely writing theoretical assignments. It seems that students are frustrated by the theoretical assessments. Perhaps they think that their real competencies and capabilities cannot be well assessed by end of the semester exams. It can be argued that these assessment methods are connected to tutors’ teaching methods as well. When the dominant teaching method in entrepreneurship classes is still traditional lectures, requiring students to do some practical tasks as the mean of their assessment is unrealistic. If we do
want to move from traditional assessment approaches (such as end of the semester exams) to more effective ones (such as practical tasks), we do need to do the same changes in the teaching methods as well.

In the case that we do want to apply practical tasks as an assessment approach, experiential learning through its entire four cycles has some affordances here. Further description of these affordances is provided in Chapter 6. The impact of these experience-based assessment approaches on students’ productive thinking has been widely investigated. For instance, using techniques such as small-group problem solving exercises, and collecting newsprint drawings to illustrate philosophical positions, Huber (2003) illustrates that weekly experiential learning and action research tasks enhance students’ Tolerance for Ambiguity. In another study, Honig (2004) highlighted the value of using failure as a valuable learning experience in order to redesign how business planning is taught by focusing on divergent thinking in the class.

5.2.4. Cultivating Productive Thinking – Iranian Academics

As can be seen in Table 5.5, Iranian Academics generated 14 solutions for cultivating Productive Thinking competencies in students through their studies in an e-learning platform. The titles and descriptions of these solutions could be found in Table 5.5.

Table 5-5 Productive Thinking solutions generated by Iranian Academics

<table>
<thead>
<tr>
<th>Solution Title</th>
<th>Solution Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introducing e-incubators to students</td>
<td>Tutors should introduce some e-incubators websites/tools to students. These tools help them to cultivate their idea-generating process.</td>
</tr>
<tr>
<td>Evaluating and criticising resources which are relevant to their courses</td>
<td>Students should be introduced and subscribed to some educational resources such as websites and journals relevant to their studies and interests. They also need to critically evaluate and criticise these resources.</td>
</tr>
<tr>
<td>Encouraging students to critically review the relevant markets</td>
<td>Students should be required to critically review the potential markets relevant to their studies and write a report about it. This report should be a part of their assessment scheme. Tutors should monitor and comment on students’ reports facilitated by e-learning communication tools in order to provide formative feedback for students.</td>
</tr>
<tr>
<td>Topic</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Requiring students to use social networks</td>
<td>Students should be encouraged to use social networks e.g. Facebook, Twitter, forums, etc. This helps students to cooperatively exchange their experiences and knowledge with others.</td>
</tr>
<tr>
<td>Encouraging students to participate and evaluate the relevant events</td>
<td>Students should be encouraged to actively take part in some events relevant to their studies which take place outside or inside the university. Also, they should be required to write a critical report as their evaluation of the attended event and its relevance to their studies.</td>
</tr>
<tr>
<td>Applying scenario writing as an assessment scheme</td>
<td>Students should be required to write some creative scenarios for extending a current business or running a new and innovative business.</td>
</tr>
<tr>
<td>Promoting social and group activities</td>
<td>Students should be encouraged to take part in some social and group activities with their classmates and other students within and outside university.</td>
</tr>
<tr>
<td>Bridging amongst Policy makers, Universities and Industry</td>
<td>There is a vital need for a continuing relationship amongst policy makers, universities and industries.</td>
</tr>
<tr>
<td>Allocating Thinking Time in the class</td>
<td>Tutors should allocate a specific weekly time for ‘thinking’ in their class. This thinking would be based on a specific subject determined by the tutor. Students are required to write and cooperatively discuss the output of this ‘thinking time’ in a forum.</td>
</tr>
<tr>
<td>Outlining practical applications of modules</td>
<td>Tutors should highlight the practical applications of each unit and module for their students before teaching that unit/module.</td>
</tr>
<tr>
<td>Providing Questioning tools and training for students</td>
<td>Students should be encouraged to make some questions relevant to their studies rather than being required to only respond to their tutors’ questions. They need to be trained on better questioning skills.</td>
</tr>
<tr>
<td>Helping students to make their goals</td>
<td>Students need to be directed to the future. They are not supposed to look at only an inch in front of their nose! They should possess a future-oriented and long-term perspective in</td>
</tr>
</tbody>
</table>
relation to their study, work and life. Tutors should encourage and help students to make their goals.

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Requiring students to evaluate their educational system</td>
<td>Students should be asked to evaluate the educational system by commenting on its strengths and weaknesses. This feedback is valuable in order to improve the effectiveness of teaching-learning environment.</td>
</tr>
<tr>
<td>Defining more sophisticated systems and filters for student recruitment</td>
<td>Universities should have a more comprehensive plan for reviewing applicants’ background and giving them an admission for a course. Students’ talents and educational background should be fitted into the course they want to do.</td>
</tr>
</tbody>
</table>

In line with many previous solutions generated by other focus groups, the dominant theme in the discussions of Iranian Academics in this focus group was moving from traditional to more practical and student-centred teaching-learning approaches. They believed that students’ entrepreneurial competencies could not be stimulated by the conventional teaching-learning approaches. One of them stressed that:

F(1): “We must know that we cannot use the educational approaches similar to what were used to educate ourselves 20 years ago. Students’ needs and preferences are totally changed and we need new approaches to meet their requirements”.

Interestingly, even academics themselves know that their traditional teaching methods do not work for the current generation of students. Consistent with this argument, another academic pointed out that:

M(1): “Students do not prefer theoretical lectures. They do prefer practical approaches which could connect them to the real world surrounding them.”

The question here is that when academics know that their traditional teaching methods do not work why they continue using them in their classes? Perhaps, as it was mentioned by Mwasalwiba (2010), they are time consuming for tutors and expensive for administrators. However, it does not seem that these reasons are acceptable to avoid non-traditional teaching methods in the class because even the current amounts of time and money investments in the traditional methods are mostly wasted. Findings of the current study in line with many other empirical studies highlighted the high level of both
academics and students’ dissatisfaction with these conventional methods.

Apparently, Iranian academics valued experiential learning and diminished the value of theoretical lecturing here. Then, the question was why the experiential approaches are not usually used in the classes; and then, the barriers of implementing effective practical teaching-learning approaches were discussed. Most of the academics had an experience in trying to implement some practical educational approaches in their classes. Therefore, they had a relatively good understanding of those barriers. Some of the obstacles against using experience-based teaching methods in the class were mentioned as follow: lack of time in the class, lack of tutors’ time to implement and monitor experience-based teaching methods, lack of skills and awareness about the structured experience-based teaching methods, lack of students’ motivation to participate in these experiential approaches. For instance, one of the tutors mentioned that:

F(2): “When I want to implement some experiential teaching methods and ask students to do a practical task, I do need to monitor their activities and give them step-by-step feedback. Otherwise, they will not be able to do their jobs effectively. However, I have had great difficulty in terms of time and, more importantly, structure of monitoring students’ work and giving them feedback”.

She believed that virtual learning environment could provide a structure which facilitates monitoring and commenting on students’ practical tasks in a more time-efficient manner. For instance, instead of typing which is a time consuming job, tutors could record their comments on students’ reports and assignments in the virtual learning environments. As could be seen here, there was a conflict between what Iranian academics wanted to do in the class and the reality and limitations surrounded them. To cope with this conflict and make the experience-based teaching-learning approaches feasible in the class, again, cooperative key principles could help tutors. Further description of these principles and their affordances in relation to specific solutions proposed here are provided in Chapter 6.

The next step of the discussion above was dedicated to how practical teaching-learning approaches could be implemented in a class. The main ground for generating these solutions was the personal experiences of academics in their own classes. Some of these generated solutions were: “Encouraging students to critically review the relevant Markets and events”, and “Outlining practical applications of modules”. With regard to the first one, they believed that students should be required to critically review the potential market
related to each of their modules from different perspectives; and then, write a critical report/assignment about it. This assignment is exactly fitted into the four experiential learning cycles. They need to go to the market and see, review and experience the potential of the market relevant to their studies (concrete experience), think about and review their experience (reflective observation), criticise and reconceptualise their thinking about that experience (abstract conceptualisation), and finally, learn some lessons to implement in their future life (active experimentation).

Regarding the latter one, they pointed out that students should know the practical applications associated with the theoretical aspects they study in their courses. This bridge between the theoretical and practical sides of the modules should be critically reflected in an assignment as a part of their final assessment score. This solution is aligned with Irish academic and entrepreneurs’ comments on the fragmented nature of modular structure. Consistent with this view, DeHaan (2009) points out that informing students about the underlying scientific ideas and giving them an opportunity to apply these ideas and concepts broadly in different contexts enhances their creativity as well. More recently, Newswander and Newswander (2011) illustrated that encouraging and requiring students to use their knowledge in practical situations such as problem solving, project teams, experiential-learning techniques, and team teaching can help to develop their flexibility. It could be seen that this enhances students’ individual accountability and facilitates cooperative learning. Again, the main role of e-learning platforms in this process is to facilitate feedback process provided by the tutors to monitor and comment on their students’ work at the different stages.

Another suggestion of the academics for moving towards new effective teaching methods was highlighting the importance of group learning in the class. One tutor believed that:

M(2): “when I used to divide students into the heterogeneous groups and require them to work together for achieving unique goals, they were more willing to take on challenges, identify new opportunities, tolerate ambiguities, and take risks”.

He argued that heterogeneous groups help students to benefit from each other’s different backgrounds and expertise. This discussion highlighted ideas that resonate with the principles and practices of cooperative learning, which provides a structure that enables students to work effectively with each other in a group context. Group learning can be achieved using specific cooperative learning techniques such as Jigsaw groups.
These techniques and their afforded solutions proposed by participants are outlined in Chapter 6. The participants of this focus group were also in agreement that a virtual learning environment facilitates a good opportunity to promote students’ communication skills, and therefore, it could be an effective strategy to use this e learning environment to encourage group-work amongst students. Sun et al. (2008a) pointed out that elimination of physical barriers and enhancing interactive communications and media presentation provided by e-learning platforms enable more dynamic interaction that fosters establishment of opportunities for cooperative learning. However, it has to be mentioned that the adoption of e-learning technology in cooperative learning may only be successful subject to paying enough attention to some critical success factors. Using Structural equation modelling (SEM) approach and surveying 538 university students, Selim (2007) identified and categorised these critical success factors as follow: “instructor characteristics (attitude towards and control of the technology, and teaching style), student characteristics (computer competency, interactive collaboration, and e-learning course content and design), technology (ease of access and infrastructure), and support” (p. 409). McPherson and Nunest (2006) looked at these critical factors from a different perspective and categorised them into four clusters: leadership, structural and cultural issues, design issues, technological issues, and delivery issues. McPherson and Nunest (2008) contributed to the field by adding pedagogically sound delivery models and training of both tutors and students as two other critical success factors for e-learning systems. It could be concluded that these critical success factors have to be taken into account when the solutions generated by this study want to be incorporated into an e-learning system by the future studies.

Another interesting solution was made by Iranian academics here. One of them stressed that:

F(3): “why students are supposed to only respond to our questions? I mean why they are not encouraged to make some questions themselves and try to learn with making instead of responding questions”.

However, the idea that how students could learn by questioning was not clear enough to other respondents. Their main concern about the efficiency of this approach was about how much in-depth arguments and learning could be achieved through questioning? It seems to be too simplified and positivistic to assume that generating questions could reflect on students’ learning and achievement. The other concern of participants was that
perhaps the range of potential questions that can be posed is more limited and narrower than the range of potential responses that can be generated by students. After a long discussion, they concluded that the potential advantages of requiring students to generate questions as a part of their learning assessment outweighs the potential disadvantages. It was argued that all real learning should be challenging and generating good questions is certainly an example of this. They tried to address some strategies to minimise the drawbacks of implementing this approach in an e-learning environment. Some of those strategies are: this questioning could be just a part of students’ assessment scheme in a module; the originality of students’ questions has to be evaluated by incorporating some software such as Turnitin into the e-learning platform; a structured system for making questions has to be created in the e-learning platform. In this structure, students could make their questions in line with the learning outcomes, syllabus, and content of the module; students could write the rationale behind their questions and also they could describe their initial knowledge used to make the question. In this way, even when the wording of two questions is similar to each other, their arguments and basic knowledge used to make the question should be different. In line with the previous solutions, experiential learning seems to have some affordances for this solution. In fact, a person who wants to learn through experiential learning cycles needs to respond to a unique question at each stage. As can be seen in Figure 5.1 and mentioned by Murphy et al. (2012), in the first cycle (concrete experience), the question is: “what happened?” In the second cycle (reflective observation) s/he needs to reflect on his/her feelings by asking the question that “what did I experience?” the third cycle is to review and reconceptualise the findings by asking this question that “why did this happen?” and finally, the fourth cycle is for finding the applications of the findings for the future by asking “what will I do?” As could be seen in the above, questioning is one of the core skills required to do experiential learning. Therefore, it could be argued that experiential learning is much aligned with enhancing students’ questioning skills and it affects students’ journey through all four cycles of experiential learning.

A body of knowledge has focused on students’ “Questioning” ability as one aspect of Productive Thinking that can be enhanced, for example, by providing a strategy plan or map for questioning in class (Tlenken et al., 2009), preparing a list of productive questions prior to entering each class (Tlenken et al., 2009), or proposing a special course for training the questioning techniques of both teacher and student groups (André and Anderson, 1978-1979; Davey and McBride, 1986; Gall, 1984; Philips and Duke, 2001).
has also been suggested that, if educational programmes can enhance students’ questioning by using these solutions and related approaches, their imagination skills will be also developed (Bunkers, 2011).

Requiring students to evaluate and comment on the strengths and weaknesses of their educational environment is another solution suggested by Iranian academics to enhance students’ productive thinking competencies. It may be that cooperative learning has some affordances here. As part of cooperative learning, group members are characteristically asked to evaluate how well they are achieving their goals and maintaining effective working relationships, for example, by describing what actions are helpful and unhelpful and making decisions about what behaviours to continue or change to best solve problems and work together effectively (Johnson and Johnson, 1989, 1999). One observation that can be concluded from the group processing aspect of cooperative learning is that evaluating the educational environment is worthwhile only when its results are implemented to improve the current situation and solve ongoing problems. In other words, getting students to evaluate their educational system without implementing the results of this evaluation to improve the system would not be deemed an effective strategy for promoting productive thinking. The consequences of group decision making on the cooperative learning working environment is critical here. At the same time, the impact on Productive Thinking of requiring students to evaluate their educational system needs to be investigated by future studies.

Requiring students to use social networks in order to exchange their experience and knowledge is another solution suggested by Irish students and Iranian academics. It is suggested here that both experiential and cooperative learning have some affordances for this solution as well, as students are asked to share their experiences in groups to facilitate their learning and to cultivate their productive thinking. At the same time, research suggests that social network use can have a multitude of effects on students, both positive and negative. Here, the focus is restricted to the impact of using social networks by students on their Productive Thinking sub-competencies. The positive impact of using social networks on students creativity (Zhou et al., 2009; Perry-Smith, 2006; Perry-Smith and Shalley, 2003; Leenders et al., 2003), opportunity identification (Ardichvili et al., 2003; Ozgen and Baron, 2007), tolerance for ambiguity (Acar and Polonsky, 2007), flexibility (Zhou et al., 2007), information seeking ability (McArdle et al., 2007), and imagination (Liccardi et al., 2007) have been reported in previous studies. Hills et al.
(1997) go further and hypothesized that the quality of network contacts can simultaneously affect some characteristics, including opportunity identification, alertness and creativity. However, the impact of using social networks on these competencies and related outcomes may be complex. For example, Zhou et al. (2009), pointed out that while using social networks can provide more sources of novel ideas and therefore increase the probability of creativity, there is a curvilinear relation between the number of social network contacts and creativity. It was argued that since the amount of time the individual can devote to fruitful discussions with each contact decreases as the number of contacts increases beyond some optimal level, diverse ideas and different perspectives are unlikely to surface; and consequently, social networks become meaningless as network size grows beyond a manageable size. Furthermore, when the number of social network contacts is too large, individuals are likely to experience information overload, making it difficult for them to sort through the voluminous, discordant information. In fact, too many divergent and dissimilar perspectives may be cognitively taxing to the point of confusion and overload and thereby hinder rather than enhance creativity. The impact of social networks on students’ productive thinking sub-competencies such as opportunity identification is also complex. Ardichvili et al. (2003) divided the social networks contacts into weak ties (including casual acquaintances) and strong ties (including friends and family) and argued that the casual acquaintance is more likely to provide unique information than are close friends, because most people have more weak ties than strong ones. This was also confirmed by Hills et al. (1997) in a survey-based study. They assert that entrepreneurs who have extended network contacts identify significantly more opportunities than solo entrepreneurs.

Comparing the solutions generated by Iranian Academics and the previous groups, especially Irish academics, it could be seen that experiential and cooperative learning are two dominant educational frameworks that have the most affordances for implementing the solutions generated by the respondents of this study.

5.2.5. Cultivating Productive Thinking – Iranian Entrepreneurs

Iranian entrepreneurs suggested 19 solutions for cultivating Productive Thinking in students. Some of these solutions are generated by other expert groups as well and some are novel and not suggested by other groups. The list of these solutions can be seen in Table 5.6.
<table>
<thead>
<tr>
<th>Solution Title</th>
<th>Solution Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creating students’ idea bank</td>
<td>A database (bank) for students’ ideas in each module should be generated and students should be encouraged to generate and submit their ideas in this database. They also could see and comment on each other’s ideas.</td>
</tr>
<tr>
<td>Helping students to make their goals</td>
<td>Students need to make and develop goals in their studies, work and life in order to avoid sporadic efforts in their life.</td>
</tr>
<tr>
<td>Encouraging students to take on challenges and risks</td>
<td>Students should be encouraged to welcome to take risks to some extent. Their educational system should not penalise them for their risk-taking.</td>
</tr>
<tr>
<td>Implementing educational games in the class</td>
<td>Some educational games relevant to the learning outcomes of the module/course have to be employed in the process of students’ learning.</td>
</tr>
<tr>
<td>Requiring students to evaluate and criticise resources which are relevant to their courses</td>
<td>Students should be encouraged to be familiar with some new scientific and academic resources relevant to their modules. They should be required to write some critical reports to evaluate these resources.</td>
</tr>
<tr>
<td>Enhancing students’ web-searching and IT skills</td>
<td>Students need training to increase their ICT skills and their ability for effective searching in the web in order to find their required information.</td>
</tr>
<tr>
<td>Applying brain storming method in the class</td>
<td>Brain storming should be used by tutors as an effective learning method to cultivate students’ creativity and free thinking.</td>
</tr>
<tr>
<td>Creating Terminology bank</td>
<td>A terminology repository relevant to the subject of each module has to be created, helping students to have a better understanding of the subject and a better ability to search for the relevant information.</td>
</tr>
<tr>
<td>Defining more sophisticated systems and filters for student recruitment</td>
<td>Selecting students with more experience and practical background relevant to the field they applied for.</td>
</tr>
<tr>
<td>Promoting students’</td>
<td>Students should be encouraged to have some interactions</td>
</tr>
<tr>
<td>Task</td>
<td>Descriptions</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>communications and interactions with other students even in other</td>
<td>Some online decision making simulators should be embedded in the e-learning platform, helping students to simulate their decisions in a business</td>
</tr>
<tr>
<td>departments via some public forums, etc.</td>
<td>environment.</td>
</tr>
<tr>
<td>Embedding decision making simulators in the e-learning platform</td>
<td>Students should be required to do some practical projects relevant to their studies. These projects should be commented and graded as a part of</td>
</tr>
<tr>
<td></td>
<td>their final grade in that module.</td>
</tr>
<tr>
<td>Requiring students to do Practical tasks</td>
<td>Students should be required to launch a trial business relevant to their studies. This spin-off would be a part of their final grade in that module/</td>
</tr>
<tr>
<td></td>
<td>course.</td>
</tr>
<tr>
<td>Requiring students to do trial start-up</td>
<td>The stories and experience of people who follow their gut feeling and 6th sense in their decision making should be shared and reviewed in the class.</td>
</tr>
<tr>
<td>Sharing stories and experiences relevant to sixth sense</td>
<td>Students’ stresses in their learning environment have to be decreased.</td>
</tr>
<tr>
<td>Providing a calm and no-stress environment</td>
<td>Students should take part in the educational planning process. They should have autonomy to partially customise the learning outcomes, syllabus,</td>
</tr>
<tr>
<td></td>
<td>educational content, assessment schedule, and teaching methods applied to the course.</td>
</tr>
<tr>
<td>Providing semi-structured and flexible educational planning</td>
<td>Tutors should avoid a complete predetermined curriculum in the class. Throughout the semester, students should be allowed - to some extent - to determine what and how they want to learn in the next sessions of the class.</td>
</tr>
<tr>
<td>Avoiding a complete predetermined curriculum</td>
<td>Students need to have a “Question Book”, enabling them to write their questions throughout their studies in each module. These questions could be seen and commented by other students are indicators of students’ educational needs.</td>
</tr>
<tr>
<td>Providing questioning tools and training for students</td>
<td>The picture that the students wish to remain from them even a century after their death should be considered seriously by them and so they should be encouraged to plan it from present time.</td>
</tr>
<tr>
<td>Helping students to make their long-term goals</td>
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</table>
As can be seen in Table 5.6, Iranian entrepreneurs generated a wide variety of solutions for cultivating productive thinking in students. In keeping with Irish Academics, a dominant theme in most of the discussions of Iranian entrepreneurs was a focus on practical rather than theoretical activities. One of them, in the beginning of the focus group, mentioned that:

\[ F(1): \text{“One of the major drawbacks of the current educational systems is their over-emphasising on the theoretical knowledge. This avoids them from requiring students to think practically, try to identify opportunities, enhance their tolerance for ambiguity, and accept the risks of being an entrepreneur”}. \]

This was confirmed by most of the participants and they explained their own negative experiences with the largely theoretical approach of university when they were doing their academic programmes. As it was mentioned in the previous section, Iranian academics thought that due to some reasons such as lack of time in the class, lack of their own time to give feedback to students, lack of tutors’ awareness about the effective experiential approaches, and lack of students’ motivation, experiential learning is not sufficiently and effectively used in university classes. Consistently, many solutions generated by Iranian entrepreneurs addressed this deficiency and tended to be more practical. Some of these practical solutions are: Requiring students to do practical tasks, Requiring students to do trial Start-Up, Creating students’ Idea bank, Helping students to develop their goals, Encouraging students to take on challenges and risks, and Implementing educational games in the class.

The question here is that what these practical tasks are supposed to do in learning environments? What are the potential main differences between these desirable practical tasks and the current theoretical procedures? Consistent with the entrepreneurship education literature, these questions can be responded from different perspectives. First, in terms of the competencies targeted by these training programmes, it can be said that while know-what competencies can be trained with the theoretical solutions as well, know-how soft competencies need more different practical and non-traditional cultivating approaches. In fact the theoretical methods affect students’ right-hemisphere but the practical ones are supposed to stimulate their left-hemisphere which is the centre of their imagination, creativity and risk-taking. Second, in terms of the expected outcomes of these entrepreneurship training programmes, the theoretical solutions perhaps are suffice for enhancing students’ knowledge ‘about’ entrepreneurship. But when we do want to prepare
students ‘for’ entrepreneurship and when we see our students as the potential future entrepreneurs, theoretical and traditional teaching methods do not work. We do need to bring them to the real environment by requiring them to do practice. Obviously, and consistent with the solutions generated by previous focus groups, experiential and cooperative learning have some affordances for these solutions. These affordances are outlined in more detail in Chapter 6.

They also believed that an optimum virtual learning environment could facilitate the process of designing and delivering students’ practical tasks. One of them pointed out that:

M(1): “I think one of the obstacles of the classrooms that prevents tutors from implementing practical tasks in their classes is their time restriction to define, control and assess students’ practical work. If, for instance, a class consists of 30-40 students, how can a tutor manage all of their work and reports? Therefore, virtual learning environments could give both tutors and students a more effective tool for defining, doing, monitoring and evaluating practical work in the learning environment”.

As it was mentioned by this entrepreneur, current e-learning platforms have the capability to facilitate students and tutors’ communications in order to save their time in the process of teaching and learning. For instance, tutors could send a written general feedback to all students at the same time. Tutors also could see their previous feedback on students’ assignments and track the modifications made on students’ work after receiving the feedback. Virtual verbal/visual communications also provide the possibility for tutors and students to work with each other even from a distance. These are samples of capabilities provided by virtual learning environment to facilitate experiential and cooperative learning.

Another critique of Iranian entrepreneurs to the current educational systems was their overwhelming emphasise on rational decision making and ignoring the role of ‘got feeling’ in students. One entrepreneur pointed out that:

M(2): “Sixth sense or gut feeling is an important capability associated with entrepreneurs. While it seems to be an inherent disposition, but I have a very good experience of stimulating my gut feeling when I was in high school. One of my teachers tended to bring a local business man to our class every month. They described their successes and failures as well as the role of the internal and external factors in their
businesses. One of them described the role of sixth sense in making his very important decisions. He brought some examples of these decisions made based on his sixth sense. Afterward, when I was in a difficult situation and could not make a decision based on the facts and evidence that I had, I tried to replicate the story that I heard several years ago, and it worked! However, universities’ curriculum relies on rational decision making only and ignored the importance of gut feeling!”

He believed that providing the possibility of reviewing stories of people who have succeeded by following their sixth sense could help Virtual Learning Environments (VLEs) to enhance their students’ intuitive ability. One interesting point here is that this entrepreneur reflected on the “teachability” of sixth sense. It could be argued that such a disposition cannot be cultivated in discrete, disconnected activities but rather must emerge as an integration of experiences where you build up confidence in your decision-making and creative faculties. According to the solution generated above, this confidence could be built by — reviewing the stories of other successful entrepreneurs. Sadler-Smith and Shefy (2004) stressed some important points with regard to intuition capability. First, they defined intuition as a “composite phenomenon that incorporates expertise and feeling, and as such is linked to mental processes both in the cortex and the limbic system and to bodily felt senses. It is not simply educated (‘smart’) guessing; it is more than 'flight or fight' (instinct) and is distinct from eureka' experiences (insight). It resides at a level below consciousness, arises cognitively, affectively, and somatically and is manifested as a 'hunch' or 'gut feel’” (p.87). Second, they pointed out that most people have intuitive experiences in their life. They reported that a study of the intuitive experiences among a sample of college principals found that they all experienced intuition-as-feelings which surfaced early on during complex decision-making and was combined with rational analysis at some point in the process of their work. Third, they pointed out that intuitive knowledge, understanding, and skill can be learned through experience and practice and it should be included in the curriculum. Fourth, they found that intuition is not well embedded in the university curriculum because while the rational model is safe, comforting, and reassuring, and in many situations it works perfectly well, the intuitive model has more risks attached to it, can be disconcerting, paradoxical and ambiguous, and in many routine situations is probably inadvisable. However, they argued that intuition is pervasive, automatic, and involuntary; and there are time-pressured and creative problem-solving situations where intuition is important and even necessary. They also provide a list of some recommendations for developing gut feeling in students. (See Table 5.7).
Table 5-7 Guidelines for cultivating intuition in students (Source: Sadler-Smith and Shefy, 2004)

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Description</th>
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<tbody>
<tr>
<td>1. Open up the closet</td>
<td>To what extent do you: experience intuition; trust your feelings; count on intuitive judgments; suppress hunches; covertly rely upon gut feel?</td>
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<tr>
<td>2. Don't mix up your I's</td>
<td>Instinct, insight, and intuition are not synonymous; practice distinguishing between your instincts, your insights, and your intuitions.</td>
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<tr>
<td>3. Elicit good feedback</td>
<td>Seek feedback on your intuitive judgments; build confidence in your gut feel; create a learning environment in which you can develop better intuitive awareness.</td>
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<tr>
<td>4. Get a feel for your batting average</td>
<td>Benchmark your intuitions; get a sense for how reliable your hunches are; ask yourself how your intuitive judgment might be improved.</td>
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<tr>
<td>5. Use imagery</td>
<td>Use imagery rather than words; literally visualize potential future scenarios that take your gut feelings into account.</td>
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<tr>
<td>6. Play devil's advocate</td>
<td>Test out intuitive judgments; raise objections to them; generate counter-arguments; probe how robust gut feel is when challenged.</td>
</tr>
<tr>
<td>7. Capture and validate your intuitions</td>
<td>Create the inner state to give your intuitive mind the freedom to roam; capture your creative intuitions; log them before they are censored by rational analysis.</td>
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</tbody>
</table>

Some other solutions generated by Iranian entrepreneurs are briefly outlined here. For example, they suggested implementing educational games in the class. These games are supposed to expose students to a simulated experience and enhance their productive thinking through experiential learning. Piaget (1962) suggested the main organizing element in game play consists of explicit rules that guide group behaviour. Games with rules are very organized compared with socio-dramatic play (such as free play, creative, and imaginative social interaction) (Annetta, 2010) and, when used appropriately, can result in increasing students’ participation in the learning process (Newswander and Newswander, 2012). The positive effect of educational games on some of the Productive Thinking sub-competencies identified in the current study, including Tolerance for Ambiguity (Glover et al., 1978), Flexibility and Adaptability (Newswander and
Newswander, 2011), and Creativity (Denis and Jouvelot, 2005) has been reported in the literature. For instance, Glover et al. (1978) investigated the impact of the BaFa BaFa cross-cultural simulation game on several classroom groups. They found that students’ tolerance for ambiguity was significantly increased in groups that used this simulation game, which is a game that focuses on teaching cultural differences and awareness. In another study, Denis and Jouvelot (2005) illustrate that a video game entitled “Cha-Luva Swing Festival” dedicated to music education spurs the players’ curiosity and creativity by enabling them to easily play music using gamepads as musical instruments.

Iranian entrepreneurs also highlighted the impact of enhancing students’ web-searching and IT skills on their Productive Thinking competencies. This is consistent with the findings of Lamberton et al. (2005), Korobili et al. (2011), Hölscher & Strube (2000), and Lamberton et al. (2005) that enhancing students’ computer and web experience and IT skills positively affect their Information Seeking Ability as well as Tolerance for Ambiguity. For instance, Korobili et al. (2011) found that students’ experience in using search engines and computers affected the choice of certain search techniques, modification of initial statements and the way they perceived relevant results in the process of their information seeking. This is consistent with Kim and Allen (2002) who mentioned that the flexibility of the web allowed all users to achieve results consistent with the tasks they were carrying out. With regard to Tolerance for ambiguity, Lamberton et al. (2005) found that people with strong interests and competence in IT are more comfortable with ill-defined and ambiguous problem-solving situations.

Applying Brainstorming method in the class is another solution suggested by Iranian entrepreneurs. Once more, both experiential and cooperative learning have some affordances for this solution. In terms of experiential learning, brainstorming is much aligned with reflective observation and abstract conceptualisation cycles, when students are supposed to critically reflect on their experience and reconceptualise it by looking at the concrete experience from different perspectives. In terms of cooperative learning, it is

4 The BaFa BaFa cross-cultural simulation game recreates reality in a rule-bound way. Students are divided into two different cultures: Alpha and Beta (no size limits are described). First, they have to learn the essential components and rules of that culture and then reinforce that learning by practising the rules of the culture. One is essentially a trading culture and uses a language that facilitates trade. The other is male dominated and is more about sharing and telling stories. Students become totally involved in their culture through this simulation; but it also raises huge emotional reactions that need to be examined during debriefing. The emotional engagement consequences are the most effective learning tools, and skilful debriefing is essential to the game’s success and to the prevention of damage caused by emotional conflicts not being resolved (Graham and Richardson, 2008).
aligned with promotive interaction, when individuals discuss the nature of the concepts being learned. Brainstorming which was proposed by Osborn (1963) is an intervention in which individuals, groups, and organizations adhere to a set of four rules while working in sessions designated to generate ideas. The rules are (1) to generate as many ideas as possible, (2) to avoid criticizing any of the ideas, (3) to attempt to combine and improve on previously articulated ideas, and (4) to encourage the generation of "wild" and "free-wheeling" ideas (Litchfield, 2008). Research suggests that incorporating brainstorming in the curriculum can provide students the opportunity to enhance their Imagination (Bland et al., 2009), Risk-taking (Childers and Lowry, 2004), Creativity (Hunsaker, 2005; Scott et al., 2004; Muttagi, 1981; Paulus and Yang, 2000), and opportunity identification skills (Shepherd and DeTienne, 2005). For instance, Isaksen and Gaulin (2005) pointed out that individuals in the process of brainstorming learn “the importance of a climate conducive to creativity, the value of diverse thinking and problem-solving styles, and that creative thinking is enjoyable and powerful” (p.326). Also, Shepherd and DeTienne (2005) found that individuals who are able to brainstorm many solutions to problems have a higher tendency to find the most innovative solutions and opportunities.

Promoting students’ communications and interactions is another solution suggested by Iranian entrepreneurs. Obviously, cooperative learning through promotive interaction which promotes opportunity of face-to-face interactions among group members has some affordances for this solution. The positive effects of students’ networking and interaction on creativity (Liu et al., 2010; Leenders et al., 2003; Andrews and Smith, 1996), and opportunity identification (Gaglio and Katz, 2001) was been demonstrated. Leenders et al. (2003) illustrated that by using effective communication with others, people can build on their knowledge and facilitate the exchange of information, create new knowledge and insights, and achieve innovation. Furthermore, communication abilities help people to procure necessary resources and stimulate buyer interest in order to make successful opportunities (Gaglio and Katz, 2001).

As another solution for enhancing students’ productive thinking, Iranian entrepreneurs suggested that universities have to provide a calm and no-stress environment for their students. This solution should be seen from different perspectives. Some scholars such as Shanteau and Dino (1993) empirically found that subjects showed a consistent decrease in creativity with increased exposure to environmental stressors. However, Later, Perry-Smith and Shalley (2003) illustrated that there is not a simple linear interrelationship
between stress and creativity. They pointed out that while too much stress and conflict can stifle creativity, a lower and more manageable amount of stress and conflict, such as that likely to result from moderate centrality\(^5\), may facilitate creativity. Consistent with this view, Byron et al. (2010) found that there is a curvilinear relationship between evaluative stress and creativity such that low evaluative contexts increased creative performance over no stress control conditions. Therefore, the solution above should be criticised based on these findings and it could be interpreted that exposing students to low to moderate stress could be useful for enhancing their creativity.

### 5.2.6. Cultivating Productive Thinking – Iranian Students

As can be seen in Table 5.8, Iranian students propose 9 solutions for cultivating Productive Thinking competencies.

#### Table 5-8 Productive Thinking solutions generated by Iranian students

<table>
<thead>
<tr>
<th>Solution Title</th>
<th>Solution Description</th>
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<tbody>
<tr>
<td>Applying scenario writing as an assessment scheme</td>
<td>Students should be encouraged to write a scenario/story based on what they learnt in the module. This scenario should be used to write a business plan in the next stages.</td>
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<tr>
<td>Applying open-book assessments</td>
<td>Students should be allowed –in some assessments- to use the books and other resources in their summative and formative assessments (open-book exams).</td>
</tr>
<tr>
<td>Applying idea writing as an assessment scheme</td>
<td>Students should generate some business ideas relevant to each module. This idea writing should be a part of their final assessment’s score.</td>
</tr>
<tr>
<td>Mosaic combination of participants in each class</td>
<td>Students in each class should be selected from different academic backgrounds, skills, culture, and ethnicity (mosaic combination).</td>
</tr>
<tr>
<td>Encouraging students to critically review the relevant markets</td>
<td>Students should be required to find and critically review the potential markets and jobs relevant to their studies.</td>
</tr>
<tr>
<td>Promoting students’ communications and interactions</td>
<td>Students should increase their communications and interactions with each other, their tutors, and experts within and outside of the class.</td>
</tr>
</tbody>
</table>

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\(^5\) Centrality refers to the position of individuals in the social networks. moderate centrality refers to not too little or too much in the centre of communications of a social network.
Applying non-score assessment system

Assessment indicators of students’ learning need to be more complete. It should be a combination of students’ score, qualitative descriptions, and practical outcomes.

Requiring students to do practical tasks

One or more practical task(s) has to be required in each module. It means that exclusively theoretical assessments are not enough for assessing students.

Implementing participatory and collaborative teaching and learning

Students need to be encouraged to work within teams. This team-work should be in different forms such as: group assignments, group discussions, group presentations, etc.

Reviewing the discussions of students in this focus group, it was revealed that they have a clear concern about the effectiveness of the current assessment approaches implemented in their learning environment. One of the students who had experience of studying in the virtual learning environment started this discussion and pointed out that:

M(1): “The main problem here is that the content of our modules and courses are updated but the assessment approaches associated with them still remain out-of-date. Our tutors tend to assess our learning just by end-semester exams at the end of the semesters. That’s why we believe that the current assessment scheme is not fair and effective. This problem especially occurs when students and tutors have not any physical contact in the virtual learning environments. It is a reality that students’ productive thinking and motivation could not be improved in the current system."

It would seem that the students agree with their lecturers that, although learning experiences are often more experiential in nature, the assessment approaches are not coherent with this change. This shortcoming can be better interpreted by looking at Bloom’s taxonomy of learning outcomes. Bloom (1956) highlighted this shortcoming and mentioned that unfortunately most of assessment approaches usually used in class tend to solely assess students’ knowledge. Against this context, he mentioned that in order to create thinkers as opposed to students who simply recall information, higher levels of assessment plans must be incorporated into training programmes. He proposed six different levels of students’ expected learning and highlighted specific assessment approaches and questions for each of these six levels (See Figure 5-2).
According to Figure 5-2 and as it was described by Bloom (1952), in the ‘Knowledge’ level questions are asked solely to examine whether a student gained specific information from the theoretical lesson. This is dominant assessment approach in most of the entrepreneurship education programmes. However, it is very obvious that the current assessment approach is not effective for assessing students’ entrepreneurial capabilities. In ‘Comprehension’ stage students are required to understand and interpret the information and facts. In ‘Application’ stage, assessment questions require students to actually apply, or use, the knowledge they have learned in a real environment. Fourth level of Bloom’s taxonomy – ‘Analysis’ – requires students to go beyond knowledge, interpretation and application and actually see patterns, motives and rational behind a problem. In ‘Evaluation’ level, students are supposed to assess information and come to a conclusion in regards to the subject being studied. Finally, in ‘Synthesis’ level, students need to create new theories or make predictions by using the information and facts they obtained in the previous stages. Consistent with what suggested by the participants of this study (practical assessment approaches), ‘Application’ is in the centre of Bloom’s taxonomy of learning outcomes and assessment approaches as well. This practical point of view helps students to have a better understanding of their memorised and interpreted information and also prepare them to analyse, evaluate and synthesise those information and facts in the upper levels of Bloom’s taxonomy.

This discussion was continued and urged on by other students’ views, which were
broadly consistent in their focus on the need for more effective assessment methods. The role of researchers of this study was to direct the discussion towards the specification of clear solutions. As the discussion progressed, students highlighted that they need more freedom and flexibility in the assessment process. One student represented this idea as follows:

F(1): “The current assessment scheme in our university pushes us to just memorise the facts and reproduce them in the exams. It is not consistent with what you are talking about students’ productive thinking. If you are interested to stimulate students’ productive thinking, you need to avoid them from memorising and recalling the content of their modules. Open-book assessments help students to be free from the anxiety of memorising and focus on critical reviewing of their resources by questioning the facts presented in those resources.”

Other students believed that this strategy helps student to learn how they could effectively seek the relevant information in their academic resources; and then, analyse and synthesise their arguments by criticising the facts extracted from the content. They pointed out that the specific capability of virtual learning environments for providing a vast variety of digital resources plus their possibility for checking the originality of students’ course-works make them appropriate for implementing an open-book assessment approach. On the other hand, implementing open-book assessment has some disadvantages which need to be taken into account as well. Brown et al. (2004) listed three of these disadvantages as follow: students need rehearsal at preparing for open-notes exams; candidates whose open notes were not very suitable are penalised quite severely, and students can become addicted to open-book exams. Taking into account the first and second criticisms above, it could be argued that students and even tutors need to be trained to have sufficient skill and awareness in relation to the pros and cons of open book exams.

Using Idea-writing as an assessment scheme was another suggestion which was highly supported by students in this focus group. The generator of this solution mentioned that:

F(2): “There are a lot of new ideas hidden in each unit of each module. Requiring us to identify and think about these potential new ideas and make them visible could help us to do the same in our life and business as well. Virtual learning environments could facilitate students’ idea generation by providing a structure for generating, reviewing, commenting and revising students’ idea generation as a part of their assessment in each
This solution was supported by other students as well. They argued that requiring them to explore the new commercial ideas from their theoretical lessons is an effective exercise in order to enable them to see opportunities when others cannot see them. It also helps students to learn the module with more intrinsic motivation. They believed that students’ idea generation can result in enhancing many of their productive thinking sub-competencies such as creativity, opportunity identification, questioning everything, imagination, and seeing the market from a different angle. This is consistent with the finding of DeTienne and Chandler (2004) and Sosik et al. (1998) who highlight the impact of students’ idea generation on developing their Creativity. Paulus and Yang (2000) contributed to this finding by indicating that idea generation in groups can result in enhancing creativity only if group members carefully process the ideas exchanged in the group and reflect on the ideas after the exchange process. Toubia (2006) extended the literature by proposing that to improve creative output of students’ idea generation, there is a need for ideation incentives and these rewards incentives have the capability to improve idea generation. This idea generating solution is in line with the experiential nature of the learning suggested as important by other respondents as well, because idea generating requires students to be in touch with the realities and potential capacities in their societies and life. As it was mentioned in the quote above, e-learning provides the structure required for the idea generating process and also facilitates monitoring and commenting on students’ generated ideas through the semester.

Iranian students also suggested that students of each class should be combined from different academic backgrounds, skills, culture, and ethnicity groups to provide a mosaic combination. One of the students pointed out that:

F(3): “I was required to take part in two group learning activities in two different modules in a semester. I remember that while my teammates were homogeneous in a class, they were heterogeneous in another one. As the most dominant difference between our performances in those two groups, most of us were more creative and inspired in the heterogeneous group learning. Because, we were completing each other much like jigsaw parts!”.

In line with Iranian academics, Iranian students here suggested that group learning in heterogeneous groups could facilitate students’ productive thinking. This technique
could be translated or extended as a part of the cooperative learning approach named “Jigsaw Groups”. This technique and its affordances for these solutions are outlined in Chapter 6. The mosaic combination of students and its effects on their productive thinking sub-competencies were addressed by a number of previous studies as well. For instance, exploring the role of self-construal and cultural priming, Cheng et al. (2011) found that cultural difference amongst students working together is an important factor driving their interpersonal flexibility. Moreover, Leung et al. (2008) point out that encouraging students’ multicultural experience can result in enhancing both their creative performance (insight learning, remote association, and idea generation) and creativity-supporting cognitive processes (retrieval of unconventional knowledge, recruitment of ideas from unfamiliar cultures for creative idea expansion). However, this solution to be effective needs to meet an important pre-requirement. Leung et al. (2008) contributed to the current literature by pointing out that the serendipitous creative benefits resulting from multicultural experiences may depend on the extent to which individuals open themselves to foreign cultures. It means that students need to be open-minded to benefit from the potential advantages of a mosaic learning environment.

5.2.2. Mapping between Productive Thinking sub-competencies and the solutions generated by focus groups

In each of the 6 focus groups reported above, a list of Productive Thinking sub-competencies and their definitions as well as a form for writing the title and description for key solutions were given to the participants, asking them to think, express, discuss and then write their generated solutions in the form provided. In each case, the person generating each solution was asked to note the specific Productive Thinking sub-competency addressed by the solution. Each solution could cover one or more sub-competencies. The form used for this process can be found in Appendix 3. Based on the information provided by participants, Table 5.8 presents a profile of the different Productive Thinking sub-competencies addressed by the solutions. Due to the lack of space, just the codes of solutions are provided here (See Tables 5.2 to 5.7 for codes, titles and descriptions of solutions).
Table 5-9 Productive Thinking sub-competencies covered by the solutions generated by focus group participants

<table>
<thead>
<tr>
<th>Solution Generator</th>
<th>Solution Code</th>
<th>Creative Thinking</th>
<th>Opportunity Identification</th>
<th>Tolerance for Ambiguity</th>
<th>Flexibility in Everything</th>
<th>Questioning Everything</th>
<th>Risk Taking</th>
<th>Stress and Failure Management</th>
<th>Willing to Take on Challenging Situations</th>
<th>Imagination</th>
<th>See the Market from a Different Angle</th>
<th>Intuitive Ability</th>
<th>Information Seeking</th>
<th>Add Value</th>
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<td>Irish Academics</td>
<td>Connecting each module to the whole programme</td>
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<td>Encouraging students to take on challenges and risks</td>
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<td>Organising Guest lecturers – Site visits</td>
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<td>Implementing participatory and creative learning</td>
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<td>Applying personal development programmes</td>
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<td>Embedding decision making simulators in the e-learning platform</td>
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<td>Using difficult and open-ended questions</td>
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<td>Irish Entrepreneurs</td>
<td>Reviewing stories of other entrepreneurs</td>
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<td>Writing business plan proposals</td>
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<td>Encouraging students to participate and evaluate the relevant events</td>
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<td>Providing Semi-structured and flexible educational planning</td>
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<td>Applying new Assessment approaches</td>
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<td>Promoting students’ multi-dimensional perspective</td>
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<td>Solution Code</td>
<td>Promoting self and peer-assessment</td>
<td>Promoting peer-teaching</td>
<td>Providing mentoring / counselling services for students</td>
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<td>Irish Students</td>
<td>Requiring students to do Practical tasks</td>
<td>Requiring students to use social Networks</td>
<td>Encouraging “Thinking and doing outside the box”</td>
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<td>Avoiding preconceived beliefs</td>
<td>Being a good and fair listener</td>
<td>Practice “Thinking &amp; Understanding first”</td>
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<td>Defining more sophisticated system and filters for student recruitment</td>
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<td>Iranian Academics</td>
<td>Introducing e-incubators to students</td>
<td>Evaluating and criticising resources which are relevant to their courses</td>
<td>Encouraging students to critically review the relevant markets</td>
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<td>Solution Code</td>
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<td>Creativity</td>
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<td>Coping with Challenges</td>
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<td>Willing to Take on a Different Angle</td>
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<td>Requiring students to use social networks</td>
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<td>Promoting social and group activities</td>
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<td>Bridging amongst Policy makers, Universities and Industry</td>
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As can be seen in Table 5.9, all of the Productive Thinking sub-competencies are covered by the solutions generated by focus group participants. However, some competencies are addressed more than others. For example, while Questioning is addressed by just one of the Irish Academics’ solutions, Willing to take on challenges is covered by four solutions generated by the same group. In general, while some sub-competencies such as Opportunity identification, Information seeking, and Imagination were covered by a larger number of solutions here, others such as Intuitive ability (6th sense) and Initiative were addressed by fewer solutions.

One conclusion that can be drawn from this table is that, according to the experience of participants of this study, all of the Productive Thinking sub-competencies identified in the previous study are educable, at least to some extent. This is consistent with Sánchez (2011) who pointed out that entrepreneurial competencies can be improved via training and development. Different points of view on the educability of the entrepreneurial competencies were reviewed and discussed in Chapter 2 of this thesis and this issue is discussed further in the general discussion section (see Chapter 7).

5.2.3. Categorising and comparing the generated solutions by different groups

As can be seen from the tables of solutions above, there is a significant overlap in the solutions generated by the different focus groups of this study. This overlap is not limited to the literal overlaps, for example, where solutions are worded very similarly. Some solutions address the same aim but are worded differently. For example, ‘reviewing stories of other entrepreneurs’ links to the ‘case study’ suggestions and perhaps is an example of a similar or “redundant” solution. This redundancy reveals where our respondents’ opinions are aligned and hint at important features of the curriculum. Therefore, it is important to draw attention to the possibility of generating a synthesis of all of the overlapping solutions, for example, in the context of a thematic analysis of all solutions generated across all focus groups. A proposed set of thematic headings are described below. These themes emerged as a result of efforts by the primary investigator of this thesis to categorise and label the solutions into 13 groups. The forty eight productive thinking alongside the themes associated with them can be seen in Table 5.10.

As it can be seen in Table 5.10, while most of the solutions supported by the literature as well, we could not find any support from the literature for a few number of solutions. It
does not mean that these unaddressed solutions, such as ‘scenario writing’, are completely new and their impacts on other competencies were not addressed by the literature. But, it means that, by the best of knowledge of this study, the impact of this solution on students’ Productive Thinking sub-competencies is not examined yet.

Table 5-10 Grouping productive thinking solutions into the common themes

<table>
<thead>
<tr>
<th>Solution theme</th>
<th>Solution Title</th>
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<td></td>
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<td>IR-A</td>
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<td>Promoting “Learning from each other”</td>
<td>Implementing participatory and collaborative teaching and learning</td>
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<td>Promoting self and peer-assessment</td>
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<td>Mosaic combination of participants in each class</td>
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<td>Pre-eminence of free thinking</td>
<td>Allocating thinking time in the class</td>
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<td>Applying brain storming method in the class</td>
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<td>Avoiding preconceived beliefs</td>
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<td>Exercising to “Think &amp; Understand first”</td>
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<td>Encouraging “Thinking and doing outside the box”</td>
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<td>Highlighting practical applications</td>
<td>Outlining practical applications of modules</td>
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<td>Creating students’ idea bank</td>
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<td>Valuing experience (learning by doing)</td>
<td>Requiring students to do trial start-up</td>
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<td>Requiring students to do practical tasks</td>
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<td>Reflective</td>
<td>Organising guest lecturers – site visits</td>
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<sup>6</sup> IR-A: Iranian Academics; IR-S: Iranian Students; IR-E: Iranian Entrepreneurs; IE-A: Irish Academics; IE-S: Irish Students; IE-E: Irish Entrepreneurs; L: Literature
<table>
<thead>
<tr>
<th>Observation</th>
<th>Reviewing stories of other entrepreneurs</th>
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<td>Sharing stories and experiences relevant to sixth sense</td>
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<td>Involving students in curriculum design (curriculum flexibility)</td>
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<td>Curriculum integration</td>
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<td>Interactive learning environment</td>
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<td>Embedding decision making simulators in the e-learning platform</td>
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<td>Bridging amongst Policy makers, Universities and Industry</td>
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<td>Being a good and fair listener</td>
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<td>Stimulating students’ curiosity</td>
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<td>Promoting students’ multi-dimensional perspective</td>
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<td>Promoting students’ critical thinking</td>
<td>Encouraging students to critically review the relevant markets</td>
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<td>Providing personal development programmes</td>
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<td>Helping students to make their goals</td>
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Improving students’ recruitment system

Defining more sophisticated system and filters for student recruitment

Brief definitions of the thirteen themes of Productive Thinking solutions are provided below:

1. **Promoting “Learning from each other”:** solutions included in this theme tend to highlight the importance of the learning that can be cooperatively obtained by students in small groups.

2. **Pre-eminence of free thinking:** the main focus of this theme is on the provision of space for students to freely and creatively think and engage in class discussions.

3. **Highlighting practical applications:** this theme points out that students should be able to apply their theoretical learning in practical situations. Therefore, they do need to explore and highlight the practical value or learning experiences throughout their studies.

4. **Valuing experience (learning by doing):** from this point of view, students’ experience is a valuable source for enhancing their learning in the class.

5. **Reflective observation:** solutions associated with this theme focus on helping students to reflectively observe everything surrounding them as potential learning opportunities and resources.

6. **Involving students in curriculum design (curriculum flexibility):** despite the traditional view, students are not only the customers of the curriculum, they need to be involved in the curriculum design as an important stakeholder group.

7. **Curriculum integration:** different modules within a course or programme cannot be seen as individual modules fragmented from the whole. The strong interrelationship between modules as part of the whole programme has to be highlighted for students.

8. **Interactive learning environment:** according to this theme, students’ interaction with computer-based simulations, educational games, their tutor and environment
is considered as a valuable resource for their learning.

9. **Stimulating students’ curiosity**: based on this theme, students are advised to see everything from a variety of different perspectives. This could be achieved by stimulating students’ questioning ability.

10. **Promoting students’ critical thinking**: this theme encourages students to intellectually and actively conceptualize, analyse, synthesize, and/or evaluate information obtained from different resources.

11. **Scaffolding students’ confidence**: according to this theme, students need to be in a safe environment from day 1 to openly share and build upon their thoughts.

12. **Providing personal development programmes**: this theme highlights the importance of providing the training support for developing personal skills, abilities and competencies in university students and staff.

13. **Improving students’ recruitment system**: this theme pointed out that the current recruitment system for getting students in universities is not optimal. This system needs to direct applicants towards the most appropriate course which is compatible with their background and talents.

As could be seen in these 13 themes and the solutions associated with them, focus group participants highlight some significant gaps between the current educational environments and the optimal environments needed to cultivate entrepreneurial competencies in students. It means that if educational approaches are to be effective in promoting entrepreneurship they need to be transformed in many ways. These 13 themes may highlight the main areas of this transformation process. An overview of the themes listed above suggest that ‘experience’, ‘group learning’ and the creation of a ‘student-centred educational environment’ are three dominant cross-cutting issues that are central to the generated solutions. Therefore, as argued in this chapter, it may be that cooperative and experiential learning are two educational frameworks which have a variety of affordances suitable for implementing these solutions in an e-learning environment. The affordances of cooperative and experiential learning are discussed further in Chapter 6.
5.3. Cultivating approaches (solutions) of Motivation competencies

Motivation is one of the most important entrepreneurial competency categories identified by participants in study 1. As it was described in Chapter 4, Motivation is a combination of eight sub-competencies including: Persistence, Proactivity and Hardworking, Need for achievement, Determination, Belief in the effect of personal efforts on outcomes, Task motivation, Competitiveness, and Independence. A description of each of these sub-competencies was provided in Chapter 4. In this chapter, the solutions suggested by focus group participants that would help to foster the development of these Motivation sub-competencies are presented. The results of the six focus groups in Iran and Ireland indicated a total of 65 redundant and 47 unique solutions. Below, the titles and descriptions of all of these solutions are presented and examined in light of research and theory in the learning sciences.

5.3.1. Cultivating Motivation – Irish Academics

Irish academics produced 10 solutions for cultivating Motivation competencies in students. These solutions can be seen in Table 5.11.

Table 5-11 Motivation solutions generated by Irish Academics

<table>
<thead>
<tr>
<th>Solution Title</th>
<th>Solution Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Encouraging students to work in industry and workplace</td>
<td>Get students to work in industry in a meaningful way, so they will appreciate why they are studying. [Also they could understand] what kind of skills they will need in their careers. Improved attention to the student/company relationship to develop a win/win situation.</td>
</tr>
<tr>
<td>Mapping students’ required skills with their studies</td>
<td>Make students explicitly aware of the skills/learning outcomes that they will need on graduation and show how each module contributes to these outcomes.</td>
</tr>
<tr>
<td>Pushing students hard by more exams</td>
<td>When UL had a trimester system (i.e. 3 sets of exams) our graduates had a better reputation for hard work than when we moved to a semester system (2 sets of exams)</td>
</tr>
<tr>
<td>Enhancing experiential learning by organising site visits for students</td>
<td>Students should engage in experiential learning preferably through on-site visits.</td>
</tr>
</tbody>
</table>
Allowing students for iterative assessments

Students should be allowed for iterative assessments until they reach their desired grade.

Providing clear link to award

Students are very motivated in 4th year when they clearly see the link between their work and their final award e.g. 2.1 as 1st etc. This link could begin as early as 1st year (connecting modules through e.g. portfolio work).

Applying known-assessment strategy (No Anonymous)

Public display of work or peer assessment of works, students will be most motivated when they know that their peers are also reviewing their works.

Offering competitive awards to students

Giving competitive awards and prizes for students work, probably best suited to project work.

Enhancing students’ flexibility in getting modules

Let students to do some accelerated programmes (take modules earlier) not dominated by progressive points.

Implementing Pull & Push Motivations

Students need to have both Pull and Push motivations. Pull motivations include: stimulation methods, interactive assessment feedbacks, fear of failure, peer review, prizes and awards, and site visits. Push motivations include: summer workshops, more assignments and exams.

As could be seen in Table 5.11, the main concern of Irish academics in this focus group was about distance of students from the real world. In most of the solutions generated above, they suggested reducing the distance between students and the real world by requiring them to work in industry, create a map between their studies and their required skills, go on site visits, offer them rewards, and pushing them hard by more difficult and iterative exams. Real world involves daily and weekly challenges that one is evaluated upon, which requires sustained vigilance and high performance levels. Therefore, this possibility could be simulated by learning situation. One of these practical-oriented solutions was about mapping between students’ studies and their needs in the real world. One of the academics stressed that:

F(1): “when I was a student, I tended to have greater motivation to learn when I understood the practical applications of the module in my life. So, those tutors who were successful in showing me this connection had a great impact on my motivation to learn.”

220
Now, I am trying to implement this experience in my own classes. The whole of my first session in each module is allocated to review the practical applications of the module in relation to students’ actual lives. Moreover, this happened again time after time during the semester as well. I feel that my students are so excited to learn more and more when they can clearly see the connection between their studies and their required skills in the real life.”

It may be that experiential learning includes some affordances for this solution, much like it may do for similar productive thinking solutions highlighted above. From the perspective of experiential learning principles, higher education offers new curricular opportunities in the interplay between academic study and wider working and life experience (Bridges, 2000). Aligned with this affordance of experiential learning, this solution sought to encourage students to connect their studies with their real life. In turn, understanding the affordances of modules in real life could enhance students’ intrinsic motivation to push for higher achievement in the class. The specific role of the e-learning environment in implementing this solution was highlighted by another focus group participant:

F(2): “we have a set of learning outcomes for each module. These learning outcomes may be mapped with students’ needs and requirements. To do so, an effective e-learning platform could facilitate the process of expressing students’ needs and then help them even to graphically map the learning outcomes with their required skills. Then, students can see each other’s maps, learn from each other’s experience, and identify new connections between their modules and their real life. This complicated process cannot be easily done manually.”

In fact, the affordance of e-learning for this solution is 1) creating a clearer map between students’ required skills and their studies, and 2) sharing the maps created by students to exchange their experiences and perspectives with each other and help them to learn from each other. Here, the cooperative nature of this solution is also unfolded. According to ‘positive interdependence’, as one of the key elements of cooperative learning, students need to believe that others’ work benefits them and their work benefits others. The flow of experience and knowledge experience suggested in the solution above helps students to benefit from each other’s generated maps and explore new affordances that their studies have for their real life. Moreover, students through promotive interaction – as another cooperative learning key element – tend to learn from each other. Therefore,
it could be argued that the solution above is strongly tied with both experiential and cooperative learning frameworks (see Chapter 6).

Consistent with the solution above, Dornyei (1994) pointed out that tutors should help their students to recognise links between their learning efforts and outcomes. This link could be created through developing learners’ instrumental motivation by discussing the role which their studies play in the world and its potential usefulness both for themselves and their community. Other studies illustrate that making the syllabus of the course relevant by basing it on students’ needs analysis and making the material personally relevant to students’ lives can result in enhancing their Task Motivation (Forsyth and MaMillan, 1991; Dornyei, 1994). However, while identifying the connections between the real world and module syllabuses and learning outcomes is necessary, it may not be enough to foster deep levels of motivation. Sometime, students identify societal needs that are not well addressed in their curriculum. That is why Qi (2010) and Forsyth and MaMillan (1991) suggest training students in interdisciplinary disciplines - such as information management, methodological and skill courses - and encouraging them to meet the needs of society in an interesting, informative and challenging way positively that promotes their competitiveness and need for achievement. Therefore, connecting students’ theoretical studies with the needs of societies has to be continued by trying to identify and meet those needs in the class. This can be done through adjusting the modules syllabus align with the real world requirements. This connection helps curriculum designers to keep the learning outcomes and syllabus updated.

Further to the solution above, another academic described her experience as follow:

M(1): “while ‘humanities’ is my academic field, I usually require my students to work in workplaces and industries relevant to their studies. This is required as a practical project which is a part of their studies and they are supposed to write a report of their project at the end of their classes and present it to their classmates. One part of their report is mapping between their studies and what they found in the real workplace. I realised that most of them highlighted very important connections between their theoretical studies and what they need in their real life. Also, they got a good experience of interacting with business owners and workers and they actually felt in their hearts the difficulty of finding or creating a job when without sufficient preparedness for employability or making productive work for themselves. So, they were more motivated to learn and get themselves ready for the future.”
Once more, cooperative and experiential nature of this solution is very obvious. Students are required to go to the workplace and get some experiences there. Moreover, they are required to share their final reports with their classmates. This sharing leads to cooperative learning and helps them to learn from each other’s experiences. It could be argued that all of the four experiential learning cycles as well as all of the five key features of cooperative learning have some affordances for this solution. With regard to experiential learning, students get the concrete experience by working in the workplace, reflectively observe their experience, critically review the rationale behind the facts that they experienced, and finally, plan for their future. Regarding cooperative learning, by presenting and sharing their experience with their classmates, they try to share the benefits derived from their own experiences, assess themselves as well as their classmates, learn from each other, develop social skills, and finally, discuss how well they are achieving their goals. As could be seen here, this practical solution should be comprehensively covered by all aspects of experiential and cooperative learning frameworks. Implementing this approach has some potential advantages and disadvantages. For instance, Knight (2004) pointed out that while requiring students to do practical group tasks encourages teamwork and maximises available resources, some students get away with doing little. This issue highlights the importance of monitoring students’ works in the individual and group bases. Here, one of the affordances of e-learning for this solution is unfolded. It is very difficult to monitor students’ submissions, peer assessments, peer-learning, and improvements by manual hard-copy approaches. Instead, e-learning could provide some software-based approaches to facilitate the flow of exchanging students’ experience and monitoring them by the tutor.

Another solution generated here by Irish academics to enhance students’ Motivation is applying hard and demanding exams in students’ assessment scheme. It is argued that when, for instance in University of Limerick, students were required to do three sets of exams in each academic year, students were more motivated to achieve a better quality in their studies. This solution is consistent by findings of Pavlin and Svetlicic (2012) who, based on a large-scale survey among 45,000 higher education graduates, argued that applying more practically oriented studies and higher workload for students could enhance their Competitiveness and help them to achieve better results in a competitive environment. The interesting point here is combination of practically oriented studies and students’ higher workload. It means requiring more workload from students in an experiential learning framework. Therefore, due to the experiential nature of other
solutions generated by this study, it could be argued that pushing students hard by more demanding requirements is aligned with other solutions and could have a complementary impact on students’ entrepreneurial competencies. However, one of the drawbacks of imposing a higher workload on students is that it would be very time-consuming for both students and tutors. Here, the affordance of e-learning for this solution could be seen. In fact, by using effective software, facilitating communications, monitoring, and feedback process, e-learning makes this time-consuming process more affordable and feasible. Furthermore, high workload could also cause more psychological and physiological stress (Lundberg and Stockholm, 1999), increased social withdrawal (Repetti, 1989), increased work-to-family conflict (Ilies et al., 2007), degrade team performance (Urban et al., 1996), increase the prevalence of depression through distress reactions (Esther et al., 2003) and burnout (Greenglass et al., 2001). Therefore, these side-effects of workload should be taken into account whenever thinking about applying this solution in educational settings. ‘Social support’ is suggested by Jacobs and Dodd (2003) as an important buffer against the negative effects of students’ workload. They pointed out that higher social support from students’ friends is associated with lower levels of depersonalization and higher levels of personal accomplishment. Interestingly, this values ‘cooperative learning’ for decreasing the workload side-effects. In line with what proposed by Jacobs and Dodd (2003), cooperative learning helps students to promote each other's success by helping, assisting, supporting, encouraging, and praising each other's efforts to achieve, orally explaining how to solve problems, and discussing the nature of the concepts being learned. Therefore, it could be concluded that applying this solution (students’ high-workload) in the class in a cooperative context may is more effective with less side-effects.

Providing semi-structured and flexible educational planning is another solution suggested by Irish and Iranian academics. They believed this flexible educational planning enhances students’ autonomy in order to provide more space for students to show their talent and plan their educational journey based on their interests, needs, and preferences. It was argued that unlike many other solutions which enhance students’ extrinsic motivation, this solution positively affect their intrinsic motivation. From their viewpoints, this intrinsic motivation is more effective, lasting, and appropriate. However, there is a challenge against this solution which was described by Bridges and Hallinger (1997). They believed that while this student-centred approach provides maximum flexibility for students to identify their own learning goals and feel greater ownership of the learning process, students oftentimes express frustration about never knowing whether they are learning the
right things. This frustration happens because the overlap between the learning objectives identified by students and instructor is less than perfect. They reported that approximately 60% of the learning objectives identified by students overlap with the learning goals of instructors and also students cover 20% less content in the student-centred version than in the conventional curriculum. Another concern about this solution is the coherence of the curriculum. It was argued that one of the potential drawbacks of personalising curriculum planning is harming the curriculum coherence. As a solution for these drawbacks, Iranian academics suggested that the flexible educational planning should be done in a semi-structured format. It means that tutors purposefully will determine the compulsory and optional parts of the curriculum; and then, students have manoeuvrability only in the optional parts of the curriculum. In this way, the distance between students and tutors’ perceptions about which learning outcome, syllabus and teaching material have to be used in class will be decreased. Furthermore, the coherence of the curriculum will be kept since the compulsory parts of the curriculum – that students cannot customise them – scaffold the curriculum and keep the connection between its different parts.

The positive impact of promoting learner autonomy through personalising the learning process and allowing students to select their desired syllabus, teaching material, topics and tasks, for example, on students’ Task Motivation (Patall et al., 2008; Dörnyei and Csizér, 1998; Dornyei, 1994; Brophy, 1987), persistence (Patall et al., 2008), Need for achievement (Forsyth and MaMillan, 1991), Proactivity and Hard-working (Parker et al., 2006), Determination (Forsyth and MaMillan, 1991; Lifshitz, 1973; Levenson, 1973), Independence (Sixsmith, 1986; Church, 2007), and Competitiveness (Qi, 2010) has been supported in the literature. Notably, Patall et al. (2008) conducted a meta-analysis of 41 studies examined the effect of choice on intrinsic motivation and related outcomes in a variety of educational settings. They indicated that providing choice enhanced students’ intrinsic motivation, persistence, performance, and production. However, they also suggested that the positive effects of choice are diminished when the self-regulatory costs of making choices become greater and when the experience of autonomy is undermined. They described the self-regulatory barrier as follow: “all acts of choice or self-control are effortful and draw on a limited resource that can be depleted, analogous to a source of energy or strength. Because all acts of volition or self-regulation draw on the same resource, any act of volition or self-regulation will have detrimental effects on subsequent acts that continue to require self-regulation. Consequently, engaging in a choice can result in a state of fatigue called ego-depletion, in which the individual experiences a decrement
in the capacity to initiate activity, make choices, or further self-regulate” (p. 272). To reduce the potential for ego-depletion in this context, paying attention to the notion of ‘semi-structured’ in the title of the solution is useful. In fact, this semi-structured process helps students to be partially guided in the process of personalising their educational journey and it helps them to keep their limited resources and avoid ego-depletion. Moreover, if there is a cooperative dimension to this task, this may also help students to cope with this ego-depletion and manage to benefit from the autonomy provided by this particular solution. Here, the affordance of e-learning is also unfolded, since structuring the complicated process of guided educational personalisation could be more effectively done by the educational technologies embedded in the e-learning platforms rather than doing in by manual and paper-based approaches.

With regard to the impact of students’ autonomy on their independence, Church (2007) pointed out that students should be encouraged to make choices: “A person can model independent thinking by sharing his ideas and opinions about everything from the weather to books to classroom activities” (p.6). But the question is how autonomy could be brought to the classroom activities and which areas could be engaged with such a process. Attempting to respond this question, Stefanou et al. (2004) proposed that autonomy support can be manifested in the classroom in at least 3 distinct ways including: organizational autonomy support (such as: allowing students some decision-making role in terms of classroom management issues), procedural autonomy support (such as: offering students choices about the use of different media to present ideas), and cognitive autonomy support (such as: affording opportunities for students to evaluate work from a self-referent standard) areas. Although these domains of autonomy could be covered by the semi-structured and flexible educational planning proposed by Irish and Iranian academics, they are not directly mentioned in the solution, but could be considered by the future studies that seek to cultivate entrepreneurial competencies in students in the context of an e-learning environment.

Finally, Forsyth and MaMillan (1991) pointed out that students who performed poorly often react very negatively and seek to blame their outcomes on lack of ability beyond their control. Combating these attributions by enhancing students’ autonomy and control may result in fostering students’ determination to earn higher grades. It could be argued that the individual accountability dimension of cooperative learning has an affordance here, since it assesses each student’s performance and feeds back the results to the group and individual to make sure that every student does his/her task within the group. Further
to the previous affordances of cooperative learning for this solution, it could be argued that cooperative learning provides the perception that students and tutors are linked with each other in a way that they cannot succeed unless they work together. This positive interdependence helps students and tutors in the class to perform better in this semi-structured educational planning system.

### 5.3.2. Cultivating Motivation – Irish Entrepreneurs

Irish entrepreneurs generated eight solutions for Motivation. These solutions can be found in Table 5.12.

**Table 5-12 Motivation solutions generated by Irish Entrepreneurs**

<table>
<thead>
<tr>
<th>Solution Title</th>
<th>Solution Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Requiring gradual and step by step tasks from students</td>
<td>The educational structure has to be designed in a way that encourages students to go forward step by step. They have to be shielded from a weighted burdening. It would be better to be gradually exposed to their tasks.</td>
</tr>
<tr>
<td>Encouraging students to compare themselves with achievers</td>
<td>Students need to be exposed to the stories of other successful people who are related to their fields/subjects and compare themselves with them.</td>
</tr>
<tr>
<td>Clarifying the criteria for awarding the determined prizes</td>
<td>Students need to be aware of the awards and conditions/criteria of allocating those awards to them.</td>
</tr>
<tr>
<td>Applying known assessment strategy (No anonymous)</td>
<td>If students know that other students are in the position of seeing and evaluation their educational tasks, they will be more motivated to get better scores.</td>
</tr>
<tr>
<td>Providing business databases for students</td>
<td>Students are away from the business world. Therefore, they have insufficient information in this area. Universities should provide this kind of information/assistance for students.</td>
</tr>
<tr>
<td>Offering competitive rewards to students</td>
<td>Significant rewards should be dedicated to both students and tutors who do their jobs in a good manner.</td>
</tr>
<tr>
<td>Defining more sophisticated system and filters for student</td>
<td>Students need to have a good score in certain competencies e.g. extraversion, persistence, curiosity, etc. before their entry to university.</td>
</tr>
</tbody>
</table>
Enhancing students’ self-awareness

Students need to have increasing knowledge about themselves.

The dominant theme in Irish entrepreneurs’ discussions was about how students could be encouraged and supported to enhance their motivation in order to create their own jobs. Some solutions such as encouraging students to compare themselves with achievers, offering them competitive rewards, clarifying the criteria for getting the rewards, and providing business databases for students were generated to encourage and support students to experience creating a new job. Some of these solutions are outlined in more detail here.

“Offering competitive rewards to students” was one of the solutions generated by Irish entrepreneurs to stimulate students’ persistence as one of the sub-competencies of Motivation. One of them described his experience as follow:

M(1): “We used to have one way back, I was about 10, five pounds at Christmas for the guy who got the best results in the class. So there was like 2 or 3 guys who were always good. So if you wanted to beat them, basically they weren’t persistent enough, because they were always going to be naturally good. So again a reward in that environment would breathe persistence in a certain type of individual. I might have had to wait for about 4 years to beat him, but I did once!”

Another entrepreneur in the group pointed out that

M(2): “It’s the same, in the sense that what you are doing is breathing competitiveness as well”.

It could be argued here that if these rewards appointed to the teams instead of individuals (joint rewards), they work better in order to facilitate students’ learning and motivation. In this case, students believe that others’ work benefits them and their work benefits others (positive interdependence) and they are motivated to promote each other’s efforts by helping, assisting, supporting, encouraging, and praising each other (promotive interaction). The general effect of rewards on people’s motivation seems to be obvious and there is a huge body of evidence to support a relationship between rewards and motivation (Cooper and Jayatilaka, 2006; Zuraida, 2011), and persistence (Marinak, 2008). However,
this cause and effect relationship does not seem to be as simple as suggested in the
solution above. Notably, as mentioned in the quote these rewards may work for a “*certain type of individual*”. This suggests that rewards may not work for all students and all contexts. Benabou and Tirole (2003) address this issue by proposing a question: Why do incentives work well in some contexts, but appear counterproductive in others? It could be argued that extrinsic motivation could work in conjunction with intrinsic ones. They pointed out that there is a conflict between economists and psychologists in valuing rewards and incentives. While it is a central theme of economics that contingent rewards serve as “positive reinforcers” for the desired behaviour, in psychology, their effect is much more controversial, often making them “negative reinforcers”, especially in the long run or in situations where intrinsic motivation (e.g. the joy of the work) is what sustains performance. In the context of education, given that many of the educational activities prescribed in educational institutions are not interesting, the role of extrinsic motivation to sustain performance may often be necessary (Ryan and Deci, 2000). Cooper and Jayatilaka (2006) support that determining some rewards for successful students, tutors and administrators could help them to increase their Task Motivation. However, these extrinsic incentives need to have certain features to be effective. Marinak (2008) pointed out that while rewards have the positive impact on students’ persistence, they have to be carefully chosen to foster students’ persistence. He believed that tutors should be encouraged to consider reward alternatives that are congruent to the task which is going to be rewarded. For instance, in the case of his studies, since he wanted to stimulate students’ reading capability, books were less undermining to students’ intrinsic motivation than token rewards.

“Encouraging students to compare themselves with achievers” was another solution generated by Irish entrepreneurs to cultivate students’ Motivation. One of the entrepreneurs pointed out that

M(3): “Yes, and I can remember, I had a friend who was most outstanding sportsman, the best sportsman, he was very successful and he won three under 10 medals. Probably more skilful than Roy Keane. But yet Roy Keane, he was the first man Ferguson picked every time. Sometimes the Christian Brother who trained teams against me, said that we were part of the problem that we made it too easy for him, he didn’t have to go training and he was picked every time, and made captain and all his life, all the way up, he was the hero, soccer, hurling, football, and he just never learned on the way up!
Whereas Keane had to kick, fight his way. a guy like him, can actually get into the United Academy, get picked for United. So he actually wore the jersey. He didn’t wear it very often. I think lack of persistence was one the main weakness that this man had. And I think that his challenge comes from exposing himself to people of his level and not higher.”

This quote includes at least two messages for us. The first one is that less talented people can actually be incredibly successful by dint of hard work and persistence. Second, comparing oneself with other achievers is an effective approach that could indirectly enhance students’ persistence and hard-work. Another entrepreneur stressed that

M(4): “I do agree with you that sometimes it’s not a teaching thing, you can’t necessarily teach someone all of these things. They’ll have them, you can create an environment, where you can nourish it. So, introducing students with some real successful case studies and encouraging them to compare themselves with those achievers could be a good solution.”

This is an interesting quote that is very relevant to previous solutions and discussions. Can these entrepreneurial competencies be taught? Learning from others through analysis of case studies may be valuable but it must be relevant to students’ needs in an encouraging manner. In line with this argument, Flyvbjerg (2006) pointed out that while ‘context-independent’ facts and rules will bring the student just to the beginner’s level of learning, well-chosen case studies can help the student achieve competence. They argued that common to all experts is that they operate on the basis of intimate ‘context-dependent’ knowledge of several thousand concrete cases in their areas of expertise. Such context-dependent knowledge and expertise also lie at the centre of the case study as a method of learning. Phenomenological studies of the learning process therefore emphasize the importance of this and similar methods of learning by studying others’ cases. It is only because of experience with cases that one can at all move from being a beginner to being an expert. Again, the experiential nature of this solution is very obvious. Respondents in this focus group suggested students to be exposed to others’ experiences and compare themselves with them. Similar to the solutions generated by Irish academics for requiring students to do something in the workplace, all of the four cycles of experiential learning have some affordances for this solution. In fact, after exposing students to others’ experience, they are required to reflect on that experience, then critically review why and how that experience has occurred, and finally try to learn from that experience for their own futures. Again, the affordance of e-learning here is facilitating the process of
exposing students to others’ experiences and also the workflow of their assignments, feedback, and monitoring their improvement. More importantly, e-learning provides the possibility of ‘live’ discussions of cases in the group setting facilitating students’ learning by reviewing those cases cooperatively.

As another solution, respondents of this focus group as well as Iranian students and academics advise that tutors should require students to provide gradual and step by step tasks instead of expecting them to provide a huge number of tasks at one time. This advice is consistent with the empirical finding of Forsyth and MaMillan (1991) who mention that limiting the scope of the tasks attempted by students and giving them many tests, rather than a few major tests, and providing opportunities to redress poor performance with good performance is an effective strategy for enhancing students’ Task Motivation. This step by step task provides a better opportunity for students to, in line with ‘group processing’ feature of cooperative learning, review their performance and make decisions about what behaviours to continue or change to get a better achievement. However, as an obstacle for implementing this gradual and step by step assessment scheme, it is very time consuming and also it is difficult to keep students and tutors posted about the trend of students’ achievements over the time. Specially, when some techniques of cooperative learning such as peer-assessment, peer-teaching, self-assessment or formative feedback are to be applied to this step by step assessment scheme, it would be very difficult to monitor, and manage students’ progress over the time. Here, the affordance of e-learning for this solution is facilitating these processes for students and tutors. This facilitation could be happened by providing some simple capabilities such as tracking changes in students’ assignments in the word documents, recording tutors’ feedback on students’ assignments instead of requiring them to do the time consuming process of typing their overall feedback on students’ assignments, possibility of random or purposeful grouping of students, managing the flow of exchanging students’ assignments for self or peer-assessment, providing the graphical reports of students’ progress over time, sending automatic reminders to students when their works are due, etc.

Another solution generated here by Irish entrepreneurs, Iranian students, and Iranian entrepreneurs to promote students’ motivation is defining more sophisticated systems and filters for student recruitment. They believed that the current system of student recruitment in universities is not effective enough to direct students to the most appropriate programme which suits them and is in line with their talent, capabilities and interest.
Therefore, there is a kind of time and investment waste when you are trying to educate somebody in a field which is not fitted into that person’s capabilities and interest. For instance, they believed that when an applicant is very introvert, with very low social activity and interest, and less openness, s/he is not an appropriate candidate for the marketing field. It does not mean that s/he has not the right to study, but s/he needs to be directed to an appropriate programme which is fitted into his/her academic and family background, personality, interests and preferences. They also pointed out that these elements which could be used in students’ recruitment system need to be carefully defined, monitored and weighed, because their importance may vary in different fields and programmes. The information derived from monitoring students in this stage should be transferred to and archived in their soft-copy files. This information can be retrieved and used when they are learning through the cooperative learning techniques in the class. For instance, when in the different stages of Jigsaw classroom or other techniques we do want to make homogenous or heterogeneous groups, students’ records can be automatically retrieved from their files in order to facilitate grouping students in the appropriate categories. The affordance of e-learning is very clear here. It is obvious that the process of designing, and implementing this recruitment system as well as using students’ profiles and monitoring their progress cannot be manually done and it needs to be supported by educational technology.

Many of the previous studies focus on the elements which can be addressed in such a sophisticated students’ recruitment system and the effects of those elements on students’ entrepreneurial competencies. For instance, McClelland (1958), Atkinson and Litwin (1960), Atkinson et al. (1960), Litwin (1958), and Carraher et al. (2010) confirm that selecting students with the preference for moderate rather than extreme level of risks and with higher conscientiousness trait scores facilitates enhancing their Need for achievement in the different learning fields such as entrepreneurship and psychology. Other studies have suggested that students with the better emotional competence, proactivity, openness, learning goal and performance-oriented, future-oriented thinking, positive affect and positive beliefs about themselves develop higher levels of proactivity and work harder throughout their studies in the university (Kim et al., 2009; Parker et al., 2006; Parker et al., 2010). Also, the positive impact of selecting students with higher need for achievement scores are wide-ranging, for example, it may impact on levels of persistence (Wu et al., 2007; Feather, 1963), and determination (Rotter, 1966), and . Similarly, self-confidence may impact on task Motivation (Clement et al., 1994).
5.3.3. Cultivating Motivation – Irish Students

As can be seen in Table 5.13, Irish students – based on their own experiences - generated four solutions for cultivating Motivation competencies in students.

Table 5-13 Motivation solutions generated by Irish Students

<table>
<thead>
<tr>
<th>Solution Title</th>
<th>Solution Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Helping students to make their goals</td>
<td>Many students have not clarified their target in their academic life. If college can help them to determine their specific and clear goals as well as timelines at least in their academic studies, it should motivate them to work hard and achieve their goals. They need to believe that their goals are achievable with hard work. This goal making helps them to be active rather than passive, also directs their efforts in a purposive channel.</td>
</tr>
<tr>
<td>Assigning students to a number of individual tasks</td>
<td>Students need to finish what they start. In fact, many students suffer from frequent interruptions during their educational tasks. To solve this problem, some individual tasks have to be embedded in the system and students need to work on those tasks and complete them in a strict deadline.</td>
</tr>
<tr>
<td>Encouraging students to compare themselves with achievers</td>
<td>Students need to compare themselves with other achievers’ successes and failures related to their fields. This comparison will help motivate them to enhance their goals and try to achieve them.</td>
</tr>
<tr>
<td>Offering competitive awards to students</td>
<td>Allocating some awards to successful students. These awards should be financial or non-financial.</td>
</tr>
</tbody>
</table>

Almost all of the solutions generated here by Irish students (except ‘helping students to make their goals’) have already been addressed by the last two focus groups as well. For instance, similar to Irish entrepreneurs, “comparing with achievers” was one of the suggestions of Irish students in this discussion. One of them described his own experience as follow:

M(1): “*when I was studying at bachelor level, I had no idea of what was needed*
for achievement. Once, one of our tutors invited a successful entrepreneur to the class and he described his faults and successes for us. His story was very interesting and full of ups and downs. At the end of that session, I felt that my eyes are opened to the real world that surrounded me and I felt that I actually need to achieve a lot of successes! So, eventually, I decided to start critically thinking about my goals and plans in my life and to prioritise my intended achievements. I felt that I had a lot of energy to chase them up and make my dreams a reality. That was, for me, a powerful and consistent source of persistence, energy, hardworking and motivation.”

Another student, confirming the positive effect of this approach on students’ motivation, highlighted that:

F(1): “students cannot only learn from other achievers’ successes. They could also learn from their failures as well. They do need to learn to practice not giving up and be persistent in achieving their goals. Also, these failures could give us a valuable experience leading us to avoid repeating others’ failures and to try to make more accurate decisions in the process of launching our business.”

Therefore, students agreed that awareness of both the failures and successes of other achievers are valuable resources for enhancing their motivation. An interesting point that came up here, as can be seen in the first quote above, was that hearing and paying attention to others’ stories helped that student to identify his own goals. It means that, first, he had no clear goals for his life at that time; second, hearing others’ stories helped him to identify and develop his goals.

The affordances of experiential learning and e-learning for this solution were already discussed by Irish entrepreneurs. Here, one of the Irish students outlined the affordance of e-learning for this solution from another perspective:

F(2): “virtual learning environments could provide a great flexibility for students in choosing amongst a variety of achievers’ stories. These stories could also be supported by other formats of multimedia presented in the e-learning platform. These formats can help students to have a better idea of what was going on in the given story.”

As could be seen here, the affordance of e-learning for this solution highlighted here is providing the multimedia formats of the story instead of solely providing the written story.
The first Irish student who spoke about reviewing others’ stories in the class pointed out that after hearing the given story “I decided to start critically thinking about my goals and plans in my life”. It means that the solution above can result in encouraging students to think about their goals. The question here was: what if the curriculum required students to think about their goals and then could be supported by other students in achieving them? By continuing this discussion, another solution was made by Irish students entitled “helping students to make their goals”. One student highlighted this solution based on her experience:

M(2): “my most important achievement in the university was not attaining subject-matter knowledge. I owe it to one of my tutors who not only encouraged me but even helped me to make my goals in life. She spent plenty of time to interact with me and give me instruction on how I could make my life goals. Further to giving me instruction, she tended to monitor my goal-making progress and give me step-by-step feedback. This feedback was not about the content of my goals. Her main concern and comments were about the process of making my goals. After finalising my goal-making, I felt that all of my efforts are directed in a purposeful and correct direction because I tried to depart from some activities which were not leading me in the right direction towards achieving my goals.”

The key point in the quote above is that the tutor was only directing student in terms of the structure and process of her goal making and she did not interfere in the content of her goals. The second important note here is that the goal making seems to help students to match between their real life and their studies. In other words, experiential learning has an affordance here. In the fourth cycle of experiential learning, students are supposed to think about the practical applications of their studies in their life. Obviously, this cycle has an affordance for students’ goal making, helping them to learn more from their experiences in real life, and more importantly, think about the practical applications of this learning in their future life.

Another student described her own experience in this subject as follows:

F(3): “There, in our class, were people who had actual goals, going through it. And there were people who took the programme without specific goals. The guys who had actual goals were earning 4 times more money. But the guys who had written goals, were earning x times more money than the fellows who had actual goals, who were earning more money than the fellows…and the key distinguishing thinking was, written goals! So
As could be seen here, the written goals are valued here. The question is why writing down the goals is so important? As a response to this question, Donohue (2005) pointed out that simply the act of writing down the goals as the roadmap to success can set the process in motion, it is also extremely important to review the goals frequently.

The next part of this discussion was allocated to the affordance of e-learning for this solution. Another student argued that

F(4): “even if tutors want to guide and help their students to make and finalise their goals, most of them suffer from a lack of knowing a standard process for this goal-making or else many of them have difficulty in reviewing students’ progress in this work and give them feedback to move on in the correct lines. Therefore, e-learning platforms could provide such a standard structure for guiding students in the process of their goal-making and also could facilitate interaction between tutors and students in performing this process.”

According to this quote, it could be argued that further to providing the structure and guidelines afforded by the e-learning platform to facilitate students’ goal making, tutors need to be trained with regard to how they could help their students to make their goals.

In addition to Irish students, Iranian academics and entrepreneurs also pointed out that helping students to make their goals promotes their motivation with regard to their studies. This solution is aligned with “goal setting theory” which is based on the premise that much human action is purposeful, in that it is directed by conscious goals. In other words, this theory suggests that “the simplest and most direct motivational explanation of why some people perform better on work tasks than others is because they have different performance goals” (Locke and Latham, 1994, p.15). However, the impact of goals on people’s performance and motivation is not as simple as suggested above. Locke and
Lathman (2002) summarized 35 years of empirical research on goal-setting theory and explored the moderators of goal effects. They found that people’s commitment to the goals, giving them feedback that reveals progress in relation to their goals, and task complexity are the three main moderators which affect the impact of goal setting on people’s motivation and performance. With regard to the last one, they pointed out that “as the complexity of the task increases and higher level skills and strategies have yet to become automatized, goal effects are dependent on the ability to discover appropriate task strategies. Because people vary greatly in their ability to do this, the effect size for goal setting is smaller on complex than on simple tasks” (pp.708-709). Goal-setting theory also asserts that people with specific hard goals called "stretch" goals perform better than those with vague goals such as "do your best" or specific easy goals (Latham, 2004). Moreover, Latham (2004) highlighted some downsides and risks of goal-making as well. He mentioned that 1) people may try too hard for quantity at the expense of quality or vice versa, 2) those who are highly committed to their own goals may be less likely to help others to attain their goals, and 3) when there are two or more goals, goal conflict may occur and performance on both goals may suffer.

Therefore, the affordance of goal-setting theory for this solution is that while with goal-setting theory, goals have been shown to increase motivation and performance on well over 100 different tasks involving more than 40,000 participants in at least eight countries, simply requiring students to make their goals may be insufficient in enhancing their motivation. We do need to take the moderators and risks of goal setting into account. In the other words, without trying to increase students’ commitment to their goals, giving them feedback regarding their progress in achieving their goals, and requiring them to make difficult and hard goals instead of ‘do your best goals’ it is hard to believe that requiring students to write their goals works and enhance their motivation. Latham (2004) also proposed another solution and suggested that people can prioritise their goals to be able to pursue more than one goal effectively.

Consistent with goal-setting theory, it was mentioned that helping and monitoring students’ emphasis on the positive goals (things desired) rather than negative goals (things to avoid), avoiding giving them goals, and developing strategies for achieving their goals can result in increasing their Task Motivation (Murayama and Elliot, 2009; Forsyth and MaMillan, 1991; Locke et al., 1981; Dörnyei and Csizér, 1998; Dornyei, 1994). Also, research suggests that encouraging students to develop specific business, learning, mastery and performance achievement goals for themselves enhances their Need for achievement.
(Wu et al., 2007; Elliott and Dweck, 1988; Linnenbrink, 2005; Carraher et al., 2010), Proactivity and Hard-working (Parker et al., 2010), Persistence (Paul, 2008), Determination (Sisco, 1992), and Independence (Ross, 1998).

With regard to the impact of students’ goals on their motivation, Murayama and Elliot (2009) examined the direct, indirect, and interaction effects of achievement goals of a sample of 1578 Japanese students on their motivation and concluded that “classroom goal structures were not only direct, but also indirect predictors of intrinsic motivation and academic self-concept, and some cross-level interactions between personal achievement goals and classroom goal structures were observed (indicating both goal match and goal mismatch effects)” (p.432). Regarding the impact of students’ goals on their persistence, it seems reasonable to assume that as an individual develops a goal or reduces/increases the importance of a goal, he or she experiences a concomitant reduction/increase in motivation to persist toward that goal (Di Paula and Campbell, 2002).

5.3.4. Cultivating Motivation – Iranian Academics

Iranian Academics generated 12 solutions for cultivating Motivation competencies in students through their studies in an e-learning platform. A list of these solutions and their descriptions can be seen in Table 5.14.

Table 5-14 Motivation solutions generated by Iranian Academics

<table>
<thead>
<tr>
<th>Solution Title</th>
<th>Solution Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Requiring master students to launch a business as their dissertation</td>
<td>Master students should be encouraged to write their dissertations based on some practical projects. For example, students should be required to launch a business related to their course and write their dissertation based on their experience in this spin-off (as the report of that spin-off).</td>
</tr>
<tr>
<td>Providing business mentorship for students</td>
<td>Students need to get business advice through business mentors about the different aspects of business and market place.</td>
</tr>
<tr>
<td>Providing business databases for students</td>
<td>Students should be helped to have a better access to some business databases and information relevant to their courses and practical tasks.</td>
</tr>
<tr>
<td>Activity</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Reviewing stories of other entrepreneurs</td>
<td>Students need to critically review the stories of both successful and failed entrepreneurs.</td>
</tr>
<tr>
<td>Using case studies in class</td>
<td>Students need to be required to work on some case-studies. These cases should be selected from some problems and difficulties occurred in industries and businesses which are related to their academic studies.</td>
</tr>
<tr>
<td>Helping students to avoid pessimism and enhance their positivity</td>
<td>Tutors should try to enhance students’ positivity with regard to different aspects within and outside of the classroom.</td>
</tr>
<tr>
<td>Putting students in the position of group leadership</td>
<td>Students should take the leadership position in their group activities. This position could be circulated amongst students within the group.</td>
</tr>
<tr>
<td>Requiring gradual and step by step tasks from students</td>
<td>Tutors have to set up some gradual and step-by-step tasks for their students based on their capabilities and competencies.</td>
</tr>
<tr>
<td>Helping students to make their goals</td>
<td>Students should be encouraged to make their main goals, break them to minor goals, and create a timeframe for achieving those goals.</td>
</tr>
<tr>
<td>Applying personal development programmes</td>
<td>Students need to be helped to enhance their personal and general skills such as: problem solving, ability to say NO, financing, opportunity evaluation, idea evaluation, human resource management, technology employment, etc.</td>
</tr>
<tr>
<td>Providing semi-structured and flexible educational planning</td>
<td>Students should have more freedom in customising learning outcomes, educational syllabus, content, and assessment schemes throughout their studies.</td>
</tr>
<tr>
<td>Applying idea writing as an assessment scheme</td>
<td>Students should be encouraged to generate novel and practical ideas about how they could apply their studies in the real life. This helps them to explore the potential applications of their studies in their actual life.</td>
</tr>
</tbody>
</table>
Similar to the discussions that Iranian Academics had in the process of generating solutions for Productive Thinking competencies, they had a great emphasise on implementing practical teaching approaches for stimulating students’ Motivation as well. Some solutions generated based on this emphasise are: Requiring students to launch a business as their dissertation, Providing business mentorship for students, Providing business databases for students, Reviewing stories of other entrepreneurs, Using case studies in the class, Putting students in the position of group leadership, Helping students to make their goals, Applying personal development programmes, and Applying idea writing as an assessment scheme. As could be seen in the solutions above, and same to the most of the solutions generated so far, learning by experience is the central distinguishing focus of these solutions here.

For instance, one of the academics who had a good experience in launching the businesses pointed out that

M(1): “Why we usually expect postgraduate students to work on a theoretical subject as their dissertation title? We do need to move students from the laboratory conditions to the real life context and let them to start experimenting the life in a real situation. One solution for implementing this idea is requiring students to launch a business relevant to their studies. Tutors could help those students and supervise them in the real environment of that trial start-up. In these cases, the main focus of the supervisor and examiners would be on the process of start-up rather than its results.”

The key point here is that if a student fails in his/her business start-up, it is not a major issue. In fact, the process of business start-up is supposed to be evaluated and not the results; because, sometime, the external factors which are out of students’ control affect the result of their attempts. Therefore, it is important for them to learn the correct and standard process of launching a business in a real environment without fearing about the results. However, while this idea was interesting to other academics as well, they thought that if this solution is to be effective, it needs to prepare tutors first since most of the academics are not familiar with the business start-up processes and requirements. Therefore, they may not be able to supervise a student in his/her business start-up. After a serious round of discussions, some auxiliary approaches were generated by the participants. For instance, one of the participants suggested that supervising students who want to launch a business as their dissertation could be done by one supervisor and one advisor. The supervisor will supervise students in terms of the academic aspects of the
work and the advisor will assist students in terms of the legal rules, processes and offer advice and support in relation to the start-up process. This solution was worded as “Providing business mentorship for students”. Consistent with this view, Crisp and Cruz (2009) pointed out that the role of the mentor need not be limited to faculty members. Therefore, based on this solution, the mentoring role is extended to business people who have launched a business. The effectiveness of cooperation between business people and academics has been explored previously. Franklin et al. (2001) pointed out that there is evidence suggesting that ventures cooperatively created by ‘outside entrepreneurs’ with ‘academic assistance’ grow more rapidly than those created by academics themselves. Participation of business mentors in directing students has some advantages for academics as well. Further to reducing their work-load and responsibility with regard to the business and legal sides of students’ activities, they can learn from the business mentors and bring this knowledge into their teaching and research activities. This effect is also confirmed by Salinitri (2005) who pointed out that this mentoring program creates a mutual learning environment, where mentees develop skills for academic and personal success while mentors developed skills that are transferable to their teaching and coaching.

Once more, experience plays the central role in this solution. Experiential learning encourages students to engage with a concrete experience, reflect on it, think about it and finally, learn from it. Therefore, the principles and practice of experiential learning resonates with this solution. Moreover, cooperative learning helps students to enhance their interpersonal skills and discuss with each other the progress of their work and how their success could be maintained by their effective working relationships. These relationships are necessary for building an effective interaction between the student and tutor throughout launching the business. In regard to the affordance of e-learning for this solution, one of the tutors believed that

F(1): “virtual learning environment can facilitate a triple connection between student, the academic supervisor, and the business advisor/mentor. Moreover, digital resources such as e-books, papers, and textbooks could be embedded into such an e-learning platform and create a business database for assisting students who are seeking for more information relevant to their business start-up”.

Another affordance of e-learning platforms for this solution was stated by another academic. He addressed the potential of simulators in educating students in a virtual environment before requiring them to go to the real environment and experience
difficulties in the process of their work. One of these business simulators is named *Entrepreneur*. It is a computer based business simulation that allows students to start up a "real" company from scratch. The simulation, based on the low volume, handmade car industry creates a realistic business environment in which learning takes place. Marriott (2004) implemented *Entrepreneur* for a group of accounting students and then outlined the learning outcomes of implementing this simulator from the students and tutors’ perspectives. He argues that the use of such a simulation is mainly in keeping with experiential learning. It presents an opportunity for students to develop their algorithmic thinking, to use spread sheet-modelling skills in a realistic setting, to enhance cognition in understanding the ‘whole’ of a business problem, and to reduce instrumentality through the intrinsic enjoyment of problem-based learning.

Requiring students to do a trial start-up was already conducted and evaluated in a number of studies. For instance, Dominguinhos and Carvalho (2006) conducted a six month educational programme named “Começar” (Begin) in the Alentejo Region in Portugal, aiming at promoting the launching of new ventures by early postgraduates as well as entrepreneurship support infrastructures in higher education institutions, turning them into more entrepreneurial organizations. The programme was divided into two different learning environments: classrooms and the working environment closely linked to entrepreneurs, and sometimes within their own companies. Besides the academic tutor in university, a business tutor (either an entrepreneurs or an employee in a private business), is also provided to help trainees in their business plan. Ultimately, nine firms were generated from a total of 22 trainees, with a success rate of 41 per cent. More importantly, they explored the reasons why some trainees failed to start a business. They identified four reasons as follow: First, the lack of motivation for this purpose, as from the beginning the main goal of some students was to simply attend the programme. Second, an opportunity/cost analysis is conducted by individuals and there are often concerns in relation to the potential income generated by new businesses. Third, the lack of start-up financial resources for some of them was impossible to overcome. Finally, the lack of partnerships in technology since some of the trainees did not have these partnerships well established. These four barriers ought to be taken into account if the solution generated by participants in this study is to be implemented.

In addition to Iranian academics, this solution was also addressed by Iranian students as well. It shows that there is a common interest/concern between Iranian students and
academics with regard to the practicality of their learning environments, and more importantly, the necessity of providing business mentorship for students. The positive impact of providing mentorship services for students on levels of Persistence (Sorrentino, 2007; Salinitri, 2005), Determination (Mink, 1975), and Competitiveness (Feller, 1995) has been confirmed in a number of studies. However, the impact of business mentorship on a wider range of students’ Motivation sub-competencies needs to be examined further in future studies.

Yet some tutors believed that the first solution discussed above (requiring students to do a trial start-up) is not feasible and need more pre-requirements. For instance, it has been pointed out that

F(2): “while most of the students have not a clear picture of their future and did not think about their goals in the life, how you can expect them to do a start-up? This would be successful only if it fits into a bigger image of their life. For instance, if a student’s long-term goal is to launch an agriculture-based business, it is good to direct him/her to do a trial start-up in the same area of agriculture and no other fields. Therefore, I think another prerequisite for requiring students to do trial start-up is helping them to make their goals”.

This solution was already generated and discussed by Irish students as well. The different aspects of this solution and the affordances of experiential and cooperative learning as well as the virtual learning environment for this solution are already outlined. It was argued that students are supposed, in the fourth cycle of experiential learning, to think about the practical applications of their studies in their life. This future-oriented thinking and planning seems to facilitate students’ goal-making.

“Reviewing stories of other entrepreneurs” and “Using case studies in the class” were two other auxiliary teaching methods proposed by the academics in this focus group to facilitate students’ trial start-up. One of the tutors who had experience of inviting entrepreneurs in the class described his experience as follow:

M(2): “first, students were reluctant to attend the class since they thought that there was no point for them. I have already talked to the invited entrepreneur and informed him about students’ expectations and the negative atmosphere of the class! However, when the invited entrepreneur arrived and started telling his story, I could tangibly see that students were paying more and more attention to the discussion. After
finishing the first session, they frequently asked me to invite more entrepreneurs and they used to make their arguments in the class based on their discussions with the entrepreneur. Specifically, their belief in the effect of personal efforts on outcomes and also their determination were positively affected”.

In line with experiential learning, students could reflectively observe entrepreneurs’ experience, conceptualise why and how various decisions had been made, and what they could learn for their own future based on the entrepreneur’s experience. Similar to the previous solutions, the affordance of e-learning for this solution also provides a structure which is necessary for listening and reflecting on the given story. Reviewing others’ cases in the class has a long tradition as an educational approach. For example, John Dewey (1929) believed that knowledge must be mastered, not just transferred, through the use of problems which the student can relate to and learn from, and which provide an opportunity to interact with real-life situations (Baumberger-Henry and DNSc, 2005). The positive effect of using case study as a teaching method on students’ theoretical knowledge as well as the ability to apply knowledge (Hammond, 2009), and engage in critical thinking (Lauver et al., 2009), problem-solving and decision making (Malesela, 2009) have been examined. However, the promoting effect of using this teaching method on students’ Motivation is less investigated. In one of the rare attempts to do so, Clachar (1999) found that implementing a teaching method relying on use of problems with case examples nurtures and arouses the development of determination in students.

Putting students in the position of group leadership was another solution generated by Iranian academics. It was argued that students should take the leadership position in their group activities and this position could be circulated amongst students. Iranian academics believed that when students feel they have responsibility for directing the group discussions and concluding the discussions in some cases, they will become increasingly hard-working, and demonstrate more determination and competitiveness to achieve the targets specified for them. This solution is consistent with some previous studies that proposed developing students’ leadership and sense of responsibility help them with enhancing their independence (Duffy et al., 1999; Ross, 1998), persistence (Waldman et al., 2001), proactivity (Strauss et al., 2009), and competitiveness (Ireland and Hitt, 1999). For instance, it was indicated that a leader may show persistence and enthusiasm in pursuing goals over the long haul and be demanding of others through the communication
of high performance expectations (Waldman et al., 2001). In regards to the effect of students’ leadership role on their pro-activity, Strauss et al. (2009) demonstrated the importance of leadership as an antecedent of pro-active work behaviour and suggested that leadership at different levels influences pro-activity via different mediators. Transformational team leaders seem to facilitate pro-activity by increasing the team-members’ confidence to initiate change. Transformational organizational leaders on the other hand increase proactivity by enhancing employees’ commitment to the organization. With regard to the impact of enhancing students’ leadership role on stimulating their competitiveness, Ireland and Hitt (1999) indicated that effective strategic leadership practices can become a source of competitive advantage and help people with enhancing the performance while competing in turbulent and unpredictable environments. However, there are some drawbacks associated with giving students the role of leadership in the groups. For instance, Wallin (2003) reported that one of the drawbacks of student leadership in the class is the stress that accompanied being a student leader. This stress stemmed from being viewed as the teacher’s pet by the other students, or from negative experiences with student leadership initiatives. This drawback highlights the importance of training student leaders in order to enhance their conflict resolution and communication skills.

‘Social skills’ as one of the key features of cooperative learning has an affordance for this solution. According to this feature, students need to be taught to enhance their interpersonal and small group skills such as: leadership, decision-making, trust-building, communication, and conflict-management skills just as purposefully and precisely as academic skills. Assigning students as a group leader helps them to achieve the learning objective. E-learning also has two main affordances for this solution. First, it provides the structure, communication, and monitoring possibility to facilitate students’ leadership. Second, since decision making is regarded as one of the main roles of students in leadership, e-learning platforms could provide decision making simulators that facilitates training students in order to make more efficient decisions. These simulators are extensively used in some educational areas such as medicine and pilotage.

5.3.5. Cultivating Motivation – Iranian Entrepreneurs

Eighteen Motivation solutions were generated by Iranian Entrepreneurs. These solutions
are presented in Table 5.15.

Table 5-15 Motivation solutions generated by Iranian Entrepreneurs

<table>
<thead>
<tr>
<th>Solution Title</th>
<th>Solution Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supporting students by providing their required information</td>
<td>Information relevant to business opportunities, financial resources, and legal issues should be provided to students. This information should help them in the process of opportunity identification and job creation during or after their.</td>
</tr>
<tr>
<td>Helping students to avoid pessimism and enhance their positivity</td>
<td>It is needed to help students to avoid pessimism. They should be hopeful about the results &amp; outputs of their efforts in the future.</td>
</tr>
<tr>
<td>Mosaic combination of participants in each class</td>
<td>Each class’s participants should be arranged in a mosaic mode from different cultures, fields, backgrounds, and capabilities.</td>
</tr>
<tr>
<td>Improving tutors’ criticism capacity (tolerance)</td>
<td>Tutors need to improve their tolerance in order to hear to students’ voice. They need to hear, think, and in some cases accept and use their students’ critiques.</td>
</tr>
<tr>
<td>Helping students to make their goals</td>
<td>Students should be encouraged to make some proper goals for themselves.</td>
</tr>
<tr>
<td>Promoting tutors’ kind interactions with students</td>
<td>The interrelationships between students and their tutor have to be improved in a successful learning environment. This interrelationship must be based on the mutual kindness, respect, trust and fairness.</td>
</tr>
<tr>
<td>Defining more sophisticated system and filters for student recruitment</td>
<td>Students’ dispositions (e.g. extraversion and openness), preferences, and skills have to be taken into account when universities want to select their students amongst different applicants. These characteristics should be matched with the requirements of the academic field they want to study.</td>
</tr>
<tr>
<td>Identifying and balancing the expectations of both students and tutors</td>
<td>Students’ expectations from their tutors and vice versa need to be identified appreciated and balanced in the beginning of each semester for each module/course. Sometimes, the gap between expectations can sometimes generate difficulties for</td>
</tr>
<tr>
<td>from each other</td>
<td>both sides. The expectation survey should cover different aspects of the learning environment including teaching and learning approaches, and students’ supporting methods.</td>
</tr>
<tr>
<td>-----------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Recruiting more experienced tutors</td>
<td>Universities need to elect their tutors from more experienced ones. Preferably, tutors should have some experiences in launching a business related to their field.</td>
</tr>
<tr>
<td>Providing business mentorship for students</td>
<td>Students need to have some business mentorship parallel to their theoretical and practical studies. This mentoring can be done by successful entrepreneurs.</td>
</tr>
<tr>
<td>Applying idea commercialization as an assessment scheme</td>
<td>Students should be encouraged to commercialize their ideas related to each course. This commercialization can be a main part of their final assessment.</td>
</tr>
<tr>
<td>Promoting e-business culture</td>
<td>Promoting e-business culture and skills amongst students.</td>
</tr>
<tr>
<td>Introducing job opportunities to students consistently</td>
<td>Students need to be aware of their potentials for job opportunities related to their studies. This will direct and motivate students’ efforts for a better achievement.</td>
</tr>
<tr>
<td>Participation of tutors in students’ practical projects</td>
<td>Tutors have to be involved in students’ practical projects and spin-offs.</td>
</tr>
<tr>
<td>Dedicating a research section in the e-learning platform</td>
<td>E-learning platforms need to be extended by adding a specific section, focusing on “Research”. For example, a possibility for writing electronic note-taking or academic referencing help students to be further prepared for doing research.</td>
</tr>
<tr>
<td>Applying personal development programmes</td>
<td>Students personal skills and abilities e.g. management, marketing, legal issues, problem solving, critical thinking, information seeking ability, business plan writing, business lunching, and negotiations skills, should be enhanced.</td>
</tr>
<tr>
<td>Recruiting the best tutors regardless of their location</td>
<td>E-learning systems are so flexible, so university can recruit the best tutors regardless of their location, time, etc.</td>
</tr>
</tbody>
</table>
| Reducing the number of students | Tutors and universities need to keep the number of students in the e-learning classes limited. Having a lot of students in a
in each class virtual class can result in decreasing the quality of class.

Most of the Iranian entrepreneurs’ discussions tended to criticise academics’ approaches in universities. They believed that some tutors’ teaching methods, behaviour, and interaction with students demotivate students within and beyond the class. One of the young entrepreneurs, who was recently graduated from the university, pointed out that

M(1): “most of the tutors do not usually try to explore, understand and respect students’ expectations in the class. So, the gap of thoughts and each other’s expectations consistently increase. This does not mean every expectation of students has to be met. In most cases, tutors could balance and modify students’ expectations after listening to them, and try to sympathize, and then speak to them about the expected learning outcomes and affordances of the module”.

This solution seems to be much aligned with another solution generated by Irish students which encouraged tutors and students to be ‘a good and fair listener’. They highlighted the importance of putting themselves in the other persons’ shoes to be able to fairly listen to others’ enquiries. Apparently, that active listening skill is a pre-requisite of the solution generated here. After contributing to this issue by other Iranian entrepreneurs, a solution has been generated entitled “Identifying and balancing students’ expectations from their studies”. ‘Balance’ is the key word in this solution. It means identifying students’ expectations on its own is not enough. These expectations have to be reviewed and responded by tutors so as to reduce the gap. Positive interdependence as one of the key features of cooperative learning has an affordance here because this solution sought to promote this perception that students and tutors are linked with each other in a way that success or failure of each of them affects others as well. With regard to the connection between e-learning and this solution, it seems the importance of tutors’ awareness about their students’ expectations may be more critical in e-learning systems when compared with face-to-face educational settings. Stevenson et al. (2006) showed that students come to distance education courses with variable expectations of the levels of service and support they will receive from their tutors. The reason behind this expectation can be found in the amount of tutors’ support allocated to e-learning students in comparison with in-house students. Mullen and Tallent-Runnels (2006) found that students in traditional classrooms ranked instructors’ effective support higher than tutors’ supports in online classes.

In general, it can be expected that identifying and working with students’ expectations has
beneficial effects on students’ satisfaction with tutor’s support, reducing student drop-out and increasing course completion rates (Stevenson et al., 2006). Also Mullen and Tallent-Runnels (2006) found that a classroom environment where teacher expectations are clear is positively related to students’ motivation, academic self-regulation and scholastic achievement. However, the question is that which expectations have to be identified and which target group (students or tutors) have to be involved in this solution. Table 5.16 provides a summary of the previous studies regarding the question above.

Table 5.16 A summary of some studies for assessing students’ and tutors’ expectations in the learning environments

<table>
<thead>
<tr>
<th>Target group</th>
<th>Target level</th>
<th>Content</th>
<th>Researcher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students</td>
<td>Tutors</td>
<td>Students’ support</td>
<td>Teaching-learning</td>
</tr>
<tr>
<td>*</td>
<td>*</td>
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</table>

As it can be seen in Table 5.16, most of the previous studies have focused on assessing students’ expectations in the area of teaching-learning approaches in the course level. On the other hand, tutors’ expectations as well as students’ support and assessing expectations in the module level are mostly ignored by the previous studies. Comparing with these studies, the solution generated by the present study sought to cover both students and tutors’ expectations through all areas including teaching-learning and students’ support approaches in both module and course levels. It was pointed out that these expectations should be identified in the beginning of the course and also in the beginning of each semester for each module. These expectations are supposed to help students and tutors to
address the points that they are expected to do during the semester/course.

Another entrepreneur continued criticising academics by mentioning that

F(1): “while I was very eager to take part in the practical projects relevant to my studies in the university, my tutors were very reluctant to actively push and guide me to implement my practical ideas/interests. Perhaps this happened because they had not experience of launching a business by themselves. Some of them even were not perfect in their subject-matter academic field”.

The main issue criticised here is that tutors have not sufficient experience in launching a business by themselves. Therefore, the question is how they can motivate students to do a start-up during or after their studies? Accordingly, participants in this group proposed that recruiting more experienced tutors should promote and support students’ motivation to do practical tasks. Alternatively, Franklin et al. (2001) suggested that academics may leave the university to run the company or may run the company in parallel with their academic responsibilities. With the latter, the business may be run as an extension to the academics’ departmental research programmes and interest. Similar to the previous solution, it seems that students expect more support from their tutors in the virtual learning environments rather than the face-to-face ones because they suffer from a lack of contact with their tutors and therefore, their expectations from their tutors are more. Furthermore, certain skills such as leadership, decision-making, trust-building, communication, and conflict-management skills are assumed to be necessary for both students and tutors to enable them to build their own businesses. Cooperative learning through its ‘social skills’ feature gives an opportunity to students and tutors to enhance their knowledge of the skills mentioned above.

Another critic about some academics was

M(2): “most of my tutors were not willing to be criticised. Instead, they preferred to just be admired”!

And finally, another entrepreneur pointed out that

M(3): “some of my tutors did not know the effective ways of communication and interaction by students. They used to create a one-direction communication route with their students and they were not valuing getting feedback from their students regarding
They argued that this approach demotivates students to take actively part in the class discussions and activities. However, participants approved that this drawback does not apply to all of the tutors and, evidently, some tutors were valuing students’ feedback and criticisms. In general, they suggested that tutors need to improve their capacity to think, accept and use their students’ critiques. Group processing as one of the key features of cooperative learning has an affordance here. Since students and tutors are supposed to discuss how well they are achieving their goals, they need to be open minded towards the feedback received from their counterparts in the learning environment. Despite entrepreneurs’ view that the cultural lack of criticising tutors is due to the tutors’ lack of acceptance, McMahon (2010) pointed out that students are also reluctant to criticise their peers – sometimes to the point where they are incapable of giving them any useful advice at all. Therefore, it cannot be claimed that the only reason for not criticising tutors in the class is their lack of acceptance. If this solution is to be implemented in the learning environment, further to training tutors to be more open-minded towards the critics, students also need to be trained in how best to critically review and provide feedback to their tutors and classmates. Furthermore, students need to have a critical mind-set to be able to actively take part in providing feedback to their tutors and peers. Cooperative learning could provide this opportunity for the class to enhance their critical feedback within the small groups in the class, for example, through group processing.

Iranian entrepreneurs believed that virtual learning environments have specific affordances to effectively respond to the challenges above. For instance, one of them proposed that

F(1): “when you want to recruit tutors for the distance education, you have no restriction in terms of the location of the tutors. You can invite the best tutors who are far away from you even from other countries and continents. So, you could get more experienced and knowledgeable tutors regardless of their location”.

Another entrepreneur pointed out that

M(4): “information technologies used in the e-learning platforms could effectively enhance the interaction between students and tutors and also facilitate the process of monitoring and giving feedback to students’ progress during their studies”.

These two affordances along with the other affordances discussed already, seem to

their class”.

suggest the capability and effectiveness of implementing these solutions in e-learning environments.

Iranian entrepreneurs addressed another drawback in the current educational systems and pointed out that requiring students to do or participate in research activities is mostly ignored in universities. Students tend to emphasise on taught programmes and only attend the classes and exams. This tendency seems to decrease their motivation for exploring new ideas through doing academic research activities. Iranian entrepreneurs believed that lack of research support for students in universities makes them reluctant to do research. Therefore, dedicating a Research section in the e-learning platform was suggested here to stimulate students’ motivation. They pointed out that e-learning has an affordance here to facilitate students’ access to the resources required for research. Consistent with this solution, Leem and Lim (2007) found that developing and supporting e-communities of knowledge (such as wikis and educational websites) in order to facilitate research and education could improve students’ Competitiveness. They pointed out that using such communities as spaces for educating learners and as a common area to engage in research provide extensive support for interdisciplinary fields to perform collaborative research using the Internet. However, it is clear from the literature that there are a number of factors which can impede or facilitate doing research in educational settings. Burkhardt and Schoenfeld (2003) identified some of these barriers as follow: 1) It's (almost) nobody's job to turn insight into impact. It means that doing the time-consuming job of research and bringing insight into an impact is not part of most students’ job description. 2) "You do your thing, I do mine." It refers to the tendency of academic community to see research as very much an individual or small group enterprise. 3) A negative incentive system. It was argued that while institutions vary in the ways they allocate credit to individuals for their contributions to research papers, a general rule is that the sum of the contributions to a paper adds up to one. It means that the more participants, the less credit one is likely to earn toward promotion and/or tenure. 4) The absence of a research-based industry. Educational publishers are the "big manufacturers" of educational products. Why do they not invest more in systematic research-based development? Simply put, economic forces argue against it.

As another solution, the Iranian entrepreneurs and academics advise the tutors to help students to avoid pessimism and enhance their positivity in order to cultivate their Motivation. In order to assess the impact of students’ pessimism and optimism on their
motivation and achievement, Yates (2002) sampled 335 students in South Australia and measured their achievement in mathematics as well as their optimistic or pessimistic explanatory style using standard questionnaires. They found that those who held a more pessimistic explanatory style experienced a lower relative level of achievement almost three years later. They concluded that pessimism is maladaptive and becomes a self-fulfilling prophecy, setting in train behaviours that are deleterious for achievement. In particular, when pessimistic students encounter negative events they are likely to exhibit a constellation of helpless behaviours including cognitive deficits, passivity, sadness, lowered self-esteem, lowered assertiveness and competitiveness. Consistent with this conclusion, Forsyth and MaMillan (1991) pointed out that developing students’ positive expectations about their chances of success, emphasising their positive goals (things desired) rather than negative goals (things to avoid), and monitoring the level of difficulty of their tests and assignments can result in improving their Task Motivation. Moreover, it was supported that enhancing students’ positive estimation about their future and encouraging them to look forward and not look back positively affect their Proactivity (Strauss et al., 2009), and Persistence (Feather, 1963; Paul, 2008). It was argued by Strauss et al. (2009) that positive affect can promote more innovative behaviours and might lead to individuals setting more proactive goals and persisting to achieve proactive goals. One possibility is that ‘positive interdependence’ can promote positivity and optimism. For example, it helps students to positively think about others’ works and the benefits that their works could bring to them. This positive mind-set is the first and most important element of cooperative learning which helps students to effectively work within the groups.
5.3.6. Cultivating Motivation – Iranian Students

Iranian students in this focus group generated 15 Motivation solutions as listed in Table 5.17.

Table 5-17 Motivation solutions generated by Iranian Students

<table>
<thead>
<tr>
<th>Solution Title</th>
<th>Solution Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applying known-assessment strategy (No Anonymous)</td>
<td>If students know that other students are aware of their names, projects and groups, they will be more persistent and motivated to be more successful.</td>
</tr>
<tr>
<td>Requiring gradual and step by step tasks from students</td>
<td>Students’ outcomes have to be assessed gradually. It helps students to be prepared gradually and not to be failed due to only a mistake in their final semester exam. In this way they can see the result of their efforts in a gradual basis and these gradual observations encourage them to be more proactive.</td>
</tr>
<tr>
<td>Promoting tutors’ kind interactions with students</td>
<td>Students need to be treated friendly and kind in a respectful manner inside and outside of the classroom.</td>
</tr>
<tr>
<td>Outlining practical applications of modules</td>
<td>Students should be encouraged to bridge between their theoretical knowledge and their applications in the real world. This could be achieved by requiring students to think and talk about the potential practical applications of their studies.</td>
</tr>
<tr>
<td>Encouraging students to work in industry and workplace</td>
<td>Tutors and universities should introduce their students to work-places and industries related to their studies.</td>
</tr>
<tr>
<td>Getting students’ feedback regarding the practicality of their modules</td>
<td>Students should provide feedback regarding the level of perceived practicality of the modules offered to them in each semester.</td>
</tr>
<tr>
<td>Transferring tutors’ minds from theoretical to practical</td>
<td>Tutors and universities’ policy makers need to be updated with the specific importance of students’ practical abilities and activities.</td>
</tr>
<tr>
<td>Defining more</td>
<td>Nowadays, applicants wishing to enter universities are</td>
</tr>
<tr>
<td>Topic</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Assessed only based on their theoretical backgrounds and academic</td>
<td>Sophisticated system and filters for student recruitment were assessed only based on their theoretical backgrounds and academic capabilities. These criteria should be changed and be in a mixed style; combining theoretical and practical criteria (for example: the number of their prior spin-offs, and their prior job experiences.)</td>
</tr>
<tr>
<td>Students need to be informed about the results of their previous</td>
<td>Making students aware of the results of their previous feedback Students need to be informed about the results of their previous feedbacks which they had submitted for their modules and tutors.</td>
</tr>
<tr>
<td>Tutors have to allocate more time for their students within and</td>
<td>Reducing the number of students in each class Reducing the number of students in each class would be useful for achieving this goal.</td>
</tr>
<tr>
<td>Students have to be clearly informed about the criteria and bases</td>
<td>Clarifying assessments’ criteria Students have to be clearly informed about the criteria and bases of their assessments in the beginning of the course.</td>
</tr>
<tr>
<td>Self and peer assessment can help students to learn more while they</td>
<td>Applying self- and peer-assessment Self and peer assessment can help students to learn more while they assess themselves and each other.</td>
</tr>
<tr>
<td>Students need to be encouraged to increase their self-confidence by</td>
<td>Emphasising on students’ strength points Students need to be encouraged to increase their self-confidence by focusing on their strengths rather than only pointing their weaknesses.</td>
</tr>
<tr>
<td>Tutors need to be motivated and encouraged to give more time to</td>
<td>Enhancing tutors’ motivations Tutors need to be motivated and encouraged to give more time to students and pay more attention on them. This should be done by electing more intrinsically motivated tutors and by rewarding tutors based on the level of their students’ achievements.</td>
</tr>
<tr>
<td>Students should be required to work on some real cases related to</td>
<td>Applying case study as an assessment scheme Applying case study as an assessment scheme Students should be required to work on some real cases related to their modules and courses. These case studies can be set as a part of their final assessments.</td>
</tr>
</tbody>
</table>

As can be seen in Table 5.17, one of the major concerns of Iranian students was in the area of assessment approaches used in their educational system. They complained about the lack of clarity in the criteria used for assessing their progress, lack of implementing self and peer assessment, and tutors’ overemphasising on their weaknesses. For instance, one of them described his experience as follow:
M(1): “In the beginning of the semester, our tutor described the assessment scheme that would be used during and at the end of the semester. But he never spoke about the criteria which would be used in those assessments. Consequently, our understanding from the details of the work we were expected to deliver was not according to what our tutor had meant therefore. Finally we scored unsatisfactory result at the end. For instance, our tutor expected us to mainly focus on synthesising the different evidence we gathered but most of us had worked on describing and analysing those evidence and had ignored the importance of synthesising”.

It is argued by this student that the criteria which will be used to assess students should be clarified for students from the outset in order to provide a fair and effective assessment. The aim of clarifying assessment criteria is providing better guidance to students, enabling consistency in marking, easier moderation, and easier provision of feedback (Price and Rust, 1999). However, the continued emphasis on explicit articulation of assessment criteria and standards is not sufficient to develop a shared understanding of ‘useful knowledge’ between academics and students (Rust et al., 2003). O'Donovan et al. (2001) developed a criteria assessment grid for the Business School at Oxford Brookes University and found that whilst students applauded the criterion-reference grid as a 'good idea' and one that did help clarify assessment requirements, they also highlighted several shortcomings including issues of subjectivity and multiple interpretations of criteria and standards. They concluded that the criterion-reference grid, from the student perspective, appeared to be of limited practical benefit unless presented as part of multifaceted approach including explanation, exemplars and opportunities for discussion. Rust et al. (2003) designed, implemented and tested an intervention to increase students’ knowledge of assessment criteria and processes. It involved students in a) preparation work, b) participation at a workshop, and c) the submission of a self-assessment sheet, along with their coursework to be handed in at the end of the first semester:

a. A week before the workshop all students were provided with two sample assignments and mark sheets including assessment criteria and grade definitions. Students were asked to individually complete the mark sheets, providing a grade and rationale/feedback for each of the assignments before coming to the workshops.

b. Workshop (90 minutes long) was offered to all students in groups of 40. The workshops were structured in the following way:
i. students joined up in small groups and discussed their initial individual marking of the sample assignments;

ii. feedback of small groups’ agreed grades and rationale to plenary;

iii. tutor-led comparison of provided rationales with criteria;

iv. tutor explanation of each criterion;

v. small groups review assessment and grade in light of tutor explanation;

(vi) final report from small groups to plenary of grade for each piece of work;

(vii) tutor provided annotated and marked versions of samples and discussed tutor assessment and mark.

The small group discussions allowed students to compare and justify their initial assessment of the work against that of others as well as allowing the declared grade to be the responsibility of the small group. However, the students were asked explicitly not to change their initial grading on their individual sheets.

(c) Three weeks later, students submit their coursework along with a completed self-assessment sheet.

They found that students’ learning can be improved significantly through such an intervention and that this improvement may last over time and be transferable, at least within similar contexts. The dominant role of small group discussions in implementing the intervention above is obvious. ‘Positive interdependence’ helps students within these small groups to positively perceive and appreciate each other’s role in the groups. Moreover, ‘promotive interaction’ enables students to influence each other's reasoning and conclusions in the small groups in order to have a better understanding of the assessment criteria discussed in the group.

Another student described her positive experience in a class when her tutor required them to assess their own assignments:

F(1): “after completing our assignments, our tutor gave us a table including the criteria that could be used for assessing them and required us to evaluate our assignments. He told us that the fairness and completeness of our self-assessments are the
main determinants of our grades at the end of the semester. It was very interesting. That was the first time that I was in the position of assessing my own assignment. I have to say that my learning in the process of self-assessment was much more than all the sessions that I attended the class. More importantly, it directly affects my belief in the effect of my personal efforts on outcomes. It also enhances my need for achievement because I understood my needs and drawbacks very well!”

Self-assessment is defined as a process by which students “1) monitor and evaluate the quality of their thinking and behaviour when learning; and 2) identify strategies that improve their understanding and skills” (McMillan and Hearn, 2008, p.40). Self-assessment is being used increasingly in higher education to help students to learn more effectively and deeply. However, its impact on students’ learning and motivation has not been widely investigated. There are some pre-requirements and conditions that if they are not meet, may negatively impact on the benefits of self-assessment work. Hanrahan and Isaacs (2001) pointed out that in order to gain benefit from peer assessment schemes, students first need training in the specific scheme being used. Taras (2001) highlighted the importance of involving students in both discussion and understanding of criteria and/or formulating the criteria used in assessment. Furthermore, Sullivan and Hall (1997) illustrated that to encourage students to take self-assessment seriously, a class discussion should be held to explain the philosophy underlying the self-assessment. It could be argued that in any attempt for effective implementation of this solution, these pre-requirements are needed to be considered.

Experiential learning, specifically, reflective observation and abstract conceptualisation cycles has potential affordances for this solution since it encourages students to reflectively and critically think about their performance and identify the reasons and outcomes of their concrete experience. Furthermore, similar to the previous solution, individual accountability as one of the key elements of cooperative learning has an affordance here. It facilitates assessing each student’s performance by, for example, requiring each student to assess and explain what they have taught to a classmate. With regard to the affordance of virtual learning environments for this solution, another student believed that e-learning systems could facilitate the interaction between students and their tutors in the process of self and peer-assessment:

M(2): “When our tutor wanted to implement peer assessment in the class, one of the major obstacles was circulating students’ assignments amongst the classmates and
then returning the peers’ feedbacks to the tutor for her final comments. I think that an e-learning platform could design some processes which can automatically do this job and facilitate the process of peer-assessment”.

The stimulating impact of implementing self-assessment on students’ Competitiveness ability (McVarish and Solloway, 2002), Task Motivation (McMillan and Hearn, 2008), Persistence and Independence (Eva and Regehr, 2005) has been empirically investigated. For instance, McMillan and Hearn (2008) illustrated that student self-assessment improves students’ motivation through promoting their intrinsic motivation, internally controlled effort, a mastery goal orientation, and more meaningful learning. Moreover, it was argued that the ability to accurately assess one’s weaknesses and one’s strengths generates a balance of confidence and caution, of persistence and flexibility, of experimentation and safety, and of independence and collaboration (Eva and Regehr, 2005).

Another student compared his experience of two of his tutors working with two different approaches in assessing their students:

M(3): “One of our tutors tended to, after each quiz or presentation, emphasise the strengths of the students. He consistently encouraged us to work on our potential capabilities. Consequently, most of us were motivated to be more proactive, persistent, determinant, and with high need for achievement. On the other side, at the same time, we had another tutor who tended just to highlight our weaknesses and ignore our positive points! It was the worst class I had ever attended. We lost our task motivation, competitiveness, and independence in that class. I think while tutors should mention the weaknesses of students, they should mainly emphasise the potential capability and the strength of the students”.

Therefore, Iranian students pointed out that they need to be encouraged to increase their self-confidence by focusing on their strengths rather than only representing their weaknesses. This approach is consistent with the empirical finding of Dornyei (1994) who pointed out that giving students motivating, informational and positive competence feedback can result in promoting their Task motivation. He stressed that tutors should point out the value of the accomplishment and not overreacting to errors. This argument is consistent with Young (1991) who indicated “a harsh manner of correcting student errors is often cited as provoking anxiety. In addition, learners consistently report anxiety over responding incorrectly, being incorrect in front of their peers, and looking or sounding
‘dumb’” (p.429). Another student believed that since the virtual learning environments suffer from the lack of face-to-face interaction between students and tutors and there is more possibility of misunderstanding between them, emphasising on students’ strengths is more important in e-learning platforms than in-house classes.

Outlining practical applications of modules is another solution suggested by Iranian students and Irish academics. This approach has already been suggested for cultivating students’ Productive Thinking as well. Literature supports the positive effect of implementing this approach on promoting students’ Motivation as well. For instance, Dornyei (1994) and Forsyth and MacMillan (1991) pointed out that developing learners’ instrumental motivation by discussing the role their studies play in the world and its potential usefulness both for their lives enhances their Task Motivation as well as Need for achievement. It is also empirically approved that applying more practically oriented studies and enhancing the transfer of knowledge from creation to application and utilization can result in increasing students’ Competitiveness as well (Pavlin and Svetlicic, 2012; Lynton, 1989). Obviously, experiential learning through active experimentation cycle has an affordance here. Active experimentation encourages students to think and find the practical applications that they could get from their studies towards their future. This mind-set helps students to see their studies from a practical lens and consider the applications of the given module/course in their real life. In this case, it could be expected that they are more motivated to have a better achievement in their studies. E-learning has also an affordance for this solution. Hyperlinks could be used in the content of modules to address the practical applications of the modules in the different parts of the curriculum. These hyperlinks could connect the theoretical subject-matter content of the module to some web-pages illustrating the implementation of the module in the context of real life.

5.3.2. Mapping between Motivation sub-competencies and the solutions generated by focus groups

As was mentioned in the Introduction section of this chapter, in each focus group reported above, a list of Motivation sub-competencies and their definitions as well as a form for writing the title and description of their cultivating solutions (see Appendix 3) were given to the respondents, asking them to think, express, discuss and then write their generated solutions in the form. In that form, the specific Motivation sub-competencies addressed by
the generated solution was also indicated. In other words, the generator of each solution illustrated the Motivation’s sub-competencies covered by each solution. Based to those details, Table 5.18 provides an overview of the Motivation sub-competencies addressed by the solutions generated by the focus groups.
Table 5-18 Motivation sub-competencies addressed by solutions generated by focus group participants

<table>
<thead>
<tr>
<th>Solution generator</th>
<th>Solution title</th>
<th>Motivation Competencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irish Academics</td>
<td>Encouraging students to work in industry and workplace</td>
<td>Proactivity and Hardworking</td>
</tr>
<tr>
<td></td>
<td>Mapping students’ required skills with their studies</td>
<td>Need for achievement</td>
</tr>
<tr>
<td></td>
<td>Pushing students hard by more exams</td>
<td>Persistence</td>
</tr>
<tr>
<td></td>
<td>Enhancing experiential learning by organising site visits for students</td>
<td>Determination</td>
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<td></td>
<td>Allowing students for iterative assessments</td>
<td>Belief in the effect of personal efforts on outcomes</td>
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<tr>
<td></td>
<td>Providing clear link to award</td>
<td>Task Motivation</td>
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<tr>
<td></td>
<td>Applying known-assessment strategy (No Anonymous)</td>
<td>Independence</td>
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<tr>
<td></td>
<td>Offering competitive awards to students</td>
<td>Competitiveness</td>
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<tr>
<td></td>
<td>Enhancing students’ flexibility in getting modules</td>
<td></td>
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<tr>
<td></td>
<td>Implementing Pull &amp; Push Motivations</td>
<td></td>
</tr>
<tr>
<td>Entrepreneurs</td>
<td>Requiring gradual and step by step tasks from students</td>
<td></td>
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<tr>
<td></td>
<td>Encouraging students to compare themselves with achievers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Clarifying the criteria for awarding the determined prizes</td>
<td></td>
</tr>
<tr>
<td>Solution generator</td>
<td>Motivation Competencies</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Proactivity and Hardworking</td>
<td>Need for achievement</td>
</tr>
<tr>
<td>Applying known assessment strategy (No anonymous)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Providing business databases for students</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Offering competitive rewards to students</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Defining more sophisticated system and filters for student recruitment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enhancing students’ self-awareness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Helping students to make their goals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assigning students to a number of individual tasks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Encouraging students to compare themselves with achievers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Offering competitive awards to students</td>
<td></td>
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<tr>
<td>Requiring master students to launch a business as their dissertation</td>
<td></td>
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<tr>
<td>Providing business mentorship for students</td>
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<tr>
<td>Providing business databases for students</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reviewing stories of other entrepreneurs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using case studies in class</td>
<td></td>
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</tr>
<tr>
<td>Solution generator</td>
<td>Solution title</td>
<td>Motivation Competencies</td>
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<tr>
<td></td>
<td>Helping students to avoid pessimism and enhance their positivity</td>
<td>Proactivity and Hardworking</td>
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<tr>
<td></td>
<td>Putting students in the position of group leadership</td>
<td>Need for achievement</td>
</tr>
<tr>
<td></td>
<td>Requiring gradual and step by step tasks from students</td>
<td>Persistence</td>
</tr>
<tr>
<td></td>
<td>Helping students to make their goals</td>
<td>Determination</td>
</tr>
<tr>
<td></td>
<td>Applying personal development programmes</td>
<td>Belief in the effect of personal efforts on outcomes</td>
</tr>
<tr>
<td></td>
<td>Providing semi-structured and flexible educational planning</td>
<td>Task Motivation</td>
</tr>
<tr>
<td></td>
<td>Applying idea writing as an assessment scheme</td>
<td>Independence</td>
</tr>
<tr>
<td>Iran Entrepreneurs</td>
<td>Supporting students by providing their required information</td>
<td>Competitiveness</td>
</tr>
<tr>
<td></td>
<td>Helping students to avoid pessimism and enhance their positivity</td>
<td>Proactivity and Hardworking</td>
</tr>
<tr>
<td></td>
<td>Mosaic combination of participants in each class</td>
<td>Need for achievement</td>
</tr>
<tr>
<td></td>
<td>Improving tutors’ criticism capacity (tolerance)</td>
<td>Persistence</td>
</tr>
<tr>
<td></td>
<td>Helping students to make their goals</td>
<td>Determination</td>
</tr>
<tr>
<td></td>
<td>Promoting tutors’ kind interactions with students</td>
<td>Belief in the effect of personal efforts on outcomes</td>
</tr>
<tr>
<td></td>
<td>Defining more sophisticated system and filters for student recruitment</td>
<td>Task Motivation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Independence</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Competitiveness</td>
</tr>
<tr>
<td>Solution generator</td>
<td>Motivation Competencies</td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>Solution title</strong></td>
<td>Proactivity and Persistence</td>
<td>Need for Hardworking</td>
</tr>
<tr>
<td>Identifying and balancing the expectations of both students and tutors from each other</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recruiting more experienced tutors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Providing business mentorship for students</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Applying idea commercialization as an assessment scheme</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Promoting e-business culture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Introducing job opportunities to students consistently</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participation of tutors in students’ practical projects</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dedicating a research section in the e-learning platform</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Applying personal development programmes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recruiting the best tutors regardless of their location</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reducing the number of students in each class</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Applying known-assessment strategy (No Anonymous)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Requiring gradual and step by step tasks from students</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Promoting tutors’ kind interactions with students</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Iranian Students**

- Applying known-assessment strategy (No Anonymous)
- Requiring gradual and step by step tasks from students
- Promoting tutors’ kind interactions with students
<table>
<thead>
<tr>
<th>Solution generator</th>
<th>Solution title</th>
<th>Motivation Competencies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Outlining practical applications of modules</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Encouraging students to work in industry and workplace</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Getting students’ feedback regarding the practicality of their modules</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Transferring tutors’ minds from theoretical to practical</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Defining more sophisticated system and filters for student recruitment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Making students aware of the results of their previous feedback</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reducing the number of students in each class</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Clarifying assessments’ criteria</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Applying self- and peer-assessment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Emphasising on students’ strength points</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Enhancing tutors’ motivations</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Applying case study as an assessment scheme</td>
<td></td>
</tr>
</tbody>
</table>
As can be seen in Table 5.18, all of Motivation sub-competencies are covered by the solutions generated by focus groups. However, some of the sub-competencies are addressed more or less than others by different groups. For example, while Determination is addressed just by one of the Iranian Academics’ solutions, they generated 8 solutions for cultivating Competitiveness. In general, while some Motivation sub-competencies such as Independence, Persistence, and Determination were covered by a smaller number of solutions, others such as Proactivity, Need for achievement, and Belief in the effect of personal efforts on outcomes are addressed by more solutions.

Overall, looking more closely at Table 5.18, this study suggests that all of Motivation sub-competencies are addressed by the solutions generated by the focus groups of this study. One of the conclusions can be made from this table is that, according to the experience of participants of this study, all of these sub-competencies are educable at least to some extent. This is consistent with Sánchez (2011) who pointed out that all of the entrepreneurial competencies can be improved via training and development. However, as was mentioned in Chapter 2, entrepreneurship education needs an urgent move from traditional to innovative non-traditional teaching methods. It was argued that the dominant teaching methods in entrepreneurship are still traditional lectures and individual business plan writing which only emphasise on the left-hemisphere of students’ brain in order to increase their rational thinking. However, as was mentioned by Kirby (2004), intuitive thinking as the result of right-brain and rational thinking as the outcome of left-brain develop what may be termed the ‘balanced brain’ which is needed to stimulate students’ entrepreneurial competencies. It was emerged from the solutions generated by this study that experiential-cooperative teaching methods could be effective in enhancing students’ entrepreneurial learning.

However, one of the most common complaints about entrepreneurship education is its resistance to change (Levin, 2006). Notably, entrepreneurship academics and university administrators may hesitate to experiment non-traditional teaching methods because applying these innovative methods is time consuming for tutors and expensive for administrators (Garavan and O’Cinneide (1994); Mwasalwiba, 2010). It can be argued that if entrepreneurship education is to be affective and if these entrepreneurial competencies are to be educable, traditional teaching methods should be replaced by cooperative-experiential teaching methods. This argument is more elaborated in Chapter seven.
5.3.4. Comparing the generated solutions by different groups

Similar to the huge overlaps reported amongst Productive Thinking solutions, there was a considerable amount of redundancy and thematic overlap in the motivation solutions generated by groups. Some solutions are worded similarly and others address the same aim but are worded differently. For example, ‘Encouraging students to work in industry and workplace’ is similar to ‘require students to launch a business’ Overall, a number of themes emerged and are described below. These themes emerged as a result of efforts by the primary investigator of this thesis to categorise and label the solutions into 14 groups. The forty seven Motivation solutions alongside the themes associated with them can be seen in Table 5.19. These themes help us to have a better understanding of the nature of the solutions and their overlaps.

Table 5-19 Grouping Motivation solutions into the common themes

<table>
<thead>
<tr>
<th>Solution theme</th>
<th>Solution Title</th>
<th>Generator7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promoting “Learning from each other”</td>
<td>Applying Self and Peer Assessment</td>
<td>IR-S</td>
</tr>
<tr>
<td></td>
<td>Mosaic combination of participants in each class</td>
<td>IR-A</td>
</tr>
<tr>
<td></td>
<td>Putting students in the position of group leadership</td>
<td>IE-S</td>
</tr>
<tr>
<td>Highlighting practical applications</td>
<td>Outlining practical applications of modules</td>
<td>IE-E</td>
</tr>
<tr>
<td></td>
<td>Applying Idea writing as an assessment scheme</td>
<td>IR-S</td>
</tr>
<tr>
<td></td>
<td>Mapping students’ required skills with their studies</td>
<td>IR-E</td>
</tr>
<tr>
<td></td>
<td>Getting students’ feedback regarding the practicality of their modules</td>
<td>IR-E</td>
</tr>
<tr>
<td></td>
<td>Transferring tutors’ minds from theoretical to practical</td>
<td>IR-S</td>
</tr>
<tr>
<td>Valuing experience (learning by doing)</td>
<td>Recruiting more experienced tutors regardless their location</td>
<td>IR-A</td>
</tr>
<tr>
<td></td>
<td>Encouraging students to work in industry and workplace</td>
<td>IE-S</td>
</tr>
<tr>
<td></td>
<td>Participating Tutors in students’ practical projects</td>
<td>IR-E</td>
</tr>
<tr>
<td></td>
<td>Requiring students to launch a business as their dissertation</td>
<td>IE-S</td>
</tr>
<tr>
<td></td>
<td>Applying Idea Commercialization as an assessment</td>
<td>IE-E</td>
</tr>
</tbody>
</table>

7 IR-A: Iranian Academics; IR-S: Iranian Students; IR-E: Iranian Entrepreneurs; IE-A: Irish Academics; IE-S: Irish Students; IE-E: Irish Entrepreneurs; L: Literature
<table>
<thead>
<tr>
<th>Reflective observation</th>
<th>Providing Business mentorship for students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reviewing stories of other entrepreneurs</td>
<td></td>
</tr>
<tr>
<td>Enhancing experiential learning by organising site visits for students</td>
<td></td>
</tr>
<tr>
<td>Encouraging students to compare themselves with achievers</td>
<td></td>
</tr>
<tr>
<td>Using case studies in the class</td>
<td></td>
</tr>
<tr>
<td>Applying case study as an assessment scheme</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Involving students in curriculum design (curriculum flexibility)</th>
<th>Providing Semi-structured and flexible educational planning</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Identifying and balancing students’ expectations from their studies</td>
</tr>
<tr>
<td></td>
<td>Making students aware of the results of their previous feedback</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Interactive learning environment</th>
<th>Promoting tutors’ kind interactions with students</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Improving Tutors’ criticism capacity</td>
</tr>
<tr>
<td></td>
<td>Enhancing Tutors’ motivations</td>
</tr>
<tr>
<td></td>
<td>Reducing the number of students in each class</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Scaffolding students’ confidence</th>
<th>Requiring Gradual and step by step tasks from students</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Assigning students to a number of individual tasks</td>
</tr>
<tr>
<td></td>
<td>Allowing students for Iterative assessments</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Providing personal development programmes</th>
<th>Applying Personal development programmes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Helping students to make their goals</td>
</tr>
<tr>
<td></td>
<td>Dedicating a Research section in the e-learning platform</td>
</tr>
</tbody>
</table>

| Improving students’ recruitment system | Defining more sophisticated system and filters for student recruitment |

<table>
<thead>
<tr>
<th>Rewarding students</th>
<th>Offering competitive awards to students</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Implementing Pull &amp; Push Motivations</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Increasing transparency in educational</th>
<th>Providing clear link to award</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Clarifying the criteria for awarding the determined prizes</td>
</tr>
<tr>
<td></td>
<td>Clarifying Assessments’ criteria</td>
</tr>
</tbody>
</table>
Brief definitions of the thirteen themes of Productive Thinking solutions are provided below. These definitions alongside the title of the solutions associated with each category could give us a clear idea about each theme included in Table 5.19.

1. **Promoting “Learning from each other”**: solutions included in this theme tend to highlight the importance of the learning that can be cooperatively obtained by students in small synergic groups. This synergy is supposed to enhance students’ motivation to effectively work in learning groups.

2. **Highlighting practical applications**: this theme points out that students should be more motivated if they see that their theoretical learning has some applications in practical situations. Therefore, they do need to explore and highlight the practical value or learning experiences throughout their studies.

3. **Valuing experience (learning by doing)**: from this point of view, students are eager and motivated to learn by conducting experiments rather learning in the theoretical classes.

4. **Reflective observation**: further to direct experiments, students should be motivated to learn by critical observation of others’ experiences.
5. **Involving students in curriculum design (curriculum flexibility):** if students are expected to be motivated learners, they will need to be involved in the curriculum design as an important stakeholder group.

6. **Interactive learning environment:** further to interacting and learning from each other (theme one), students need to interact with computer-based simulations, educational games, their tutor, and environment as valuable resources for their learning.

7. **Scaffolding students’ confidence:** according to this theme, students’ motivation can be stimulated subject to providing a safe educational environment for them from day one. It helps them to openly share and build upon their thoughts.

8. **Providing personal development programmes:** this theme highlights the importance of providing the training support for developing personal skills, abilities and competencies in university students and staff.

9. **Improving students’ recruitment system:** this theme pointed out that the current recruitment system for getting students in universities is not optimal. This system needs to direct applicants towards the most appropriate course which is compatible with their background and talents.

10. **Rewarding students:** students need to be extrinsically motivated to do tasks that they are expected to do. These extrinsic motivations could interactively affect and complement the impact of other intrinsic motivations.

11. **Increasing transparency in the educational environment:** the link between students’ efforts and the result of their effort including the rewards and grades has to be clearly shown to students from the beginning.

12. **Connecting students to the job market:** students need assistance to be more familiar with the opportunities available in the job market. They need to have more information about the job market; and more importantly, they need to know how they could collect and evaluate information about the job market relevant to their expertise.

13. **Increasing positivity in educational environment:** tutors should promote positivity in the
class environment and amongst their students.

14. **Pushing students hard**: the class has to be demanding and require students to work hard to achieve the learning outcomes. This hard-working tendency in students should then transfer into their real life when they are out working as entrepreneurs.

As can be seen in these 14 themes and the solutions associated with them, huge gaps identified between the current educational environments and the optimal ones which are appropriate for cultivating entrepreneurial competencies in students. It means that if educational approaches are to be effective in promoting entrepreneurship they need to be transformed in many aspects. These 14 themes may highlight some areas of this transformation. Looking more closely at the themes above, it could be clearly seen that, similar to productive thinking solutions, ‘experience’, ‘group learning’ and ‘student-centred educational environment’ are the three dominant issues which mostly highlighted by the solutions generated here. Therefore, as it was frequently argued in this chapter, so far, it seems that cooperative and experiential learning are the two educational frameworks which have the most affordances for implementing these solutions in an e-learning environment.

5.4. **Translating ‘theoretical solutions’ into ‘software-based solutions’**: The current study sought to generate solutions which could be used for enhancing students’ entrepreneurial competencies in an e-learning platform. All of these solutions are theoretical and need to be fitted to the technical language of the e-learning platforms. To do so, a standard model in software development named “Prototyping Development Model” is used to show a sample of transferring and implementing these theoretical solutions in an e-learning platform. More details about this method are described in Chapter 3 of this study. While the majority of this work is beyond the scope of the current thesis, a sampling of this e-learning platform design work is presented below.

5.4.1. **Prototyping Sample: reviewing others’ stories**

A structured system for critically reviewing entrepreneurs’ stories by students is designed in this storyboard. These stories represent entrepreneurs’ successes and/or fails. This critical review could be selected as one of students’ assessment schemes in the e-learning platform. This software-based solution was based on a theoretical solution entitled ‘reviewing stories of other entrepreneurs’, which
was generated by Irish entrepreneurs and Iranian academics and was generated to stimulate students’ Productive thinking and Motivation.

A. Functional Specifications:

The four dimensions of the Functional Specification for this storyboard are detailed as follows:

- **Training:** In this function, tutors are required to submit a list of entrepreneurs’ stories in the platform. Students are then required to select and read one entrepreneur’s story. They can also suggest or request tutors to provide a new story. Students are then required to review their selected story and respond to three sets of questions:
  
  o In response to the first set of questions, they need to make a judgement about the given story. This judgement is made according to the four dimensions of the SWOT framework, including: Strengths, Weaknesses, Opportunities and Threats. To manifest these four dimensions in response to a story, students start discussions around the given story in the forums associated with the platform. They need to identify the positive and negative points of the entrepreneur’s performance in the given story.
  
  o The second set of questions requires students to compare themselves with the entrepreneur in the story. They need to compare the entrepreneurs’ performance with their own potential capabilities and performance in the same situation. This comparison helps them to have a better idea about their capabilities and limitations.
  
  o The final section of the assessment associated with this task is named “Learnt Lessons”. In this section, students are supposed to think and write about the lessons they learned through reading and evaluating this story.

- **Motivating:** Similar to every type of classroom and online exercise, students need intrinsic and extrinsic motivations to be well-engaged with this process. Intrinsically, students receive formative feedback from their tutors in the process of evaluating the given story. This constructive feedback is valuable in order to empower students to enhance their capability for a better performance in the same situation at a later date by avoiding the faults and grasping the opportunities missed by the entrepreneur in this story. Extrinsically, this process could be used as a mean of students’ summative assessment. In this case, a part of students’ final grade
in a module comes from their performance in this task. This performance could be assessed by students’ themselves (self-assessment), their peers (peer-assessment), and the tutor. In any case, students’ performance in responding to the three sets of questions described in the last section should be scored against the certain criteria which are evident to students from beginning.

- **Monitoring:** All of the students’ records and activities in this process are visible to all users enrolled in the module. Moreover, tutors are supposed to monitor students’ performance, give them formative and summative feedback, and reward active students in the process.

- **Assessing:** Assessing students’ records in this function could be done in two ways: Formative and Summative Assessment. In the formative assessment stage, students receive constructive feedback from their peers and/or tutors without any grading. In fact, they have opportunity to revise and improve their submitted works prior to the assessment deadline. Then, their revised assignments will be assessed and graded by the tutor (summative assessment). Likewise, students could also assess their tutors’ interaction and the quality of their feedback here. To do so, a set of questions will be asked from students at the end of the formative assessment stage. This prevents them from forming any bias since they have not access to their summative grades at that stage.

**B. Schematic Storyboard**

The Schematic Storyboard (see Figure 5.3) graphically illustrates a process diagram of how the overall system works for this particular use-case (Others’ Stories) to accompany the functional specification (FS) depicting data/control flow in the different layers of the e-learning platform.
Figure 5-3 Schematic storyboard for “others’ stories” solution
All of the four components of the functional specification described in the last stage are graphically illustrated in this schematic storyboard. It should be noted that the familiarity of the researcher with e-learning platforms and software design is a necessary skill for drawing these schematic storyboards. The researcher should be aware of the different software layers which should be used for software engineering.

This schematic storyboard should be read from the yellow circle (start point). The procedures are shown by following the arrows in the storyboard.

C. Interactive Mock-up

Based on the functional specifications and schematic storyboard above, Balsamic software was used to provide a set of visual examples of inputs to and outputs from system processes without including any real data in the system. This mock-up is interactive. It means that user can click on the different icons of the mock-up on their screens and see the next page that they are expected to see in the real software. The interactive mock-up for this solution (reviewing others’ stories) can be seen in a CD placed in Appendix F.

D. Usability Test

After preparing the interactive mock-up above, 6 groups of students, academics, and distance education administrators in Iran and Ireland as the end-users of this mock-up were involved in testing the mock-up. The aim of this test was to make sure that the end users of the mock-up can quickly and easily accomplish their own tasks in the system. They were invited to a computer laboratory in order to work with the mock-up in an individual basis. After working with the mock-up, they were asked to fill out a questionnaire including open-ended and close-ended questions in order to test the usability of the mock-up. The close-ended questions comprises 6 propositions and participants were required to select a number in the likert scale between 1 to 5 to indicate the level of their agreement with that proposition (Strongly agree: 5, Agree: 4, No idea: 3, Disagree: 2, Strongly disagree: 1). A sample of this questionnaire can be found in Appendix G. The mean of their responses to each of those propositions can be found in Table 5.20.
Table 5-20 The results of Usability Test for ‘Others Stories’ Mock-up

<table>
<thead>
<tr>
<th>Proposition</th>
<th>N(^8)</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>It was easy to complete this function.</td>
<td>30</td>
<td>4.60</td>
</tr>
<tr>
<td>When I used the instructions, the information was easy to understand.(^9)</td>
<td>2</td>
<td>4.50</td>
</tr>
<tr>
<td>This function is useful and effective.</td>
<td>30</td>
<td>4.13</td>
</tr>
<tr>
<td>I am willing to use this function in a real e-learning environment.</td>
<td>30</td>
<td>4.23</td>
</tr>
</tbody>
</table>

As can be seen in Table 5.20, a mean score upper than 4 out of 5 is devoted to each of the first four propositions of the questionnaire indicating that the usability of this mock-up is high and acceptable from its end-users’ point of view.

With regard to the second proposition, only those participants who did not understand the function of the mock-up were required to read the instructions provided in each page of the mock-up. As can be seen in Table 5.20, this proposition was only rated by two participants. It means that 28 out of 30 participants did not use the instructions provided for each page of the mock-up. Therefore, it can be argued that the mock-up was clear enough to the majority of participants and that is why they did not use the instructions. Moreover, those two participants who used the instructions, found them easy to understand.

Three open-ended questions have been asked from the participants to explore the ‘strengths’, ‘weaknesses’ and ‘improvement solutions’ of this mock-up. While responding to these questions was optional, some participants responded them. Eliminating the repetitious responses, a brief summary of their ideas regarding those three open-ended questions can be found below:

**Strengths:**

- Enhancing students’ critical thinking.
- Providing the possibility of formative assessment for students.
- Enabling students to compare themselves with achievers.
- Encouraging students to reflect on others’ successes and failures.

---

\(^8\) Number of end-users rated the propositions

\(^9\) Only those participants who used those instructions were required to rate this proposition.
- Enabling students to assess their tutors in this function.

**Weaknesses:**

- It is time-consuming, especially for tutors.
- Students cannot see the criteria which will be used for evaluating their submissions.
- Students cannot suggest and add a story into the list of available stories in this function.
- Students cannot see the tasks have already been done by previous students and classes in this function.
- Students cannot communicate with their tutors when they are working in this function.

**Improvement solutions:**

- This function works well if tutors have a teacher-assistant (TA).
- Enabling tutors to record their comments verbally instead of typing and submitting written comments on students’ assignments.
- Students should be able to add a story to the existing list of stories in this function.
- Students should have access to the submissions made by previous students in this function in order to learn from each other.

**E. Revising Mock-up**

According to the ideas generated by the end users of this mock-up in the usability test above, the actions below were taken into account to improve this function and create the final Interactive Mock-up:

- Tutors could record their comments instead of typing them on students’ submissions.
- A box has been added at the left side of all pages, illustrating the evaluation criteria of students’ submissions.
- A chat box has been provided in all pages, enabling students to chat with their tutors at the time of reviewing stories and submitting their tasks.
- Students were enabled to suggest their tutors to add a story in the list of available stories.

The last version of this interactive mock-up can be seen in a CD placed in Appendix H.
5.5. Conclusion

In this chapter, two comprehensive sets of the solutions for enhancing students’ Productive Thinking and Motivation competencies are presented and discussed. These solutions were generated by 6 focus groups and included active participation and discussion of Iranian and Irish participants. A total of 48 unique solutions for cultivating Productive Thinking and 47 solutions for promoting Motivation in students were generated by participants in this study. These solutions could be used in different ways in the design of an e-learning platform to positively affect students’ entrepreneurial competencies; therefore, the affordances of virtual learning environments for implementing these solutions are also outlined in this chapter. Given the overlap between the solutions generated by the different focus groups a series of thematic overlaps between the solutions were identified. Consequently, the dominant themes can be seen in Tables 5.10 and 5.19. Accordingly, 13 themes emerged from analysis of the 48 unique Productive Thinking solutions (see Table 5.10) and 14 themes emerged from analysis of the 47 unique Motivation solutions (see Table 5.19).

In the context of entrepreneurship, education has been seen from different perspectives. Two dominant perspectives discussed for entrepreneurship education are: individualistic (competitive) vs. cooperative and traditional didactic vs. experiential learning. The individualistic paradigm of entrepreneurship education refers to a prevalent theme in thinking about entrepreneurial education focusing on single individuals within a linear educational process, which culminates in a degree (Laukkanen, 2000). In contrast, cooperative learning is a student-centred, instructor-facilitated instructional strategy in which a small group of students are responsible for their own learning and the learning of all group members (Li and Lam, 2005). The second perspective in entrepreneurship education is outlined by a contrast between traditional didactic and experiential learning. Didactic learning which is also known as principle-based or traditional learning comprises more or less formal discussions, presentations, and the use of audio-visual aids (Baillie and Ravich, 1993). Moreover, summative assessment which measures student achievement and outcome is the main assessment approach in traditional learning environments (Trotter, 2006). However, novices are often unable to appreciate and extend principles to novel situations and, unless there is a close connection between a principle and relevant examples, people are unable to take advantage of abstract principles (Nadler et al., 2003). In contrast, according to the experiential learning, learning is best conceived as a process and not in terms of outcomes. Therefore, to improve learning in higher education, the primary focus
should be on engaging students in a process that best enhances their learning and includes feedback on the effectiveness of their learning efforts (Kolb and Kolb, 2012).

Furthermore, comparing Tables 5.10 with 5.19, it could be seen that 9 out of 14 themes emerged from Motivation solutions are the same as the themes emerged from Productive Thinking solutions. It means that further to the redundancy and overlap between the solutions generated for either Productive Thinking or Motivation competencies, there is a considerable overlap between the solutions generated to cultivate both of them. This overlap means that there is a consensus in relation to aspects of curriculum design which can be used to promote students’ productive thinking and motivation as two important entrepreneurial competencies.

The themes were in common between productive thinking and motivation solutions were:

- Promoting “Learning from each other”,
- Highlighting practical applications,
- Valuing experience (learning by doing),
- Reflective observation,
- Involving students in curriculum design (curriculum flexibility),
- Interactive learning environment,
- Scaffolding students’ confidence,
- Providing personal development programmes, and
- Improving students’ recruitment system.

The main focus of all of these common themes as well as the unique themes which only associated with either productive thinking or motivation is learning from ‘experience’ and ‘each other’. These two themes directed us to this conclusion that an experiential-cooperative approach is more appropriate than other teaching approaches when we do want to stimulate students’ entrepreneurial competencies. Since all of the entrepreneurial competencies identified by the previous part of this study are soft know-how competencies and they are usually very difficult to be trained, it can be
concluded that without paying enough attention to a combination of these cultivating approaches we cannot reach our objective for stimulating those competencies in students. In the other words, implementing one or a few number of these cultivating approaches, alone, will not sufficiently and effectively enhance students’ entrepreneurial competencies. Most of these cooperative-experiential solutions can be categorised as non-traditional training approaches which are necessary to stimulate students’ right hemisphere in order to cultivate their soft entrepreneurial competencies targeted by this study. The affordances of cooperative and experiential learning for these solutions were initially discussed in this chapter and will be further elaborated in Chapter six.

In the next chapter, we would like to show how the 5 key features of cooperative learning (positive mutual interdependence; individual and group accountability; promotive interaction; social skills; group processing) and four main cycles of experiential learning (concrete experience, reflective observation, abstract conceptualisation, and active experimentation) map onto the curriculum design based on the solutions and themes generated here. Moreover, the contribution of this study align with the gaps identified in the literature are discussed in chapters 6 and 7.

As it was mentioned in the beginning of this chapter, it should be reminded that we do need to be very tentative with the term ‘solution’. In the other words, it does not mean that implementing these solutions and the themes emerged from them solve all of the issues of educational systems. Teaching-learning environments are very complex systems with a lot of moderator variables and perhaps many of them operate outside of the control parameters suggested by these solutions. However, it could be argued that these solutions provide insight into novel ways to promote the targeted entrepreneurial competencies (productive thinking and motivation) in university students through their studies in an e-learning environment.
6. Chapter 6: A hybrid Cooperative-Experiential Learning framework for cultivating students’ Productive Thinking and Motivation

6.1. Introduction

When the productive thinking and motivation solutions generated by this study were described and discussed in Chapter 5, it gradually emerged that, amongst the different educational theories, ‘cooperative’ and ‘experiential’ learning theories have the most affordances for implementing these solutions in an e-learning environment. Some brief discussions have been provided to highlight some of these affordances for the solutions generated there. At the same time, it was obvious that a lot of literal and conceptual overlaps can be seen between those solutions. Therefore, the common themes of the solutions gradually emerged by categorising the solutions (see Tables 5.10 and 5.19). This chapter will take a closer look at these affordances and determine a more detailed map between those solutions and cooperative as well as experiential learning principles in order to facilitate the solutions generated above in an e-learning context.

To do so, firstly, an overview of cooperative and experiential learning is provided and, secondly, the solution themes are mapped with each of the key features of cooperative learning, cycles of experiential learning, and features of e-learning when it is applicable. Some examples of the cooperative and experiential teaching-learning approaches from the literature are also provided and discussed.

One key word frequently used in Chapter 5 and here is ‘affordances’. We frequently argue that cooperative, experiential and e-learning have affordances for implementing the solutions generated by this study. Our definition of ‘affordances’ is in line with Gibson’s (1977) theory of affordances. He introduced concept of affordances to explain:

- how inherent “values” and “meanings” of things can be directly perceived; and
- how this information can be linked to the action possibilities.

He suggested that what we perceive when we look at objects are their affordances and argued that studies on these objects should be conducted in its natural environment rather than in isolation. Consistent with this view, the word ‘affordances’ is used by this study to
explore the ‘values’ and ‘meanings’ of cooperative, experiential and e-learning and how that can be linked to implement the solutions generated by this study in an actual e-learning environment.

6.2. An overview of Cooperative Learning

There are three basic ways students can interact with each other as they learn in the class. They can compete to see who is "best" (the most dominant approach in the educational environments), they can work individualistically toward a goal without paying attention to other students, or they can work cooperatively with a vested interest in each other's learning as well as their own (Roger and Johnson, 1994). Cooperative learning, as one of the most remarkable education theories, is a student-centred, instructor-facilitated instructional strategy in which a small group of students is responsible for its own learning and the learning of all group members to acquire and practice the elements of a subject matter in order to solve a problem, complete a task or achieve a goal (Li and Lam, 2005). However, not all of the learning groups work in this way. While some kinds of learning groups facilitate students’ learning and achievement, other types of those groups hinder students’ learning. Therefore, it is important to distinguish a cooperative learning group from what is not a cooperative learning group, such as: a pseudo learning group and a traditional classroom learning group.

Johnson and Johnson (1999) described a pseudo learning group as a group of students who work together but they have no interest in doing so; therefore, they hide information from each other, attempt to mislead and confuse each other and distrust each other. This happens because the students believe that they will be evaluated by being ranked from the highest to the lowest performer (Rafferty, 2013).

The traditional classroom learning group is outlined as a group of students who accept the instruction to work with each other (Donovan, 2002) but students are evaluated and rewarded as individuals, not as members of the group. Therefore, while they seek each other's information, they have no motivation to teach what they know to their group-mates (Johnson and Johnson, 1999). Fundamental to what is explored by this study is a reflective, educative experience; not simply “training” which is more appropriate for simple technical skills development. Nor for that matter is education concerned with merely arranging
interaction between students and educative materials. Fundamentally, this study is trying to deepen considerations of education for cultivating two entrepreneurial competencies (Productive Thinking and Motivation), not training to engage with materials.

In contrast with pseudo and traditional learning groups, students in cooperative learning groups believe that they can achieve their learning goals if and only if the other students in the group achieve theirs (Deutsch, 1962; Suwantarathip and Wichadee, 2010). Thus, students seek outcomes that are beneficial to all those with whom they are cooperatively linked, discuss material with each other, help one another to understand it and encourage each other to work hard (Johnson and Johnson, 1999). The main theory underpinning cooperative learning is social constructivism advanced by Vygotsky (1896-1934). He considered that the roles of culture and person-to-person social interactions are important in understanding how humans learn. Vygotsky assumed that the development of individuals’ thoughts, languages, and reasoning processes is a result of this cooperative and cultural learning which is based on students’ social interaction (Li and Lam, 2005). Cooperative learning is an effective formal education strategy for transmitting these cultural experiences into the teaching-learning environment (Doolittle, 1995). Hattie (2013) compared cooperative, competitive and individualistic learning modes in terms of their effectiveness and concluded that cooperative learning leads to higher results than competitive learning (with a mean effect size of $d=0.54$), and both are superior to individualistic learning. The effect size of cooperative learning versus individualistic learning was $d=0.59$ and the effect size of competitive learning versus individualistic learning was $d=0.24$.

Roger and Johnson (1994) argued that cooperative efforts - only under certain conditions - may be expected to be more productive than competitive and individualistic efforts. Those conditions are:

1- Clearly perceived positive interdependence;
2- Considerable promotive (face-to-face) interaction;
3- Clearly perceived individual accountability and personal responsibility to achieve the group’s goals;

An effect size provides a common expression of the magnitude of study outcomes for many types of outcome variables, such as school achievement. For example, an effect size of $d=1.0$ indicates an increase of one standard deviation on the outcome (in this case, improving school achievement).
4- Frequent use of the relevant interpersonal and small-group skills;
5- Frequent and regular group processing of current functioning to improve the group’s future effectiveness.

These five conditions formed the five key elements of cooperative learning which were defined by Johnson and Johnson (1989, 1999) as below:

1- Positive interdependence: The perception that we are linked with others in a way so that we cannot succeed unless they do. This first and most important element of cooperative learning helps students to believe that others’ work benefits them and their work benefits others. Some techniques are suggested for enhancing students’ positive interdependence in the class, such as: joint rewards, divided resources and complementary roles (reader, checker, encourager and elaborator).

2- Individual accountability: Assessing each student’s performance and giving back the results to the group and individual. Some techniques for strengthening this feature are: giving an individual test to each student, randomly selecting one student's product to represent the entire group and having each student explain what they have learned to a classmate.

3- Promotive interaction: Individuals promote each other's success by helping, assisting, supporting, encouraging and praising each other's efforts to achieve, orally explaining how to solve problems, discussing the nature of the concepts being learned, teaching one's knowledge to classmates and connecting present with past learning. For enhancing students’ promotive interaction it is recommended to give them accountability to their peers, ability to influence each other's reasoning and conclusions, social modelling, social support, interpersonal rewards and the opportunity for face-to-face interactions among group members.

4- Social skills: Teaching students to enhance their interpersonal and small group skills such as: leadership, decision-making, trust-building, communication and conflict-management skills just as purposefully and precisely as academic skills.
5- Group processing: Group members’ discussion about how well they are achieving their goals and maintaining effective working relationships by describing what member actions are both helpful and unhelpful, and making decisions about what behaviours to continue or change to solve the problems and work together effectively.

Based on the five essential features above, Johnson et al. (2000) presented some cooperative learning methods can be used in the classroom. Those methods range from specific procedures (such as Jigsaw and Cooperative Integrated Reading & Composition) to conceptual frameworks educators use to build their own cooperative lessons (such as Learning Together and Group Investigation) to curriculum packages in which cooperative learning is a central part (such as Team Accelerated Instruction and Student Teams Achievement Divisions), to rather complex procedures that require some sophistication to use (such as Constructive Controversy).

These different cooperative learning methods can be divided into direct and conceptual approaches. While the direct ones can be easily and quickly learnt and implemented by tutors in the class (Badawy, 2012), the conceptual ones have not immediate effect and deal with tutors’ ability to adapt their current lessons and activities into cooperative ones (Johnson and Johnson, 2009; Siciliano, 2001; Rezaei-zadeh et al., 2013). Previous studies indicated that while the direct approaches are easier and quicker, the conceptual ones – after their implementation – would be more robust and effective in changing class circumstances and enhancing students’ achievement (Antil et al., 1998; Johnson et al., 2000).

When compared to pseudo and traditional learning groups, cooperative learning provides a more hospitable environment in which students efficiently and effectively enhance their achievements, improve their attitudes toward learning and grasp the key concepts of a subject (Hwang et al., 2005). Furthermore, Li and Lam (2005) indicated that students who are in the cooperative learning groups are psychologically healthier and have higher self-esteem than students who are not. Another description of the benefits of cooperative learning to students and tutors is provided by Shimazoe and Aldrich (2010) (See Figure 6.1)
Figure 6-1 Benefits of cooperative learning to students and instructors (Source: Shimazoe and Aldrich, 2010)

The specific impact of cooperative learning in the context of virtual learning environments has been investigated by some scholars. For instance, Krause et al. (2009) empirically illustrated that implementing cooperative learning in the e-learning environments provides greater learning performance, perceived performance and perceived competence for students. Consistent with this view, Hattie (2013) confirmed that educational technologies, like many structural innovations in education, effectively increase the probability of cooperative learning when a) there is a diversity of teaching strategies, b) there is a pre-training for using educational technologies, c) there are multiple opportunities for learning, d) the student – not teacher – is in ‘control’ of learning and e) peer learning and feedback is optimised. These conditions for enhancing the effectiveness of using educational technologies to improve cooperative learning probability in the class are discussed further in Chapter 7 (See ‘contribution’ section).

Despite the potential impact of implementing cooperative learning techniques on enhancing students’ achievement and the huge studies conducted in this area so far, most of them focused on children in grades three to 12. The college level was either ignored or students’ results at college level proved inconclusive (Shimazoe and Aldrich, 2010; Hancock, 2004; Qin and Johnson, 1995; Purdom and Kromey, 1992). Therefore, this study will highlight the importance of implementing a cooperative learning environment in enhancing students’ motivation and productive thinking as two main entrepreneurial competencies.
6.3. An overview of Experiential Learning

While Hanft and Knust (2010) believe that universities usually plan and organise their programmes for “traditional” students who enter directly into a fulltime university Bachelor programme after high school and then progress to a fulltime Master programme, Bridges (2000) describes that “The University” identity has been deconstructed in many ways and the kind of learning which takes place outside the official curriculum between registration and the award of the degree is very different from the traditional university setting. He pointed out that Higher Education offers new curricular opportunities in the interplay between academic study, the wider working world and life experience.

From a pedagogical point of view, this interplay between academic study, working and life experience can be translated as “Experiential learning”. The distinguishing feature of experiential learning is that the experience of the learner occupies central place in all considerations of teaching-learning environment. This experience may comprise earlier events in the personal or professional life of the learner, current events or those arising from the learner's participation in activities implemented by teachers and facilitators (Andresen et al., 2000). It is easy to see how the experience-based learning leads to some changes, which as a result take the student out of the precincts of the university into the outside world and which consequently engage a different set of people in the service of teaching students (Bridges, 2000).

Experiential learning and its different dimensions are not some new phenomena and they have already been addressed and confirmed by different theories. Some pedagogical scientists such as Dewey (1938), Piaget (1952), Coleman (1977) and Resnick (1987) clearly point out the importance and necessity of experiential education to be uniquely poised to help overcome the current deficiencies of both traditional schooling and much of vocational-technical training as it occurs today.

Knowing the experiential learning cycles help us to better understand the process of experiential learning (Harrison, 2007; Kraft, 1990). Different experiential learning cycles have been proposed by Dewey (1938), Kurt Lewin (1948), Piaget (1970) and Kolb (1984). A summary of these four models of experiential learning cycles are described here.
Dewey’s theory of experience proposed three cycles for experiential learning: 1) Getting the experience (Doing); 2) Reviewing the experience; and 3) Planning for the future based on the reviewed experience. The Lewinian model of action research and laboratory training was expanded on Dewey’s model and highlighted the positive effect of: 1) here-and-now experience followed by; 2) collection of data and observations; 3) analysing the data; and 4) future-oriented conclusion of the analysis on students’ learning. Piaget’s model of learning and cognitive development, similar to Dewey and Lewin models, is a cycle of interaction between the individual –from infancy to adulthood - and environment. He identified four major stages of cognitive growth for each individual that start from birth and continue to the age of 14-16 approximately. These four stages are called: 1) Sensory-motor stage (0-2 years); 2) Representational stage (2-6 years); 3) Stage of concrete operations (7-11 years); and 4) Stage of formal operations (12-15 years).

Reviewing and evaluating these three experiential learning cycles, Kolb added another cycle to Dewey’s cycles and proposed four cycles for students’ experiential learning: 1) Concrete Experience (CE); 2) Reflective Observation (RO); 3) Abstract Conceptualisation (AC); and 4) Active Experimentation (AE) (Planning). Kolb simply defined CE as learning by feeling, RO as learning by watching, AC as learning by thinking and AE as learning by doing (Kolb, 1984; Kolb et al., 2001).

The core of Kolb’s four-stage model of learning cycles is showing how experience is translated through reflection into concepts, which, in turn, are used as guides for active experimentation and the choice of new experiences (Healey and Jenkins, 2000). Each of these cycles place different demands on learners. In the concrete experience (EC) stage, students must involve themselves fully, openly and without bias in new experiences. Experience is defined here as a direct observation of or active participation in events as a basis of knowledge. Then, during the reflective observation (RO) stage, they must take a step back, think, review and reflect on the experience. Reflection is defined here as the ability to step back, ponder, question and assess one’s own experience in order to abstract from them knowledge that is relevant to other experiences. Through the abstract conceptualisation stage (AC), they must understand and perhaps criticise their previous observations and integrate them into logically sound, relevant and existing concepts, theories and information. As a result of abstract conceptualisation, tentative hypothesis or generalisations could be formed.
Finally, in the active experimentation stage (AE), students must test, apply and put into practice these theories and information and use them as bases for decision making, problem solving and planning for the future cases. Active experimentation leads students to new experiences and, therefore, the Kolb experiential learning cycles will be started from the first cycle again (Frontczak, 1998; Sugarman, 1985). Figure 6.2 illustrates these four cycles and their brief definitions.

**Concrete Experience (CE):** Where the learner is actively experiencing an activity (e.g., a laboratory session, field class)

**Reflective Observation (RO):** Where the learner is consciously reflecting back on that experience

**Abstract Conceptualization (AC):** Where the learner is being presented with/or trying to conceptualise a theory or model of what is (to be) observed

**Active Experimentation (AE):** Where the learner is trying to plan how to test a model or theory or plan for a forthcoming experience

Figure 6-2 Kolb’s experiential learning cycles and their brief definitions (Source: Healey and Jenkins, 2000)

The importance of employing all four learning cycles in educational settings was addressed by Kolb and Kolb (2005): “This process is portrayed as an idealized learning cycle or spiral where the learner “touches all the bases”—experiencing, reflecting, thinking, and acting—in a recursive process that is responsive to the learning situation and what is being learned” (p.194). The effectiveness of employing all four learning cycles in an entrepreneurial training system is also addressed by some scholars. For instance, Garavan (1994) points out that, for example, a deficiency in Concrete Experience (CE) may lead to an inability to formulate plans and a deficiency in Active Experimentation (AE) may lead to an inability to implement the plans.

Therefore, it is important to make sure that the cultivating approaches of this study cover all
learning cycles. To highlight the linkages between different solutions and the experiential learning cycles, two guidelines are used by this study. Firstly, a table provided by Frontczak (1998) for mapping different learning objectives and methods with experiential learning cycles is used (see Table 6.1). Secondly, a conceptual grid of experiential learning cycles and pedagogical techniques has been adapted from Randolph and Posner (1979) and Claxton (1990). This grid can be seen in Figure 6.3.

Table 6-1 Method of analysing experiential learning methods using Kolb’s learning cycles (Source: Frontczak, 1998)

<table>
<thead>
<tr>
<th>Stage of teaming process</th>
<th>Learning objectives for each stage</th>
<th>Questions for educators to ask regarding teaming activity</th>
</tr>
</thead>
</table>
| Concrete Experience      | Encourage active student participation and involvement in the learning process. | Was the assigned activity *relevant* to the overall course objectives?  
Did the professor provide *sufficient directions* and an appropriate environment for the activity to occur?  
Are the students *capable* of such an activity?  
Did the student complete the activity?  
Did the student discuss the "who, what, when, where and why" of the experience (much like a straightforward, objective, informational "news item")?  
Did the student discuss not only the experience or activity, but what led up to the event and the consequences? |
| Reflective Observation    | Allow students the opportunity to express their feelings toward the learning experience. | Are students given the opportunity to communicate their feelings, reactions and emotions toward the experience?  
Does the professor limit or suspend judgment regarding the student's feelings?  
Are students given some directions for expressing feelings (i.e., *guided reflection*)?  
Are students encouraged not only to reflect on the experience, but to consider what triggered these feelings? |
| Abstract Conceptualization| Assist in student understanding of the relevant marketing concepts and theories | Are students provided with guidance on how to relate this experience to the relevant theories/concepts/topics studied in class?  
Are students encouraged to formulate tentative hypotheses for generalizations based in these |
<table>
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<th></th>
<th>Improve students' ability to apply what has been learned to new experiences and new marketing strategies.</th>
<th>Are students given the opportunity to specifically explain what they had learned from the experience and how they could apply this knowledge to future experiences?</th>
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</thead>
<tbody>
<tr>
<td><strong>Active Experimentation</strong></td>
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<tr>
<th><strong>Concrete Experience</strong></th>
<th>Change in skills and attitudes by:</th>
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<td></td>
<td>Role plays</td>
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<td>Games</td>
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<td></td>
<td>Structured Exercises</td>
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<td>Processing Discussion</td>
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<td></td>
<td>T-Groups</td>
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<td>Diaries</td>
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<td>Field Project</td>
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<td></td>
<td>Idea writing</td>
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<td></td>
<td>Questioning</td>
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<th><strong>Active Experimentation</strong></th>
<th>Change in understanding by:</th>
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<td></td>
<td>Focused learning groups</td>
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<td></td>
<td>Argumentative discussion</td>
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<td></td>
<td>New &amp; innovative experiments/research</td>
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<td></td>
<td>Suggested readings</td>
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<td>Analysis papers</td>
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<td></td>
<td>Social and group activities</td>
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<td></td>
<td>Problem solving exercises</td>
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<tr>
<th><strong>Reflective Observation</strong></th>
<th>Change in appreciation by:</th>
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<td>Movies</td>
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<td>Applied lecture</td>
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<td></td>
<td>Dialogue</td>
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<td></td>
<td>Limited discussion</td>
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<td>Cases</td>
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<td>Problem exam</td>
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<td></td>
<td>Rewarding</td>
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<td></td>
<td>Group discussions</td>
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<td></td>
<td>Reflective papers</td>
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<tr>
<th><strong>Abstract Conceptualisation</strong></th>
<th>Change in knowledge by:</th>
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<td></td>
<td>Theory lecture</td>
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<td></td>
<td>Required readings</td>
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<td>Hand-outs</td>
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<td>Programmed instruction</td>
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<td></td>
<td>Theory papers</td>
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<td>Content exam</td>
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<td></td>
<td>Mentoring</td>
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It should be noted here that at the end of this review, a considerable connection could be seen between cooperative and experiential learning theories. For example, the ‘concrete experience’ stage of experiential learning advises that students must involve themselves fully, openly and without bias in new experiences. Obviously, traditional learning cultures that emphasise competition amongst students mitigates against this approach. Against this context, cooperative learning has scaffolds to overcome this by promoting mutual interdependence, promotive interaction, key skills and students’ accountability and consider how the respondents in Chapter 5 offered perspectives that are very relevant to this. Or the
‘abstract conceptualisation’ stage of experiential learning highlights that students must understand and perhaps criticise their previous observations and integrate them into logically sound, relevant and existing concepts, theories and information. This is much aligned with what is promoted by ‘group processing’ and ‘promotive interaction’ of cooperative learning (see ‘cooperative learning review’ of this chapter). Now, we turn our attention to the affordances that these two learning frameworks could have for implementing the solutions generated by this study in a more effective way.

6.4. Solution themes and cooperative-experiential e-learning
At this point, we will discuss the affordances of cooperative and experiential learning frameworks for implementing the solutions in an e-learning environment. These affordances are highlighted based on the solution ‘themes’ generated in Chapter five. Therefore, each theme, alongside the title of solutions associated with that theme, are provided; and then, a more argumentative synthesis focusing on the connections between cooperative and experiential learning approaches and the solutions generated by this study are provided. To make these connections, a definition of cooperative learning and key features provided by Johnson and Johnson (1999, 2009), as well as experiential learning cycles suggested by Kolb (1984), and Kolb and Kolb (2005) are employed. Also, to ensure clarity, some rich exemplars of implementing cooperative and experiential learning are provided.

6.4.1. Promoting “Learning from each other”
This theme includes eight unique productive thinking and motivation solutions as below:

- Implementing participatory and collaborative teaching and learning
- Promoting self and peer-assessment
- Promoting students’ communications and interactions
- Requiring students to use social Networks
- Promoting peer-teaching
- Promoting social and group activities
- Mosaic combination of participants in each class
- Putting students in the position of group leadership
The dominant theme in these solutions addresses the importance of enhancing students and tutors’ communications, interactions and group activities as the rich learning opportunities in the class. ‘Conversation’ should be presumed as the focal point and main tool for implementing the solutions associated with this theme. Baker et al. (2005) proposed that learning comes from students’ conversations in an experiential learning process through which people construct meaning together from their experiences. Through these conversations, students could exchange their concrete experiences and their reflective thoughts about those experiences, discuss with each other the epistemological and ontological aspects of that experience and, finally, discuss the future implementations of that experience in their lives. With regard to Kolb’s experiential learning cycles, it seems that ‘Reflective Observation’ (RO) is relevant here since it encourages students to critically reflect on their observations and try to analyse and evaluate those experiences in order to learn from those opportunities. If this applies to the learning environment, students are willing to learn from each other’s experiences through reflecting on their observations and conversations.

With regard to the relevance of cooperative learning to these solutions, Eshuis and Stuiver (2005) pointed out that the first step in learning from each other comes from students depending on each other to solve a problem. At this stage, they have to cooperate and take each other’s perspective into account in order to better understand each other’s perspectives and start to appreciate the validity of different arguments when examined from different perspectives. The main relevance of cooperative learning in relation to this theme is emerging here. Cooperative learning helps students to promote each other's success by helping and orally explaining how to solve problems through social modelling, social support, interpersonal rewards and opportunity of face-to-face interactions among group members. Through cooperative learning students believe that they ‘sink or swim together’. Therefore, they have two responsibilities: 1) learn the expected material; and 2) ensure that all members of the group learn that material (Roger and Johnson, 1994). This dual responsibility, referred to as ‘positive interdependence’, encourages students to effectively work with and learn from each other within and outside of the learning environment.

One of the major techniques of cooperative learning, ‘Small-Group Teaching’, implements
the solutions of this theme. Slavin (1980) defined this technique as “a general classroom organizational plan in which learning takes place through cooperative group inquiry, discussion and data gathering by students. Students select subtopics within a general area selected by the teacher and then organize themselves into small groups of two to six members. These groups further subdivide their topic into individual tasks to be performed by group members in preparation for a group presentation to the total class. This group presentation is then evaluated by the other students and by the teacher. Thus, Small-Group Teaching is very high in student autonomy and involves a high degree of task interdependence because of the assignment of students to special tasks within the group, but it is relatively low in group reward interdependence (group rewards are not well-defined) and individual accountability” (p.321). ‘Positive Role Interdependence’, as one of the key elements of cooperative learning, assigns complementary and interconnected roles to students that specify responsibilities that the group needs in order to complete the joint task. Teachers create role interdependence among students when they assign them complementary roles (Roger and Johnson, 1994). In the case of this technique, different roles such as teacher, assessor, task divider and presenter could be assigned to students when they are doing their tasks in the group.

Another cooperative learning technique which has an affordance for the solutions of this theme named ‘Jigsaw classroom’. It uses small heterogeneous groups of about five to six students to form so-called ‘Jigsaw groups’. They are characterized by interdependent cooperation between students. Academic material is broken into as many parts as there are team members. Students in a Jigsaw group are supposed to learn different parts and then collaborate by teaching and learning from each other to establish a complete picture, a Jigsaw. Students then study their sections with members of other teams who have the same sections (‘expert groups’). The expert group members then move to their respective Jigsaw groups. As a result, a Jigsaw group will consist of as many ‘experts’ as there are participants, with each student being dependent on all the others (Brat, 2008). ‘Positive Resource Interdependence’ motivates students to effectively take part in the Jigsaw process. According to this principle, each student has only a portion of the resources necessary for the task to be completed; the members’ resources have to be combined for the group to achieve its goals. Tutors may wish to highlight students’ cooperative relationships by giving them
limited resources that must be shared (one copy of the problem or task per group) or giving each student part of the required resources that the group must then fit together (Roger and Johnson, 1994). Another element of cooperative learning which ensures that all students contribute to the cooperative learning techniques named ‘individual accountability’. According to this feature, students learn the lesson together and then perform it alone. To make this happen, the tutor needs to implement some techniques, such as giving an individual test to each student or having students teach what they learned to someone else to make sure that there is no student(s) in the group seeking a free ride.

One of the main requirements for implementing these cooperative experiential solutions in the classroom is facilitating communications and interactions amongst students and also between students and their tutors. Perhaps providing a facilitated communication and interaction route could be considered as one of the main affordances of e-learning environments for cooperative and experiential solutions generated by this study. Sun et al. (2008b), consistent with this claim, pointed out that interactive communications and media presentation provided by IT can help learners develop high-level thinking models and establish conceptual knowledge in a cooperative learning environment. Ellis et al., (2009) mentioned that educational technologies could enhance learners’ interactions and communications in four dimensions, including: learner-content, learner-instructor, learner-learner and learner-interface.

Social networks, electronic whiteboards, asynchronous forums, synchronous chat rooms and messaging systems could be used as the means of these communications and interactions in order to facilitate students’ cooperative learning and assessment (McConnell, 2002). Dunlap and Lowenthal (2009) expressed their experience of using Twitter in their class. They described their use of Twitter to encourage free-flowing just-in-time interactions and how these interactions can enhance social presence in online courses. Furthermore, from their experience, Twitter helped them to address their students’ issues in a timely manner, help their students to write concisely and for an audience, connect their students with a professional community of practice, support their students’ informal learning and maintain their on-going relationships with their students. As a result, Twitter helped their students to further learn from each other and their tutors, and to also have the opportunity to learn from
many practicing professionals who are not a part of their class.

There are more efficient innovations implemented in e-learning environments to enhance these cooperative interactions. ‘Rotisserie’, as a structured asynchronous text-based communication system developed by Harvard University, is one of them. It is claimed on the Rotisserie website that:

*The Rotisserie implements an innovative approach to online discussion that encourages measured, thoughtful discourse in a way that traditional threaded messaging systems cannot. In contrast to the completely asynchronous, broadcast-to-broadcast mode of existing threaded messaging systems, the Rotisserie adds structure to both the timing and the flow of the discussion (http://h2opproject.law.harvard.edu/rotisserie.html).*

According to the Rotisserie website and Weller et al. (2005), it breaks the timing of the discussion into semi-synchronous rounds. Users are allowed to post responses at any time but their responses are not published to other users until the deadline for the current round passes. This structure allows users to put significant thought into their responses rather than competing with other participants to post first or copying and rephrasing their responses. More importantly, this structure allows the tutor in cooperative class to control the flow of the discussion by distributing responses to specific users for further discussion at the end of each round, ensuring that every post is distributed to at least one other user for comment and that each user has exactly one post to which to respond. Lastly, the Rotisserie system includes support for discussion not only within a given class, but also between many different classes at once, allowing, for instance, Internet law classes at Cambridge to participate in a discussion about digital rights management with an engineering course at MIT.

It seems that affordances of cooperative learning for the student-centred solutions of this theme are higher in e-learning environments rather than the face-to-face educational environments. McLoughlin and Luca (2002) contended that in a face–to–face classroom setting, students learn to cooperatively learn from each other, by engaging in tasks defined, and under teacher supervision. In online environments, however, teacher presence is often
limited to task definition, management and feedback functions. Therefore, team-working and cooperative skills need to be supported though different pedagogies and processes, such as establishing a climate of trust and openness, communication protocols, resolution of conflict and group processes that provide sanctions and support. In line with this view, Chang and Chen (2009) pointed out that since a teacher cannot observe students’ interactions in an e-learning environment, the peer assessment appears more important in virtual rather than face-to-face educational environments. They proposed a fuzzy peer assessment system (FPAS), which provides a fair and democratic method to evaluate peers’ work in an E-learning environment. By implementing FPAS, all students participate in the entire assessment process, beginning by jointly establishing an assessment questionnaire and assessing other peers’ assignments using consistent fuzzy preference relations. Furthermore, since real scores are always needed to evaluate students’ performances in the class, the FPAS calculates an appropriate score in terms of assessments of contribution for each student.

6.4.2. Highlighting practical applications
This theme includes eight unique productive thinking and motivation solutions as below:

- Outlining practical applications of modules
- Writing Business plan proposals
- Applying Scenario writing as an assessment scheme
- Applying Idea writing as an assessment scheme
- Creating students’ Idea bank
- Mapping students’ required skills with their studies
- Getting students’ feedback regarding the practicality of their modules
- Transferring tutors’ minds from theoretical to practical

All of the solutions in this theme tend to highlight the importance of seeing students’ theoretical studies from a practical perspective. They encourage students to write their ideas, write a business scenario based on that idea and, finally, write a business plan based on the written scenario. Students need to know the links between their studies and their practical needs in the real life. However, this mind-set needs to be cultivated in tutors first because, without their support, it is difficult to require students obtain that practical perspective.
Since ‘practice’ and ‘experience’ are in the centre of the solutions in this theme, the experiential nature of this theme is very obvious. Sakofs (1995) pointed out that ‘experiential learning’ is a philosophical orientation toward teaching and learning that values and encourages bridging and mapping between students’ concrete educative activities and their abstract lessons in order to maximise learning. The affordance of experiential learning for providing linkages between students’ practical experience and their theoretical lessons is also highlighted by Chapman et al. (1995). They stressed that experiential learning combines students’ direct experience that is meaningful to them with guided reflection and analysis in a challenging, active and student-centred process. This could be achieved by requiring students to test, apply and put into practice their studies and information and use them as bases for decision making, problem solving and planning for the future cases (Active Experimentation).

From a cooperative learning point of view, students and tutors need feedback with regard to how well their cooperative learning activities are functioning. One of the main criteria which could be used for providing this feedback is practical applications of learning activities being used in the class. Johnson and Johnson (1991) pointed out that the goals of this evaluating process (group processing) are twofold: 1) to identify what student actions were helpful or unhelpful; and 2) to make decisions about what activities to continue or change. This feedback could provide a good resource for assessing the practicality of students’ modules and learning activities. Roger and Johnson (1994) pointed out that this group processing could be done on two levels: in small groups and with the whole class. While the feedback provided in the first level addresses each small group of students’ cooperative activities, the latter one combines the feedback results of the small groups and provides a report for the whole class.

One of the affordances of virtual learning environments for this and some other solutions is the possibility of using ‘group blogs’ to facilitate students’ idea exchanging process. By setting up community blogs around specific subject areas such as ‘practical applications of the modules’, an online community can be established, where members post their ideas and articles of interest, and where discussion arises around these (Weller et al., 2005). Students could see their posts published in the blog and submit some comments on each other’s posts. These idea exchanges help students to enrich their initial understanding of the practical
applications of the modules. Wikis as fully editable websites are another means of boosting students’ interactions in e-learning platforms. Augar et al. (2004) successfully used wikis to enable hundreds of students to participate in a cooperative exercise at Deakin University. They illustrated how e-learning practitioners can use wiki technology to enhance online social interaction amongst students, disseminate information to the student body and build information repositories or for the collaborative production of documents.

6.4.3. Valuing experience (learning by doing)
This theme includes eight unique productive thinking and motivation solutions as below:

- Requiring students to do trial Start-Up
- Requiring students to do Practical tasks
- Encouraging students to take on challenges and risks
- Introducing e-incubators to students
- Recruiting more experienced tutors regardless their location
- Encouraging students to work in industry and workplace
- Participating Tutors in students’ practical projects
- Requiring students to launch a business as their dissertation
- Applying Idea Commercialization as an assessment scheme
- Providing Business mentorship for students

Lewis and Williams (1994) classified three distinct applications of experiential learning in higher education: field-based experiences, prior learning assessment and experiential applications for personal development and classroom-based learning. The second and third categories above are outlined in the other sections of this chapter. Consistent with the solutions associated with this theme, the first and oldest application of experiential learning (field-based experiential learning), which has been common in higher education since the 1930s, is discussed. Internships and practicum assignments, which help students to prepare themselves for careers, and service learning, in which students perform community service for others, are the examples of field-based experiences. Warren et al. (1995) pointed out that it is a generally accepted truth that students in experiential learning must combine action with reflection in order to have a full human experience. Pimentel (1999) highlighted the role
of experiential learning in fulfilling this need by utilizing learning activity in which students encounter tangible and real-based learning contexts rather than abstracted knowledge. The activity-based nature of learning is reflected in the concept of ‘conversational learning’, which grew out of David Kolb’s aspiration “to explore a new approach to teaching and learning based on the theory and practice of experiential learning” (Baker et al., 2002, p.3). Unlike traditional learning methods that place primary emphasis on abstract and conceptual dimensions of knowledge, conversational learning equally values the learner’s emotional, sensual and physical engagement in the learning process (Ibid).

From a cooperative learning perspective, doing a practical job such as launching a business is a complex work that requires different expertise and abilities to be completed. For example, students need to be advised with regard to the legal, financial and marketing issues. They cannot possess all of the required skills for launching a business. Here, the affordance of ‘Positive Interdependence’ as one of the key elements of cooperative learning is emerging. Students feel a positive interdependence to their tutors, advisors and classmates to achieve their goals. All four dimensions of positive interdependence including ‘goal’, ‘reward’, ‘resource’ and ‘role’ have affordances here. ‘Positive Goal Interdependence’ encourages and unites them to define and try to achieve their common goal (in this case, launching a business). ‘Positive Reward Interdependence’ provides a cooperative instead of a competitive reward for whole of the group including student, tutor, advisor and perhaps his/her classmates when they achieve their goal by launching the business. ‘Positive Resource Interdependence’ helps students to be benefitted from others’ resources, information or materials necessary for the task to be completed. And finally, ‘Positive Role Interdependence’ assigns a complementary and interconnected role to each member in the group that specify responsibilities that the group needs in order to complete the joint task. These four dimensions of positive interdependence motivate students and their teammates to cooperatively work in order to do their practical tasks within and outside of the class.

Positive interdependence results in students’ promotive face-to-face interaction. It could be defined as individuals encouraging and facilitating each other’s efforts to achieve and complete tasks, and to produce in order to reach the group's goals (Roger and Johnson, 1994). In the case of solutions related to this theme, promotive interaction helps students and their teammates to efficiently and effectively assist each other to launch their business or do
their practical joint tasks.

If ‘learning by doing’ wants to be effective, it has to also pay enough attention to the remaining three key elements of cooperative learning. In fact, learning groups that do not ensure that their members (students) are well committed to their tasks within the groups cannot assist them to learn cooperatively. This assurance could be provided by assessing individual students’ performance and giving feedback to the individual and the group in order to ensure that each individual is contributing his or her fair share to the group’s success (individual accountability). Then, it should be argued that students cannot cooperatively interact and work with each other without being taught the social skills required for high quality cooperation (social skills). Finally, learning groups works effectively if they reflect on how well they are functioning. This reflection is necessary to: 1) describe what member actions were helpful and unhelpful; and 2) make decisions about what actions to continue or change (Roger and Johnson, 1994). Interestingly, as could be seen in the above, all of the five key elements of cooperative learning have affordances for the solutions associated with this theme. It shows the high cooperative nature of these solutions and illustrates that requiring students to learn by doing some joint practical tasks outside of the class is an effective cooperative strategy for enhancing students’ achievement.

With regard to the affordances of e-learning for the solutions of this theme, Jarmon et al. (2009) argued that virtual worlds may provide an effective environment for building skills to build bridges between education and experience because of social and technological capabilities for engagement in social interactions with people from various fields across geographical distances. They pointed out that these capabilities make e-learning an optimal environment for experiential learning and a potentially effective environment to use in a project-based interdisciplinary communication course where students must demonstrate their learning by creating a real life product through cooperation in a virtual world. They highlighted six characteristics of the virtual learning environment that facilitated experiential learning through concrete experiences and active experimentation included (a) the capacity to host virtual social interactions and collaborations, (b) the capacity to allow users to test hypotheses by applying them to an actual project and doing something active without some of the risk and cost of the real world, (c) the possibilities for relevance of their virtual actions to the real world, (d) the capacity to allow for various types of abilities to be practiced and
demonstrated virtually, (e) the stimulation of imagination, exploration, and creativity, and (f) an increased sense of personal presence and tangible experience in the virtual world.

6.4.4. Reflective observation
This theme includes seven unique productive thinking and motivation solutions as below:

- Organising guest lecturers – site visits
- Reviewing stories of other entrepreneurs
- Sharing stories and experiences relevant to sixth sense
- Enhancing experiential learning by organising site visits for students
- Encouraging students to compare themselves with achievers
- Using case studies in the class
- Applying case study as an assessment scheme

Joplin (1995) stressed that requiring students to get an experience alone is insufficient to be called experiential learning; it is the reflection process which effectively turns experience into experiential education. It means that ‘learning by doing’ alone cannot be called experiential learning. Dewey (1938) also emphasises the ‘action-reflection’ cycle by dividing experience into ‘primary’ and ‘secondary’ parts. While the primary experience is the immediate, tangible and the moving world presented to students’ senses, the secondary (reflective) experience refers to understanding those feelings. All of these confirm that reflection on an experience is a critical dimension of all experiential learning activities. Consistent with this view, the solutions above generated by this study could specifically assist students in reflective learning throughout their studies in an e-learning platform.

All of the solutions in this theme address the impact of ‘case-study’ as an educational approach on students’ motivation and productive thinking competencies. Using case-study in the class has two experiential and cooperative dimensions. With regard to the experiential aspect of this solution, Kreber (2001) argued that the case study approach to teaching students in higher education, if properly facilitated, is an effective way to provide students with the opportunity to become involved in all four cycles of Kolb’s experiential learning framework. When students are introduced to the case, they become engaged with a real life situation (concrete experience). Then, they need to reflect on the case being studied by
analysing the problem in order to distinguish its overt symptoms from its underlying causes. At this stage, students begin to brainstorm on alternative problem-solving strategies. Here, students’ intuition and creative faculties are called upon. While being judgmental is not part of this learning phase, learners are encouraged to generate as many alternatives as possible without considering their implications (reflective observation). Then, students evaluate each alternative for its possible consequences, select the best alternative and develop a theory or hypothesis to explain and solve the problem (abstract conceptualisation). Finally, they need to put their ideas into practice and test their feasibility by designing an implementation plan to experiment with their solution strategy (active experiment).

Regarding the cooperative dimension of this solution, Gross Davis (1993) and Knoop (1984) recommended using case studies in combination with group learning. Knoop (1984), for example, provided a model he called ‘pragmatic problem-solving model’ to encourage learners effectively work with case study in the groups through five steps as follow: 1) Identifying the problem; 2) Distinguishing the problem from its underlying causes and overt symptoms; 3) Generating alternative problem-solving strategies; 4) Evaluating each alternative and selecting the best strategy; and 5) Developing a plan for implementing the preferred strategy. This process could be boosted by ‘Promotive interaction’, which encourages students to critically think about and review each other’s work in the group and provide each other with feedback in order to improve their subsequent performance (Roger and Johnson, 1994).

With regard to the affordance of e-learning for this theme, Lai et al. (2007) demonstrated that students perceived the function of technologies such as mobiles right at the beginning of experiential learning; however, it was not the technology itself but the interplay between technology and pedagogical practice that affords possibilities for better experiential learning. It was argued that technologies could help students to be more effectively engaged in detailed observation by enhancing the authentic nature of experiential learning. For instance, technologies help students to record their concrete experiences and reflect on that recorded experience several times instead of being only relied on their forgetful memory. One of the other affordances of e-learning for the solutions of this theme is to provide an appropriate structure to facilitate students’ learning activities for studying and reflecting on the cases in the class. It directs students’ activities in a purposeful structure pre-designed by their tutors.
and helps to reduce students’ confusion with regard to the ‘process’ of doing the task and the final ‘report’ which they are required to write.

6.4.5. Involving students in curriculum design (curriculum flexibility)
This theme includes five unique productive thinking and motivation solutions as below:

- Avoiding a complete predetermined curriculum
- Providing Semi-structured and flexible educational planning
- Requiring students to evaluate their educational system
- Identifying and balancing students’ expectations from their studies
- Making students aware of the results of their previous feedback

The solutions associated with this theme show a tendency to recommend a more student-centred learning environment and to value the central role of students in the class. In his book entitled ‘Freedom to Learn for the 80s’, Rogers (1983) described that the power in class is shifted from the expert teacher to the student learner, driven by a need for changing the traditional environment where in this “so-called educational atmosphere, students become passive, apathetic and bored” (p.25).

O’Neill and McMahon (2005) pointed out that flexible learning, experiential learning and self-directed learning have been linked with student–centred learning. In line with this point of view, the solutions associated with this theme sought to enhance students’ role in the process of curriculum design which will be implemented in their class. Students’ active involvement in this process could be encouraged by the last stage of experiential learning (active experimentation) which helps students to plan for their futures based on their previous observation, reflection and information.

Curriculum design can be summed up, by this solution, as a joint task shared between students and tutors. Each of the students and tutors groups has a role and responsibility in this joint task. From cooperative learning point of view, this idea is in line with ‘Positive Role Interdependence’ which presumes that each member in the learning group is assigned complementary and interconnected roles that specify responsibilities that the group needs in order to complete the joint task. Tutors create role interdependence among students when
they assign them roles such as reader, designer, recorder, planner, checker of understanding, encourager of participation and elaborator of knowledge (Roger and Johnson, 1994). In the case of this theme, students should take the ‘planer’ or ‘designer’ role in the process of their learning. Through this role, they are responsible for taking part in the design and customisation of their curriculum in terms of their own preferences and needs. This exercise helps students to see that their work benefits their classmates and, in turn, that their classmates’ work benefits them. It could also maximise students’ learning due to providing mutual support and encouragement in the class.

‘Group processing’ has also an affordance here by requiring students to reflect on their curriculum and provide feedback in order to help their curriculum designers and tutors to make decisions about what sections of the curriculum should continue or be changed. The purpose of group processing here is to clarify and improve the effectiveness of the members in contributing to the curriculum to achieve the group’s goals.

One of the main considerations of involving students in the process of curriculum design is to keep curriculum cohesion. Biggs (2003) suggested that curriculum cohesion could be kept through alignment to intended learning outcomes. It could be argued that e-learning could facilitate involving students in the curriculum design process and at the same time keeping the curriculum coherence by providing an automated structure that connects different parts of the curriculum, including learning outcomes, content and assessment approaches together in a coherent way. In line with this argument, Kalyuga (2007) stresses that virtual environment is characterised as a highly interactive space in that it provides some benefits such as real-time personalized task selection for students.

6.4.6. Interactive learning environment
This theme includes eight unique productive thinking and motivation solutions as below:

- Implementing educational games in the class
- Embedding decision making simulators in the e-learning platform
- Bridging amongst policy makers, universities and industry
- Being a good and fair listener
- Promoting tutors’ kind interactions with students
As it has already been mentioned, Lewis and Williams (1994) classified three distinct applications of experiential learning in higher education: field-based experiences, prior learning assessment and experiential applications for personal development and classroom-based learning. The first and second applications above are discussed in the other sections of this chapter. Here, consistent with the solutions associated with this theme, the classroom-based applications of experiential learning as an antidote for traditional education are reviewed. The classroom-based applications of experiential learning are boosted by active learning, as an experiential learning approach, which requires that students do more than just listen by involving in doing things and thinking about what they are doing. Role plays, games, case studies, critical incidents, simulations, socio-drama, real-life scenarios, experiment with new behaviours, receive feedback in a safe environment and values clarification exercises are some of the many forms of experiential learning techniques currently in use.

As Kiili (2005) described, experiential learning can facilitate positive user experience in order to maximize the impact of educational games. Experiential learning stresses the importance of providing the player with immediate feedback, clear goals and challenges that are matched to his/her skill level in order to facilitate flow experience.

Experiential learning has an affordance for one of the other solutions of this theme which recommended bridging amongst policy makers, universities and industry. As it was mentioned by Cantor (1997), implementing experiential learning in class also has some not-so-obvious outcomes. He pointed out that through development of experiential learning programs, colleges and their faculty and students are brought closer to their communities. Through these newly formed linkages between university and society including industries and policy makers, proactive economic development outcomes emerge, including better educated and trained students as potential employees, technology transfer from faculty to entrepreneurs via business development consultation and other similar means.

With regard to the affordance of cooperative learning for these solutions, one of the major
cooperative techniques, ‘Teams-Games-Tournament (TGT)’, should be outlined here. Slavin (1980) defined this technique as follows: “TGT is built around two major components: 4- to 5-member student teams and instructional tournaments. The teams are the cooperative element of TGT. Students are assigned to teams according to a procedure that maximizes heterogeneity of ability levels, sex, and race. The primary function of the team is to prepare its members to do well in the tournament. Following an initial class presentation by the teacher, the teams are given worksheets covering academic material similar to that to be included in the tournament. Teammates study together and quiz each other to be sure that all team members are prepared. After the team practice session, team members must demonstrate their learning in the tournament, which is usually held once each week. For the tournament, students are assigned to three person “tournament tables." The assignment is done so that competition at each table will be fair—the highest three students in past performance are assigned to Table 1, the next three to Table 2, and so on. At the tables, the students compete at simple academic games covering content that has been presented in class by the teacher and on the worksheets. Students at the tournament tables are competing as representatives of their teams, and the score each student earns at his or her tournament table is added into an overall team score. Because students are assigned to ability-homogeneous tournament tables, each student has an equal chance of contributing a maximum score to his or her team, as the first place scorer at every table brings the same number of points to his or her team. Following the tournament, the teacher prepares a newsletter which recognizes successful teams and first place scorers” (p.319-320).

The effectiveness of this technique, as well as other solutions associated with this theme, could be boosted by ‘promotive interaction’ as one of the key features of cooperative learning, which encourages students to help, assist, support and praise each other's efforts to achieve. It also provides feedback by the teammates in order to improve the player’s subsequent performance. Furthermore, since ‘interaction’ plays a central role in all solutions of this theme and some other themes, by simply placing socially unskilled students in a group and requiring them to cooperate with each other, it does not mean that they have the ability to do so effectively. We are not born instinctively knowing how to interact effectively with others, and interpersonal and small-group skills do not magically appear when they are needed (Roger and Johnson, 1994). Here, the affordance of another cooperative learning
feature, known as ‘interpersonal and social skills’, is emerging. Johnson and Johnson (1991) pointed out that students must be taught the social skills required for high quality cooperation and be motivated to use them if cooperative groups are to be dynamic and productive.

Another suggestion made by this theme is to reduce the number of students in each class. This is obviously in line with the ‘individual accountability’ feature of cooperative learning which proposes that as much as the size of the group is smaller, the possibility of doing the fair share of the joint work by individual students is greater (Roger and Johnson, 1994). This individual accountability provides a constructive feedback for the individuals back to the individual and the group for helping them to know who needs more assistance, support and encouragement in completing the joint task.

Providing the educational games which are integrated in the e-learning platforms is one of the affordances of virtual learning environment for the solutions associated with this theme. Furthermore, borrowing from the success of educational games, some researchers have recently begun to utilise this technology within the e-learning domain. Monahan et al. (2008) presented one of these systems: CLEV-R (Collaborative Learning Environment with Virtual Reality). It is a desktop and web-based multi-user environment, which mimics a real university and provides an interface to a general e-learning system. CLEV-R includes a suite of specialised communication tools that allow synchronous and group learning to take place, collaboration on group projects and tasks and the use of designated areas of the virtual university for social interaction with others.

6.4.7. Scaffolding students’ confidence
This theme includes six unique productive thinking and motivation solutions as below:

- Providing a calm and no-stress environment
- Applying Non-score assessment system
- Applying Open-book assessments
- Requiring Gradual and step by step tasks from students
- Assigning students to a number of individual tasks
- Allowing students for Iterative assessments
The main aim of the solutions associated with this theme is putting students in a safe environment from Day 1 to openly share and build upon their thoughts. This could be achieved by reducing competition and enhancing cooperation between students. This cooperative approach seems to have an affordance for providing a no-stress learning environment and it also affects other solution themes. For instance, Slavin (1980) contended that replacing competition by cooperation in the class provides ‘positive reward interdependence’, which in one student's success helps another to be successful.

Furthermore, it could be argued that other students’ support, feedback and admiration helps students to maintain a moderate level of arousal, characterized by low anxiety and stress through acting in trusting and trustworthy ways; and being motivated to strive for mutual benefit. This ‘promotive interaction’ amongst students facilitates providing a calm and no-stress environment for students in the class. Moreover, cooperative learning does not see assessing students only from a ‘summative’ perspective and in order to grade them. The nature of cooperative assessment is more ‘formative’ and constructive. Johnson and Johnson (1991) pointed out that the main aim of assessing individuals in the groups is to know that who needs more assistance in completing the assignment. So, other students in the group as well as the tutor could help the weak student(s) in order to reduce their stress, improve their contribution in the group, and enhance their learning in the group. Another feedback which could be provided in order to build students’ confidence in the cooperative groups is coming from ‘group processing’. Students are required to reflect on how well they are functioning. This feedback is aimed to positively describe member actions in the group and provide information for making decisions about what actions to continue or change. Roger and Johnson (1994) stressed that the positive side of this feedback has to be emphasised in group processing. Therefore, it could help students to build their confidence in a positive learning environment.

With regard to the affordance of e-learning environments for the solutions associated with this theme, Jarmon et al. (2009) argued that built-in support within the virtual learning platforms, especially the array of communication tools, provides opportunities for social interaction, collaboration, an increased sense of shared presence, partially dissolved social boundaries and, finally, lowered social anxiety.
6.4.8. Providing personal development programmes
This theme includes six unique productive thinking and motivation solutions as below:

- Enhancing students’ Web-searching and IT skills
- Applying Personal development programmes
- Providing mentoring / counselling services for students
- Creating Terminology bank
- Helping students to make their goals
- Dedicating a Research section in the e-learning platform

Experiential learning theory as defined by Kolb posits that learning is the major determinant of human development and how individuals, including students and tutors, learn shapes the course of their personal development (Kolb and Kolb, 2005). It could be argued that students could develop their personal abilities and skills by having a concrete experience, critically reflecting on that experience, conceptualising and comparing that experience with the relevant theories and information and, finally, planning for the future applications of their learnt lessons during the past three stages of the experiential learning.

The first step in designing and implementing personal development programmes is identifying the expertise areas and skills which need to be developed. This needs an individual-based assessment of students’ strengths and weaknesses. ‘Individual accountability’ as one of cooperative learning key features has an affordance here by facilitating this individual based assessment. In turn, this personal development programme improves cooperative learning efforts by helping students and perhaps tutors to do an equal share of the group work more effectively. Roger and Johnson (1994) proposed some common ways to structure individual accountability include:

1. Keeping the size of the group small. The smaller the size of the group, the greater the individual accountability may be.
2. Giving an individual test to each student.
3. Randomly examining students orally by calling on one student to present his or her group's work to the teacher (in the presence of the group) or to the entire class.
4. Observing each group and recording the frequency with which each member-contributes to the group's work.
5. Assigning one student in each group the role of checker. The checker asks other group members to explain the reasoning and rationale underlying group answers.

6. Having students teach what they learned to someone else. When all students do this, it is called simultaneous explaining.

‘Social and interactive skills’ is one of the main areas that most of students need to be supported through ‘personal development programmes’. It is argued that students, in order to coordinate group-based efforts for achieving their mutual goals, must: 1) get to know and trust each other; 2) communicate accurately and unambiguously each other; 3) accept and support each other; and 4) resolve and reduce their conflicts constructively (Johnson, 1991). These four pre-requirements of cooperative learning highlight the importance of training students to improve their social skills required for high quality cooperation in the classroom and motivating them to use effectively these skills if cooperative groups are to be productive.

Johnson and Johnson (1991) mentioned that the whole field of cooperative group dynamics is based on the premise that students’ social skills are the key to group productivity. This issue illustrates the necessity of implementing personal development programmes to stimulate students’ social and interactive skills before requiring them to work in the cooperative groups.

E-moderating is one of the other affordances of e-learning for the solutions of this theme and some other themes. It was defined as the process of facilitating the formation and development of small and large groups through virtual conferencing (Brace-Govan, 2003). E-moderating summarizes and weaves together the ideas of students who have made a contribution to a topic of discussion and helps learners to reflect about the issues under discussion. E-moderation of online discussions has been shown to be beneficial for promoting group work and cooperative learning and it is considered to be an effective method to achieve structured group interaction (Ellis et al., 2009). These online discussions through e-moderating enhances the flexibility of personal development programmes suggested by these solutions and provides the possibility of involving students and tutors in these activities even when they are far from each other.

Another affordance of e-learning platforms for this solution and some other ones is described by Kam et al. (2005). They designed a system called ‘Livenotes’, a shared whiteboard
system that uses wireless communication and tablet computing to support real-time conversations within small groups of students and to facilitate cooperative and augmented note-taking during lectures. This interactive tool helps students and tutors to build an effective relationship when they are planning and conducting the personal development programmes.

6.4.9. Improving students’ recruitment system

This theme includes one unique productive thinking and motivation solutions as below:

- Defining more sophisticated system and filters for student recruitment

Kolb (1984) pointed out that optimal learning occurs when people are able to link their past experience with new concepts they want to learn. It means that students’ backgrounds and prior experiences have a pivotal role in experiential learning. In line with Kolb’s point of view, ‘prior learning assessment’ is pointed out by Lewis and Williams (1994) as one of the distinct applications of experiential learning in higher education. Consistent with the solutions associated with this theme, ‘credit for prior learning’ reflects the recognition by the higher education establishment that meaningful learning can and does occur in informal settings and based on students’ prior learning. One widely recognized mechanism for evaluating students’ prior learning is the College Level Examination Program (CLEP) of the College Board. Most of colleges now provide for individual evaluations of students’ previous learning, using a portfolio created by the learner and evaluated by appropriate faculty.

By designing and implementing more sophisticated system and filters for student recruitment, it is expected that students’ abilities and capabilities are monitored and assessed when they want to enter to the programme. This monitoring and filtering does not necessarily mean that all students in a programme have to have same competencies and preferences. Instead, the variety of their capabilities and skills provides a good context for promoting their ‘Positive Role Interdependence’. This cooperative learning feature suggests that students could have different roles in the class and these complimentary roles could be assigned to students based on their different preferences and capabilities. For instance, if some students have a divergent cognitive skills they should be appointed as the analysers of
the group activities to make arguments and compare the group findings with others, and if some of them have convergent cognitive skills they should be appointed as synthesiser of the group activities to make the final conclusions of the group findings.

Educational technologies integrated in the virtual learning environments could facilitate monitoring and examining applicants’ academic and competency background. This could be done by using online surveys and structured application forms. With regard to the online surveys, some aspects of students’ competencies and personality could be evaluated by requiring them to fill out some online standard questionnaires. These questionnaires could be automatically analysed and their results could be appeared and classified in students’ personal profiles. In turn, these profiles could be used by the faculties when they want to decide on the applications. These profiles have another affordance for those students who enter to the programme. When they want to make small cooperative groups through their studies in the different modules, again the information of these personal profiles could be used to make homogenous or heterogeneous learning groups.

### 6.4.10. Pre-eminence of free thinking

This theme includes five unique productive thinking solutions as below:

- Allocating Thinking Time in the class
- Applying Brain storming method in the class
- Avoiding preconceived beliefs
- Exercising to “Think & Understand first”
- Encouraging “Thinking and doing outside the box”

All of the solutions in this theme encourage students to think before any judgement or action. It helps them to avoid bias in their judgements and beliefs which could be created by their preconceived beliefs. These solutions could be considered as the pre-requirements and context of other solutions.

From experiential learning point of view, ‘thinking’ is an integral part of learning process. Kolb and Kolb (2005) pointed out that learning as a holistic process requires the resolution of conflicts between dialectically opposed modes of adaptation to the world. Conflict,
differences and disagreement are what drive the experiential learning process. In the process of learning one is called upon to move back and forth between opposing modes of reflection and action and feeling and thinking. In this definition, thinking alongside feeling, perceiving and behaving are considered students’ learning resources. Therefore, one of the four cycles of Kolb’s experiential learning, called ‘abstract conceptualisation’, is dedicated to ‘thinking’. This cognitive part of experiential learning refers to individual and group thinking processes such as memory, perception, mental models, schemas and representations (Kayes, 2002). Therefore, it could be noted that experiential learning encourages students to think about their experiences and to observe in order to complete the process of their experiential learning.

Cooperative learning stimulates students’ thinking by promoting their shared responsibility for thinking. In group cooperative learning activities, the thinking load can be distributed amongst the students in the group with both cognitive and emotional consequences. It shares out students’ efforts of thinking and reduces the anxiety produced by having to keep the argument going singlehandedly because each student has to think and say only one ‘piece’ of the discourse, which can be used to construct another. Students’ roles are separated so that each participant need play only one of them. Consequently, the cognitive load for any one individual is reduced. A further look at cooperative learning methods such as Jigsaw and Teams-Games-Tournaments where the concentration is on what the students actually do in these groups, would help pinpoint what ‘thinking’ processes are practiced and, therefore, what type of improvement in higher order skills might be expected (Brown and Palincsar, 1989).

With regard to the affordance of e-learning for cultivating students’ thinking skills, Clark and Mayer (2011) compared learning of 163 medical students from a three week programme of case based online instruction using a series of computer-based clinical case simulations was designed to foster reasoning and logical thinking abilities. The comparison group participated in the traditional teaching programme that included didactic lectures, bedside tutorials and outpatient clinics. The research team observed that the students felt the simulations complemented and deepened their understanding of patient care as they could relate this information to real cases present in the wards, supporting the benefits of e-learning designed to be job specific and case based. They provided evidence and examples for the
design of job-specific case-based e-learning programmes that build students’ thinking skills and problem solving meta-cognition skills as much as technical knowledge and skills. They have advocated for a domain specific or job specific approach that uses real world cases as a context for learning thinking skills unique to a discipline. E-learning can be used to make invisible thinking processes explicit as well as to prompt practice applying those processes. Furthermore, educational technologies help students in the small cooperative groups to stimulate their creative thinking. Jones et al. (2001) argued that technology allows students to quickly and anonymously contribute in the class discussions. This anonymity lowers the risk of being embarrassed by a wrong answer and helps students to have a more open and creative debate.

6.4.11. Curriculum integration
This theme includes one unique productive thinking solution as below:

➢ Connecting each module to whole programme

This solution refers to integrating elements of previous modules into the module being delivered where applicable. The focus of curriculum integration is on designing a curriculum that is relevant, standards-based, and meaningful for students. A review of the literature has been done by Loepp (1999) revealed that far more curriculum integration occurs at the lower levels of education than at the high school and university levels. She pointed out several pre-requirements that tutors and curriculum designers have to take into account when they want to enhance the curriculum integration. First, teachers need to become members of learning communities. At one level they need to work with their peers to improve their education. At another level, teachers should work with their students in order to solve problems that have multiple answers. Second, teachers need to become skilled in facilitating small group and cooperative learning since learning is a social process and students learn a great deal by interacting with one another. Third, teachers need to implement experiential-oriented instruction in their class. This includes inventorying and storing materials; the safe operation of instrumentation, machines, and equipment; and leading students toward efficient progress. The cooperative nature of this solution is emerged from the first and second pre-requirements and its experiential nature is obvious in the third pre-requirement above.
Experiential learning provides a real-world perspective, to help students and faculty build relationships with business people, and to provide good public relations for the university departments and faculties (Hamilton et al., 2000). These information and relationships provide a better understanding for faculties and curriculum designers to integrate the curriculum components and modules together more efficiently.

From a cooperative learning point of view, students and tutors’ beliefs that ‘they are linked with others in a way so that we cannot succeed unless they do’ helps them to cooperatively work with each other in order to enhance curriculum integration. Furthermore, ‘promotive interaction’, which encourages students and tutors to promote each other's success by helping, assisting, supporting, encouraging and praising each other's efforts to achieve, orally explaining how to solve problems, discussing the nature of the concepts being learned, teaching one's knowledge to classmates, and connecting present with past learning, helps tutors and students to understand the curriculum integration and try to improve it in due course.

E-learning could facilitate this process by visualising the curriculum integration process. This visualisation is presumed to enhance the clarity of the interrelationships existing between different components of the curriculum. It also helps to reduce the complexity of curriculum integration process by illustrating the connections existing between the learning outcomes, syllabuses, assessment schemes and the resources of the different modules.

6.4.12. Stimulating students’ curiosity
This theme includes two unique productive thinking solutions as below:

- Providing Questioning tools and training for students
- Promoting students’ multi-dimensional perspective

Experiential learning requires students to explore the real world instead of being solely relied on the class activities in order to learn. However, it is also argued that learning cannot be achieved only by doing and experiencing without critically reflecting on what they are doing or observing (reflective observation). This can be done by making some questions relevant to the experience being studied by student. Jiusto and DiBiasio (2006) analysed the
effectiveness of one well-regarded experiential academic program in preparing students for life-long learning through the acquisition of attitudes and skills supportive of self-directed learning and pointed out that students’ curiosity about learning is enhanced as a result of implementing that experiential approach in the class.

From the cooperative learning point of view, stimulating students’ questioning ability could be achieved by requiring them to work in groups instead of working individually. Students’ initial questions need to be responded or commented by other students or tutor in order to enable them to make their secondary questions and this process could be done better when students are working with each other in the small groups. In this way, they feel a more positive dependency on each other’s cooperation in the questioning and learning process (positive interdependence) and it motivates them to cooperatively help each other in order to construct or respond questions. It could also be claimed that providing feedback has a role in enhancing students’ multi-dimensional perspective. Students could see one issue from different perspectives by providing each other with feedback, challenging each other's conclusions and reasoning in order to promote higher quality decision making and greater insight into the problems being considered (promotive interaction) (Roger and Johnson, 1994).

With regard to the affordance of e-learning for the solutions of this theme, Steinkuehler and Williams (2006) contended that interacting within virtual environments, including social networks, not only helps people build communities but also exposes them to a diversity of world views through promoting these virtual social relationships. It is also argued that online synchronous discussion is an effective instructional tool for facilitating students’ willingness to raise questions or offer comments in the learning environment, and engaging students in reflective learning which, in turn, enhances their intellectual development and critical thinking. These online discussions enable students to share and debate multiple perspectives simultaneously without worrying about interrupting the flow of a conversation that had moved on (Wang, 2005).
6.4.13. Promoting students’ critical thinking

This theme includes five unique productive thinking solutions as below:

- Encouraging students to critically review the relevant Markets
- Encouraging students to participate and evaluate the relevant events
- Requiring students to evaluate and criticise resources which are relevant to their courses
- Applying new Assessment approaches
- Using difficult and open-ended questions

Some experiential learning scholars, such as Dewey and Freire, highlighted an inextricable link between critical thinking and experiential learning. For instance, while valuing experiential learning effectiveness, Freire pointed out that “the uncritical celebration of experience needs to be avoided” (Boud and Miller, 1996, p.9). He recognised that learning from experience should take place within a context of sound critical thinking skills; and therefore, highlighted the central role of effective critical teachers. He believed that those critical teachers need to have competence in communication and group facilitation, courage to persevere in challenging assumptions, humility, political clarity in the capacity to break free from dominant paradigms, and to be prepared to take risks in order to engage students creatively in the excitement of learning (Freire, 1994; Gibbons and Gray, 2004). Reflective observation as the second cycle of experiential learning is supposed to have an affordance for enhancing students’ critical thinking through stimulating students’ problem solving ability (Maudsley and Strivens, 2000). In fact, through ‘reflective observation’, students are required to reflectively and critically think about the problem being studied and, then, provide the possible solutions to solve that problem.

In terms of cooperative learning, Brookfield (1987) believed that encouraging peer-support in the class underpins critical thinking in students. This peer support could be provided by individuals providing each other with efficient and effective assistance; exchanging required resources and processing information more efficiently and effectively; providing each other with feedback in order to improve their subsequent performance; challenging each other's reasoning in order to promote greater insight into the problems being considered; advocating the exertion of effort to achieve mutual goals; influencing each other’s efforts to achieve the group's goals; acting in trustworthy ways; and being motivated to strive for mutual benefit.
E-learning environments have some tools to support students’ critical thinking. It was argued that active exchange of ideas within small groups not only increases interest amongst the group members but also promotes their critical thinking. By using online communication, discussion and presentation tools in the e-learning platforms such as computer conferencing, faculties can engage their students in a wide range of activities that can contribute to these active idea exchanges in order to stimulate their critical thinking and intellectual growth. Furthermore, online asynchronous conversations allow students to give and accept feedback from other classmates and to have greater reflection, which in turn help students to enhance their critical thinking (Macknight, 2000). However, some characteristics of students such as their previous experience with distance education or independent study, their cognitive maturity, and their experience with participatory and interactive learning environments seem to be necessary preconditions for the successful implementation of online communication and presentation tools where success is measured by high levels of participation, interaction, and critical thinking (Bullen, 2007).

This theme includes four unique motivation solutions as below:

- Providing clear link to award
- Clarifying the criteria for awarding the determined prizes
- Clarifying Assessments’ criteria
- Applying Known Assessment strategy (No Anonymous)

The solutions associated with this theme highlighted the importance of clarifying the criteria which will be used for assessing students’ outputs. It was stressed that these criteria should be clearly shown to students from the first day of their entry to the programme. It was argued that this clarification helps students to match themselves with the expected learning outcomes of the programme by knowing how and based on which criteria they will be assessed.

It is generally accepted that the involvement of students in the establishment of assessment
criteria and selection of assessment processes such as self and peer-assessment is crucial and should be an integral part of the programme design (Rae and Carswell, 2000). This leads to a ‘individual accountability’ feature of cooperative learning, which facilitates assessing students as individuals and giving feedback to the individuals and their groups. Some techniques such as self and peer-assessment are also recommended by cooperative learning in order to provide formative feedback on students’ performance. The solutions of this theme are also in line with ‘Positive Reward - Celebrate Interdependence’, which refers to the cooperative rewards that can be appointed to the groups of students. This element highlights the positive effect of joint rewards and celebration of group efforts on students’ individual and group performance. This cooperative nature of the rewards should be clarified for students at the beginning, encouraging them to have a better understanding and motivation to work with each other.

Another solution in this theme highlights the importance of applying a known assessment strategy (no anonymous). It means that all students in a group should be aware of the results of an individual’s assessment results. This is in line with the ‘individual accountability’ feature of cooperative learning, which proposes that when the performance of individual students is assessed, the results have to be given back to both the individual and the group, and the student is held responsible by group mates for contributing his or her fair share to the group’s success. It is important that the group knows who needs more assistance, support and encouragement in completing the joint task. It is also important that group members know they cannot "hitchhike" on the work of their teammates (Roger and Johnson, 1994).

Slavin (1980) pointed out that the main affordance of educational technologies and virtual learning environments for implementing cooperative learning in the class is providing ‘structure’ in three sections: a task structure, a reward structure and an authority structure. Task structure helps teaching-learning environment by facilitating class discussions, grouping students in homogeneous or heterogeneous small groups and lectures. The reward structure facilitates rewarding students interpersonally in the cooperative groups by grades, teacher approval and tangible rewards due to their appropriate behaviour and achievements. The authority structure refers to the control that students exercise over their own activities, as opposed to that exercised by teachers and other adults. The reward structure which could be provided by e-learning platforms has an affordance for the solutions associated with this
theme. The other affordances mentioned by Slavin (1980) facilitate the other solutions and themes generated by this study.

6.4.15. Connecting students to job market
This theme includes five unique motivation solutions as below:

- Introducing job opportunities to students consistently
- Providing Business databases for students
- Supporting students by providing their required information
- Enhancing students’ self-awareness
- Promoting e-business culture

It is argued that Kolb's experiential learning theory is useful in linking the person and job by measuring them in the same terms. Measuring the person and job in commensurate terms can be accomplished by using the model of four performance competency areas. This model stressed that generic skills of both the individual and the job can be identified as being affective, perceptual, symbolic or behavioural performance competencies. Not only can individual skills and competencies required to perform the job effectively be identified, but valid differences in occupations can be determined through the use of this four factor model (Sims, 1983). Furthermore, the final stage of experiential learning (active experimentation) refers to encouraging students to review the practical implementations of their studies from a future-oriented perspective. They need to test, apply and put into practice the information they got in the experiential learning process and use them as bases for decision making, problem solving and planning for the future cases and opportunities. Therefore, active experimentation leads students to new experiences and possible practical applications of their theoretical learning in the job market.

Groenewald (2004) reviewed existing cooperative learning definitions and their historical development. He concluded that “cooperative education can be reduced to four core dimensions … namely: (a) an integrated curriculum, (b) learning derived from work experience, (c) cultivation of a support-base, and (d) the logistical organization and coordination of the learning experience.” (p. 24). These four components are described by Haddara and Skanes (2007) as developing a curriculum which integrates the needs of
industry with academic requirements; careful design of the work component to ensure its contribution to the experiential learning process; the cultivation of a loyal supporting industrial base; and establishing a structure which ensure sound practices of monitoring and evaluating students before, during, and after the work experience. This definition of cooperative learning is much aligned with the solutions associated with this theme in encouraging students to make connections with industries and other job markets in order to put their learning into practice.

Furthermore, it could be argued that one of the pre-requirements of introducing students to the job market is identifying their preferences, abilities and future plans. Similar to the argument made for ‘providing personal development programmes’, it can be noted that ‘individual accountability’ has an affordance for this solution by assessing students’ weaknesses and strengths on an individual basis. Six approaches for evaluating students’ performance and capabilities were already suggested in the personal development theme and could also be employed here.

In line with the e-learning affordances suggested by Slavin (1980) in the previous theme, the ‘task structure’, which could be provided by e-learning platforms, has an affordance for the solutions of this theme. It is argued that enhancing students’ discussions and communications helps them to increase their awareness of the possible job opportunities in the real world as well as the practical applications of their theoretical studies. The affordance of some social networks such as LinkedIn in creating an incredible job and expertise network is very obvious and it could be generalised –to some extent- to the other social networks as well.

6.4.16. Increasing positivity in educational environment
This theme includes two unique motivation solutions as below:

- Emphasising on students’ strength points
- Helping students to avoid pessimism and enhance their positivity

Fredrickson and Losada (2005) argued that initially positive attitudes produce more accurate subsequent knowledge than do initially negative attitudes. Positivity, by prompting approach
and exploration, creates experiential learning opportunities that confirm or correct students’ initial expectations. By contrast, because negative attitudes like boredom and cynicism promote avoidance, opportunities to correct false impressions are passed by. They suggested that positivity—by broadening exploratory behaviour in the moment—over time builds more accurate cognitive maps of what is good and bad in the learning environment.

From the cooperative learning point of view, when students believe that their work could benefit ‘others’ and others’ work could benefit them (positive interdependence), their positivity towards ‘others’ will be increased. Specifically, ‘Positive Role Interdependence’ seems to have a good affordance for emphasising on students’ strength points. It could be argued that each student is strong in some roles and weak in other roles. Tutors cannot expect all students to be excellent in all roles. Perhaps, while some of them are good presenters, they are not so good in teaching or assessing others. Positive Role Interdependence provides the possibility of sharing responsibilities that the group needs in order to complete the joint task. In this case, role sharing could be relied on the skills and abilities that students possess so far. The other key elements of cooperative learning are also helpful in stimulating students’ positivity. For instance, ‘individual accountability’ suggests that performance of individual students should be assessed. But unlike the summative assessments, the reason for this formative feedback is not grading students. It is supposed to provide information about students who do need assistance and support. Furthermore, ‘group processing’ as the fifth essential component of cooperative learning requires students in the group to reflect on their performance in order to provide a feedback about the usefulness of members’ actions. But, at the same time, it was stressed out that this feedback should emphasise on positive points of students. It could be seen from the elements above that the main focus of cooperative learning is reducing competitiveness between students and enhance their positive affect by implementing several techniques and principles.

Educational technologies allow the educator to integrate active learning techniques into the class activities. By providing both individual and group learning activities, students can participate in their own learning and generate thoughts and ideas to share with their peers. E-learning, as was already mentioned, can also facilitate personalised learning by providing the structure required for this personalisation. Furthermore, it helps students’ self-learning by providing access to audio, visual and kinesthetic tools. Therefore, it is argued that when
learning become interesting, fun and engaging, students develop greater interest and potentially create new positive habit loops for learning (Senk, 2013).

6.4.17. Pushing students hard
This theme includes one unique motivation solutions as below:

- Pushing students hard by more exams

To encourage students to work hard and to prevent them from social loafing and ‘hitchhiking’ on the work of others, their performance needs to be examined on an individual basis. This individual-based assessment is not in contrast with the cooperative nature of the group work because it assures the group members that everyone is committed to his/her fair share of the work and strengthened by learning cooperatively. ‘Individual accountability’ pushes each student as a member of the cooperative group to work hard in order to be a stronger individual in his or her own right. That is why, after participating in a cooperative lesson, group members should be better prepared to complete similar tasks by themselves (Roger and Johnson, 1994). Consistent with this view, Gray and Gibbons (2002) points out that since cooperative group-work demands a great deal of personal effort and gives students a lot of responsibility, it ensures that a student works hard.

6.4.18. Rewarding students

- Offering rewards to students
- Implementing Pull & Push motivations

‘Positive Reward - Celebrate Interdependence’ as one of cooperative learning features has an affordance for implementing these solutions. It points out that each student in group receives the same reward when the group achieves its goals. To supplement goal interdependence, teachers may wish to add joint rewards (e.g. if all students in the group score 90% correct or better on the test, each receives five bonus points). Sometimes tutors give students: 1) a group grade for the overall output of their group; 2) an individual grade resulting from tests; and 3) bonus points if all group members achieve the criterion on tests. Finally, regular celebrations of group efforts enhance the quality of cooperation in the class (Roger and ...
Johnson, 1994). By suggesting a cooperative reward structure, cooperative learning increases students’ performance by introducing interpersonal rewards for individual behaviour, group norms favouring performance that helps the group to achieve its goals, and mutual help among group members (Slavin, 1980).

The affordance of e-learning platforms for the solutions of this theme is previously mentioned by Slavin (1980). He points out that e-learning provides a ‘reward structure’ which facilitates rewarding students interpersonally in the cooperative groups by grades, teacher approval and tangible rewards due to their appropriate behaviour and achievements. Furthermore, the communication and interaction tools of e-learning environments, such as social networks, forums, email groups and chat rooms, could be used for enhancing students’ awareness about the suggested rewards. This enhances awareness stimulates students’ motivation in order to increase their group and learning activities and increase their chance of winning the rewards.

6.5. Discussion

Further to the tabular approach provided above, this section sought to provide an insight into the findings of the previous studies about the impact of cooperative and experiential learning on students’ entrepreneurial competencies in general and productive thinking and motivation competencies in specific. Moreover, the affordances of the specific findings of this study for enhancing cooperative and experiential learning in a virtual learning environment are discussed.

6.5.1. General perspective: The impact of cooperative and experiential learning on entrepreneurial learning

There is a considerable number of evidence confirming that traditional teaching-learning approaches are inadequate for meeting entrepreneurs’ educational needs and, therefore, there is a need to implement appropriate training approaches in the entrepreneurial learning process (Higgins and Elliott, 2011; Goss, 1989; Garavan and O’Cinneide, 1994; Heinonen and Poikkijoki, 2006).

Experiential and/or cooperative learning are two most-cited educational frameworks
suggested to enhance entrepreneurs’ learning. A review of the literature in these areas and the contribution of this study are provided here.

With regard to the first framework, the overall positive impact of implementing experiential learning approaches on entrepreneurs’ learning has already been examined by a large number of scholars. For instance, Cope and Watts (2000), conducting an empirical study and examining the effect of using critical incident technique on entrepreneurs’ learning, concluded that implementing experiential learning approaches could effectively enhance students’ entrepreneurial learning. Also, Cooper et al. (2004) illustrate that requiring entrepreneurship students to work with an entrepreneur in his/her real business significantly enhances their learning and provides opportunities for students to ‘see, touch and feel’ entrepreneurship at first hand. Or, for instance, Corbett (2005) tried to map between the different experiential learning activities and enhancing students’ Opportunity Identification and Exploitation. Some other scholars who supported the impact of experiential learning approaches on entrepreneurs’ learning are Daly (2001), Pittaway and Cope (2007), Cope (2005), Deakins and Freel (1998), Rae and Carswell (2000), Politis (2005), Politis and Gabrielsson (2009), Dhliwayo (2008), and Krueger (2007).

Cooperative learning as another framework for enhancing entrepreneurs’ learning is addressed by previous studies. Pittaway and Cope (2007) and Melinda and Kusuma (2009) argued that learning from peers in a cooperative learning environment stimulate entrepreneurial learning. The positive impact of cooperative learning on entrepreneurs’ learning is supposed to be imposed through peer-learning (Hackbert, 2011), using web 2.0 technologies such as Wikis (Smith et al., 2010), combining students with entrepreneurs and educators in a contingent learning environment such that all groups would be able to engage in an experiential, collaborative, co-learning experience (Hannon et al., 2005), and requiring students from different disciplines to work cooperatively within the groups and use cooperative tools such as wikis (Rafael and Jose, 2013). More recently, Suonpää (2013) proposed a model for constructing an opportunity centred collaborative learning model through and for entrepreneurship. This model has four interconnected learning phases including: negotiated enterprise, patient communication, team empowerment and shared leadership.
6.5.2. Specific perspective: The impact of cooperative and experiential learning on productive thinking and motivation

In general, hundreds of the empirical studies sought to examine the impact of cooperative learning versus traditional instruction on students’ achievement (See for instance, Brandy, 2013; Dyson and Plunkett, 2012; Bunrasi, 2012; Bertucci et al., 2012; Law, 2011; Thompson and Chapman, 2004; Nam and Roland, 2011; Johnson et al., 1993; Griffin, 2008; Muhammad, 2012; Adeyemi, 2008; and Köse et al., 2010; Conring, 2010; Romero, 2009; Yager et al., 1986; Kumar and Kyushu, 1998; Li and Dejun Wang, 1995) or students’ perceptions (See for example, Heath, 2010; Diflorio, 1995; Searcy et al., 2008; Sarobol, 2012; Der Pan et al., 2010; Servetti, 2011; Ballantine and Larres, 2009; Gillies and Boyle, 2008; Duckworth, 2010; Carrier et al., 1995; Ahern, 2007). Also some studies tried to review the impact of cooperative learning on students’ motivation (Julkunen and Borzova, 1997; Julkunen, 2001; Torchia, 2012). However, the impact of cooperative learning on enhancing students’ productive thinking is almost ignored by previous studies.

With regard to motivation, there is a consensus that incorporating cooperative learning in the classroom could positively enhance students’ motivation (see Torchia, 2012; Dörnyei, 1997; Ushioda, 1996). However, the question of “how students’ motivation is affected by cooperative learning?” was seen and responded to from different perspectives. For instance, previous studies argued that cooperative learning positively affects students’ motivation through encouraging students to have cooperative goals (Julkunen and Borzova, 1997; Julkunen, 2001); enhancing students’ group cohesiveness (Johnson and Johnson, 1995); encouraging students to be goal-oriented (Milleret, 1992); decreasing students’ anxiety and stress (Deci and Ryan, 1985); and enhancing students’ self-confidence (Nichols and Miller, 1994). The positive impact of implementing cooperative learning in the class on enhancing students’ persistence as another dimension of students’ motivation is also confirmed by Pisani (1994). Moreover, some studies try to identify some moderators of the relationship between cooperative learning and students’ motivation. For instance, Hancock (2004) found that the level of students’ peer-orientation moderates the impact of cooperative learning on students’ motivation.

With regard to the impact of implementing cooperative learning on students’ productive thinking competencies, a few studies have been conducted so far. For instance, Mevarech
and Susak (1993) illustrated that incorporating cooperative learning techniques in the class can result in improving students’ ability to generate higher cognitive questions (questioning ability) and creativity as two dimensions of students’ productive thinking. However, regarding the other sub-competencies of productive thinking, the cooperative learning literature is disappointing. For instance, some previous studies found that cooperative classrooms provide a poor psychological and social environment to stimulate students’ initiation or risk-taking (Sahlberg, 2010), and stress-coping (Alexander and Ludwig, 2006) as three productive thinking competencies.

With regard to the experiential learning and its effects of students’ motivation and productive thinking competencies, some studies have been conducted in this area so far.

While some studies such as Baker (2014) and Weinberg et al. (2011) mentioned that implementing experiential learning model in the class has not significant effect on students’ motivation, many studies approved the positive impact of incorporating experiential learning activities in class on students’ motivation (See for example: Knott, 2004; Sibthorp et al., 2011; Payne et al., 2011; Lee and Hoadley, 2007; Nakamura, 2012). However, same to the previous section, there is no consensus on how experiential learning could enhance students’ motivation. Previous studies believe that experiential learning could positively affect students’ motivation through using educational games (Sugar and Sugar, 2002, Lee and Hoadley, 2007), requiring students to work within a team and create a spoof video, which could be posted on YouTube (Payne et al., 2011), implementing the Life Challenge Program (LCP) which is an experiential, motivation enhancing group intervention designed for adolescents in a youth detention facility (Knott, 2004), using the laboratory method (=ELLM) (Nakamura, 2012), and using an online learning platform that combines social learning, work-based learning, inquiry-led learning and high degrees of personalization (Arnold, 2008).

Regarding the impact of experiential learning on students’ productive thinking, many studies concluded that experiential learning led to a higher level of creativity in students (See for example, Baker, 2014; Rathunde, 2013; Hannon et al., 2004; Potgieter, 1999). Moreover, Ashley et al. (2011) argued that incorporating experiential learning in the class helps students to go beyond creativity and use their creativity for problem-solving. Other studies
demonstrated that implementing experiential learning strategies could enhance students’ risk-taking (Hill and Herman, 1998), questioning (Kinsey, 2011), and imagination (Hill and Herman, 1998) as well as other productive thinking competencies.

However, similar to the motivation competencies, there is no consensus about how experiential learning positively affects students’ productive thinking competencies. Previous studies argued that students’ different productive thinking sub-competencies could be enhanced by incorporating some experiential learning approaches such as: requiring students to do an experiment in the second life environment (Ashley et al., 2011); using interactive technologies and online courses to engage students in a concrete experience (i.e., locating a particular website related to the topic) (Murphrey, 2010); requiring students to regulate experiences of interest including those occasional intense states of flow or total absorption in some activity (Rathunde, 2013); using team experiential tasks in the class (Hannon et al., 2004); requiring students to think about applying what they had learned to "real life" organizational settings (Pauleen et al., 2004); implementing outdoor games (Consalvo, 1996; Thompson, 1991); requiring students to visit and learn in the museums (Speltz and Shaugnessy, 1990); using simulations and games (Gundry and Kickul, 1996; Petranek, 1994); and applying action learning in the class (Kinsey, 2011).

6.6. Conclusion: Contribution of this study in terms of Cooperative-Experiential Learning

The results of this study first and foremost demonstrate the effectiveness of a combined model of experiential and cooperative learning as an effective conceptual framework for entrepreneurship education in general, and for cultivating students’ productive thinking and motivation specifically.

Looking more closely at the discussions provided in relation to the affordances of cooperative and experiential learning theories for the solutions generated by this study, it could be concluded that:

- In line with Johnson and Johnson (1999), we believe that when teaching-learning efforts are structured cooperatively, there is considerable evidence that students will exert more effort to achieve, build more positive and supportive relationships, and
develop in more healthy ways to enhance their productive thinking and motivation competencies as the two most important entrepreneurial competencies.

- Consistent with Kolb and Kolb (2005), we argue that experiential learning, as another educational framework for enhancing students’ productive thinking and motivation, could be characterised as:

  o Learning is best conceived as a process, not in terms of outcomes.

  o All learning is relearning. (Learning is best facilitated by a process that draws out the students’ beliefs and ideas about a topic so that they can be examined, and integrated with new and more refined ideas).

  o Learning requires the resolution of conflicts between dialectically opposed modes of adaptation to the world.

  o Learning is a holistic process of adaptation to the world.

  o Learning results from synergetic transactions between the person and the environment.

  o Learning is the process of creating knowledge.

As has been presented in this study, the impact of implementing cooperative and experiential learning on students’ entrepreneurial competencies –in general- and on their Productive Thinking and Motivation specifically- has already been proved. However, there are two concerns that the contributions of this study could build on.

Firstly, as it was mentioned by Murphrey (2010), we believe that while the benefits of experiential and cooperative learning activities have been well documented by previous studies, little focus has been placed on creating cooperative and experiential learning opportunities or studying their impact within the educational environments in general and online learning environment specifically.

Secondly, looking more closely at the studies suggested implementing cooperative and experiential learning for stimulating students’ entrepreneurial competencies, it can be concluded that the novel approach of this work towards the careful mapping has been done
between cooperative-experiential learning key features and the solutions generated by this study are arguably far more rigorous in its approach than what is already in the literature. Most of the previous studies in this area rely on studying the impact of implementing a specific training programme on students’ entrepreneurial learning and the cooperative or experiential learning aspects of that specific programme. For instance, Cooper et al. (2004) studied a specific training approach named ‘Venture Management programme’ implemented in University of Strathclyde to encourage students from a broad spectrum of disciplines work with an entrepreneur on a business development project. In a second example, Cope and Watts (2000) studied the impact of critical incidents as learning opportunities on students’ entrepreneurial learning and highlighted the value of ‘learning by doing’ in entrepreneurship education. Therefore, in this context, the value of this study is in using an exploratory collective intelligence methodology to explore experiential-cooperative nature of entrepreneurship education from its stakeholders’ points of view. This study generates a set of general guidelines and solutions which could be implemented in any entrepreneurial education programme across the different disciplines.

Based on this background, this study contributed to existing literature on experiential-cooperative entrepreneurship education in several ways as below:

- Suggesting a hybrid cooperative-experiential curriculum:

Experiential learning in itself also has a cooperative nature. It was argued that experiential learning occurs once the learner shares the intellectual experience in some manner with other learners (Frontczak, 1998). However, the impact of each of the cooperative and experiential learning frameworks on students’ entrepreneurial competencies has been separately investigated. Some scholars, such as Reinl and Kelliher (2010), Cope and Wats (2000) and Higgins and Elliott (2011), highlight the role of cooperative learning in entrepreneurship education and also suggest some cooperative techniques to be implemented in this context. Some other scholars, such as Politis (2005), Pittaway and Cope (2007) and Rae and Carswell (2000), contend that the dynamics of entrepreneurial learning is largely an experiential process. While the importance of implementing cooperative-experiential learning framework in the context of entrepreneurship education was highlighted by Lucey (2007) and Tian (2007), neither of them provided a curriculum design including cooperative-experiential
teaching-learning approaches for enhancing students’ entrepreneurial competencies. This study could be considered as one which generates a hybrid curriculum including cooperative and experiential methods and provides insight into the capability of these two frameworks to be merged together for stimulating students’ entrepreneurial competencies.

- Suggesting a variety of solutions for improving cooperative learning:

Despite the fact that cooperative learning is theoretically well defined, there is a lack of teaching procedures matched with this framework. Johnson and Johnson (2009) pointed out that while many cooperative teaching procedures have been recommended over the past 60 years, very few are still practised and almost none are as widespread and institutionalized into instructional practices as cooperative learning. Perhaps that is why Shimazoe and Aldrich (2010) point out that there is usually a resistance by university students and tutors to use cooperative learning due to their poor experience with it. They suggested and divided some solutions for improving cooperative learning in universities by focusing on a three-stage model of group formation and development. These three stages are: Design and Development Stage, Operation Stage and Output and Disbanding Stage. Figure 6.4 illustrates those solutions based on the three categories above.

_________________________
Stage 1: Design and Development Stage
  1. Establish group goals and rewards, e.g. thoroughly explain process to students, create positive interdependencies.
  2. Control group composition, e.g. determine optimal diversity and team size.
  3. Develop students’ social skills, e.g. via training before classroom activities actually begin, team building, acting as positive role model.

Stage 2: Operation Stage
  1. Design task & transparent reward systems, e.g. start with simple assignments, clarify expected outputs.
  2. Monitor group performance, e.g. through peer evaluation and feedback, and intervene quickly when problems arise, e.g. rearrange groups’ memberships.

Stage 3: Output and Disbanding Stage
  1. Provide prompt feedback and take groups’ outputs seriously, discuss output in class.
  2. Maintain consistency in the reward system: satisfy individual as well as collective needs, e.g. give individualized feedback to each student.

_________________________

Figure 6-4 some solutions for improving cooperative learning in universities
Looking more closely at Figure 6.4 and comparing it with Tables 6.1 and 6.2, it can be seen that almost all of these solutions are also indicated in this study. Furthermore, other solutions are generated by this study which could be used to enhance cooperative learning in class, especially in the virtual learning environments. These solutions could be found in Tables 6.1 and 6.2.

- Suggesting a variety of solutions for improving experiential learning:

Different studies suggest approaches for improving the effectiveness of experiential learning. For instance, Kolb and Kolb (2005) generated a set of solutions for enhancing experiential learning in higher education. These solutions include: respect for learners and their experience; begin learning with the learner’s experience of the subject matter; creating and holding a hospitable space for learning; making space for conversational learning; making space for development of expertise; making space for acting and reflecting; making space for feeling and thinking: making space for inside-out learning; and making space for learners to take charge of their own learning. As can be seen in Tables 6.1 and 6.2, almost all of these solutions are addressed by the current study. Furthermore, other solutions for enhancing experiential learning in universities are also generated. These new solutions can also been seen in Tables 6.1 and 6.2.

- Highlighting solutions for incorporating cooperative-experiential learning in the virtual learning environment:

Previous studies indicate that educational technology can help higher education institutions to improve the effectiveness of experiential and cooperative learning. For instance, Lai et al. (2007) illustrates that mobile technologies are effective at improving students’ knowledge creation during the experiential learning process. Furthermore, Huang et al. (2008) argued that using digital annotation services and wireless communication devices in a jigsaw method of cooperative learning can enhance students’ learning potential. Hence, consistent with Lai et al. (2007) and Huang et al. (2008), the solutions of this study are generated to be embedded in an e-learning environment.

To sum up, this chapter tried to make it clear that how cooperative and experiential learning theories can help implementing solutions generated by this study in an e-learning
environment. Without this clarification we cannot be completely benefitted by the full potential of these two learning theories. Paying attention to the affordances of experiential and cooperative learning key features for those solutions could assure their quality and effectiveness in the real training environments. It has to be reminded that the importance of these solutions is due to the nature of the competencies targeted by the current study. If the current study targeted know-what competencies (the hard facts about business creation and management), perhaps there was no need for generating non-traditional cooperative-experiential training approaches. Those hard facts can be taught to students even by using the traditional methods. However, here we targeted soft know-how competencies such as creativity, pro-activeness, leadership, risk taking propensity and wakefulness. They are most effective competencies which could stimulate students’ entrepreneurial capability but at the same time they are very difficult to be trained. Therefore, we do need to revise and redesign our cultivating approaches in order to prepare ourselves for instilling these soft facts in our students’ minds.

Clearly, what has been proposed here needs to be tested empirically. Ideally, students’ entrepreneurial competencies (productive thinking and motivation) would be assessed following a pre-test-post-test quasi-experimental design whereby students’ competencies are measured before and after exposure to a programme based on the solutions generated here. This is further elaborated in Chapter 7.
7. Chapter 7: General Discussion

7.1. Introduction
This study sought to identify entrepreneurial competencies that are important for students to cultivate in an educational setting and, drawing upon the insights and understanding of key stakeholders, explore solutions and educational frameworks that could be used in the design of a curriculum for promoting students’ entrepreneurial competencies through their studies with an e-learning platform. The main methods used by this study were Interactive Management (IM) and focus group, both of which worked together as part of an exploratory collective intelligence methodology to explore the ideas of key curriculum stakeholders. This chapter presents a summary of the findings of this research and highlights the contributions and limitations of this study. Moreover, suggestions for future studies in this area are presented.

7.2. Summary of findings
The findings of this study can be divided into three major sections:

- Identifying the most important entrepreneurial competencies which enable university students to create their own innovative and entrepreneurial job opportunities after their graduation;

- Exploring the inter-dependencies between these entrepreneurial competencies in a comparative study of three stakeholder groups: students, academics and entrepreneurs; and

- Classifying two sets of cultivation approaches (solutions) which could be implemented in an e-learning platform for enhancing the identified entrepreneurial competencies in students.

With regard to the first and second research questions focused on identifying entrepreneurial competencies and their inter-dependencies, an exploratory collective intelligence methodology, Interactive Management (IM), was used to identify, rank, and structure five
sets of entrepreneurial competencies for university students in both developing and developed countries. These were based on the ideas generated by five expert groups in Ireland and Iran. Highly ranked competencies from each set were identified and five enhancement structures were then generated illustrating the logic of enhancement interrelationships between elements of the set of competencies. These five enhancement structures can be seen in Figures 4.1 to 4.5 in Chapter 4. A summary of main findings from the structures is presented here.

Positivity and Competitiveness were seen by Irish entrepreneurs as critical drivers of other competencies in the system and the outcome of this structure was the ability to take an idea and Add value. However, for Iranian entrepreneurs in our study Self-confidence was the main critical drivers of other competencies and the outcome was Networking ability. Unlike the Iranian Entrepreneurs’, Irish students regarded Networking ability as the most important driver of all other competencies, rather than being driven by other more fundamental competencies. Iranian students perceived Tolerance for ambiguity as one of the critical drivers of all other competencies. Finally, Irish academics believed that Belief in the effect of personal efforts on outcomes and Commercial Understanding are the two most fundamental competencies which affect all other competencies either directly or indirectly.

Then, based on an algorithm and taking into account the competencies’ commonalities across groups, the number of votes each competency received, their level placement in the enhancement structure, and their succedent and antecedent interrelations, the 37 competencies identified across all five IM sessions were ranked (see Table 4.2). A sixth IM session was then conducted in order to categorise competencies and a total of seven higher-order categories of competency emerged and were labelled: Productive thinking, Motivation, Interpersonal skills, Leadership, Positivity, Domain knowledge, and Emotional objectivity. All 37 competencies were distributed amongst these categories and, consequently, an influence score for each category was calculated by summing the scores of its component competencies using the data available in Table 4.3. Accordingly, the highest ranking category of competency labelled Productive Thinking included 14 competencies with a total score of 297; Motivation, the second-highest ranking competency category included eight components with a total category score of 176.
‘Productive thinking’ emerged as a competency category that included 14 sub-competencies as follows: Creativity; Innovation and ingenuity; Opportunity identification, evaluation and grasping; Tolerance for ambiguity and uncertainty; Adaptability and Flexibility; Risk-taking; Questioning everything; Stress and failure coping; Willingness to take on challenges; Imagination; Initiative; Ability to see the market from a different angle; Information-seeking ability; Intuitive ability (6th sense); and Add value. Furthermore, ‘Motivation’ consisted of eight sub-competencies including: Persistence, Proactivity and Hardworking; Need for achievement; Determination; Belief in the effect of personal efforts on outcomes; Task motivation; Competitiveness; and Independence. These competencies are defined and their influence scores and interdependencies are discussed in Chapter 4 of this study.

In the next sections of this chapter, the contributions of these findings are outlined and more detail are summarised with regard to:

- How key aspects of productive thinking and motivation have been identified in the empirical literature as central to entrepreneurship and how the results of the current study advance our understanding of key interdependencies;

- Some of the key similarities and differences between Irish and Iranian groups and between students, entrepreneurs, and academics and their implications for future research;

- Types of cross-cultural factors that might be influential in shaping entrepreneurship and perspective in relation to same and what future research might do to measure key aspects of culture which were not directly measured in this study.

Regarding the second research question focused on cultivating the identified entrepreneurial competencies, six focus groups generated solutions which could be implemented by an e-learning platform in order to enhance students’ productive thinking and motivation (see Tables 5.20 and 5.36). 48 unique solutions for cultivating productive thinking and 47 unique solutions for motivation were generated by the focus groups. These solutions were categorised into 13 themes for productive thinking and 14 themes for motivation. Some commonalities between these themes emerged across productive thinking and motivation solutions, and the final list of the solution themes is presented below (See Table 7.1).
Table 7-1 The list of solution themes and their targeted competencies

<table>
<thead>
<tr>
<th>Theme</th>
<th>Targeted competency</th>
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<tbody>
<tr>
<td></td>
<td>Productive thinking</td>
</tr>
<tr>
<td>Promoting “learning from each other”</td>
<td>*</td>
</tr>
<tr>
<td>Pre-eminence of free thinking</td>
<td>*</td>
</tr>
<tr>
<td>Highlighting practical applications</td>
<td>*</td>
</tr>
<tr>
<td>Valuing experience (learning by doing)</td>
<td>*</td>
</tr>
<tr>
<td>Reflective observation</td>
<td>*</td>
</tr>
<tr>
<td>Involving students in curriculum design</td>
<td>*</td>
</tr>
<tr>
<td>Curriculum integration</td>
<td>*</td>
</tr>
<tr>
<td>Interactive learning environment</td>
<td>*</td>
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<tr>
<td>Stimulating students’ curiosity</td>
<td>*</td>
</tr>
<tr>
<td>Promoting students’ critical thinking</td>
<td>*</td>
</tr>
<tr>
<td>Scaffolding students’ confidence</td>
<td>*</td>
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<tr>
<td>Providing personal development programmes</td>
<td>*</td>
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<tr>
<td>Improving students’ recruitment system</td>
<td>*</td>
</tr>
<tr>
<td>Rewarding students</td>
<td>*</td>
</tr>
<tr>
<td>Increasing transparency in an educational</td>
<td></td>
</tr>
<tr>
<td>environment</td>
<td></td>
</tr>
<tr>
<td>Connecting students to the job market</td>
<td></td>
</tr>
<tr>
<td>Increasing positivity in an educational</td>
<td></td>
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<tr>
<td>environment</td>
<td></td>
</tr>
<tr>
<td>Pushing students hard</td>
<td></td>
</tr>
</tbody>
</table>

When considering these solutions, it emerged that they are significantly aligned with two well-known educational theories: Cooperative and Experiential learning. Therefore, the key features of cooperative learning (positive interdependence, individual accountability, promotive interaction, social skills, and group processing), as well as the main cycles of experiential learning (concrete experience, reflective observation, abstract conceptualisation, and active experimentation) were described and their affordances for implementing those solutions in an e-learning platform were outlined.
In the cooperative learning framework, Positive Interdependence was defined as the perception that helps students to believe that others’ work benefits them and their work benefits others. Individual Accountability was described as assessing each student’s performance and giving back the results to the group and individual. Promotive Interaction was defined as the process that individuals promote each other's success by supporting, encouraging and praising each other's efforts. Social Skills referred to teaching students to enhance their interpersonal and small group skills. And finally, Group Processing was outlined as group members’ discussion about how well they are achieving their goals (Johnson and Johnson, 1999, 2009). In the experiential learning framework, Kolb simply defined Concrete Experience as learning by feeling, Reflective Observation as learning by watching, Abstract Conceptualisation as learning by thinking and Active Experimentation as learning by doing (Kolb, 1984; Kolb et al., 2001).

It was argued that a cooperative-experiential framework might be the most influential and appropriate pedagogical framework for cultivating university students’ Productive thinking and Motivation in a virtual learning environment. This argument was made by making it clear how solutions generated by this study map onto the key features of cooperative and experiential learning frameworks. These maps were highlighted in Chapters 5 and 6. For instance, one of the themes emerged from the solutions of this study was “Promoting learning from each other”. It highlighted the importance of enhancing students and tutors’ communications, interactions and group activities as the rich learning opportunities in the class. Regarding cooperative learning, Eshuis and Stuiver (2005) pointed out that the first step in learning from each other comes from students depending on each other to solve a problem. Through cooperative learning students believe that they ‘sink or swim together’. Therefore, they have two responsibilities: 1) learn the expected material: and 2) ensure that all members of the group learn that material (Roger and Johnson, 1994). This dual responsibility, referred to as ‘positive interdependence’, encourages students to effectively work with and learn from each other within and outside of the learning environment. Also, two cooperative learning techniques named ‘Small-Group Teaching’ and ‘Jigsaw classroom’ which have affordances for implementing the solutions of this theme were outlined. In regards to experiential learning, it was argued that ‘Reflective Observation’ encourages students to critically analyse, evaluate, and reflect on their observations within and outside
the class. If this applies to the learning environment, students are willing to learn from each other’s experiences through reflecting on their observations and conversations. An analysis same to what is presented above has been done for all of the solution themes in order to explore the affordances of cooperative-experiential learning framework for implementing those solutions in a virtual learning environment.

The experiential and cooperative nature of entrepreneurship education is supported by the extant literature. For instance, Cope and Watts (2000) conducted a series of semi-structured interviews with six entrepreneurs to explore what they learned from the critical moments – as the experience-based learning opportunities - in the history of their business. They concluded that implementing experiential learning approaches could effectively enhance students’ entrepreneurial learning. Furthermore, Pittaway and Cope (2007) and Melinda and Kusuma (2009) argued that learning from peers in a cooperative learning environment stimulates entrepreneurial learning. They asked students in a group-based entrepreneurship education programme to reflect on their learning by writing an essay between 1500 and 2500 words. Then, using NVIVO software, they coded students’ reflections and highlighted the importance of cooperative learning mechanisms that afford those interested in starting their own business the opportunity to learn from their peers, experienced entrepreneurs, and small business consultants. In this context, the gaps in cooperative and experiential learning literature on entrepreneurship education, and the contributions of this study to this literature, are both outlined below.

7.3. Contributions of this study

Eight gaps in entrepreneurship education literature were identified and presented in Chapters 1 and 2. They are:

- Lack of consensus about which entrepreneurial competencies are most important to be cultivated in university students
- Lack of exploring entrepreneurial competencies’ interrelationships
- Lack of cross-cultural research on entrepreneurship especially between developing and developed countries
- Limited movement beyond traditional educational methods when teaching entrepreneurship
- Lack of stakeholders’ engagement in identifying entrepreneurial competencies and designing entrepreneurship curricula
- Lack of research about entrepreneurship education in the specific context of virtual learning environments
- Lack of use of technology for enriching entrepreneurship education
- The limited application of qualitative research methods in entrepreneurship research

The key contributions of this study are summarised in light of the gaps above.

**Gap 1: Lack of consensus about which entrepreneurial competencies are most important to be cultivated in university students**

Despite the extant gap in the literature with regard to what entrepreneurial competencies are, grounded in a comprehensive literature review and a significant collective intelligence effort, the current study sought to identify the most important entrepreneurial competencies that need to be cultivated in university students.

In the context of 6 IM sessions that included active participation of Iranian and Irish academics, entrepreneurs, and students, this study contributed to the literature by critical identification of four important high-level entrepreneurial competencies: Productive thinking, Motivation, interpersonal skills and leadership. These competencies may need to be cultivated in university students who intend to become entrepreneurs after their graduation in both Ireland and Iran. A brief review of the top sub-competencies of productive thinking and motivation is provided here.

**Productive Thinking**

In our study, creativity, innovation and ingenuity were identified as the highest ranked component of Productive thinking. The importance and central position of creativity and
innovation for entrepreneurial endeavour has been highlighted in previous research by Schumpeter (1934), McClelland (1961), Martin (1982), and Carland et al. (2007). The other two top components of productive thinking, opportunity identification and tolerance for ambiguity and uncertainty, were also seen as highly important competencies by academics, students and entrepreneurs. Notably, opportunity identification is often highlighted in the entrepreneurial competency literature. For example, Byrne (2010) argues that a firm’s entrepreneurial success is positively associated with its efforts to put key individuals in a position to detect opportunities, train them to be able to do so, and reward them for doing so. Also, Weaver et al. (2009) points out that successful entrepreneurs are capable of recognizing and capitalizing on opportunities. Tolerance for ambiguity, the third most highly ranked component of productive thinking, refers to the extent to which one is comfortable and able to function in situations where there is a high degree of uncertainty and ambiguity as to the nature of the rules governing success or the nature of the problem one is faced with. There is some evidence suggesting that entrepreneurs have a higher tolerance for ambiguity than either senior executives or general managers (Pearson and Chatterjee, 2001; Sapuan et al., 2009). Furthermore, Milton (1989) notes that entrepreneurs not only operate in an uncertain environment, they eagerly undertake the unknown and willingly seek out and manage uncertainty.

Motivation

In relation to motivation, a significant body of literature highlights the importance of both push and pull factors as motivators of entrepreneurs (Moore and Buttner, 1997; Duchéneaut and Orhan, 2000). While push factors are factors that are likely to drive people into entrepreneurship (e.g. the need for greater income, or dissatisfaction with their current employment), pull factors are factors that encourage people to become entrepreneurs, such as the desire for autonomy and independence. It is generally argued that a combination of both push and pull factors capture most of the fundamental entrepreneurial motivations (Orhan and Scott, 2001; Deakins and Whittam, 2000). Notably, all motivational competencies identified in this study (Persistence; Proactivity and hardworking; Need for achievement; Determination; Belief in the effect of personal efforts on outcomes; Task motivation; Competitiveness; and Independence) belong to the pull category. Since the context of
deliberation for working groups in this study focused on students’ intra-personal competencies, it is not surprising that all of the motivational competencies identified are internal pull motivational factors. At the same time, a focus on these pull factors is important for entrepreneurship educators and policy makers. For example, it has been argued that it is important to promote the acquisition of “enterprise” skills and, more specifically, support venture start-up activity through human, physical and working capital provision (Dawson and Henley, 2012). Moreover, with persistence collectively ranked as the number one competence amongst all motivation competencies, a focus on persistence has implications for first time entrepreneurs and the training of persistence in entrepreneurship education programmes. Consequently, the educational environment and context of training and development created in a university setting through formal and informal supports may be essential in reinforcing entrepreneurial intent and persistence in the pursuit of entrepreneurial goals (Lee and Wong, 2004). Drawing upon the logic of participants in the current study, it may be that building confidence, promoting stress and failure coping, and sustaining tolerance for ambiguity in the face of dynamic and changing task demands may need to be critically integrated into the curriculum in order to foster persistence as a core motivational competency.

Interpersonal Skills

Interpersonal skills identified by this study include Communication skills, Networking, Deal making and negotiation, and Emotional Intelligence. Researchers have long recognised interpersonal skills as critical to entrepreneurship. Izquierdo and Deschoolmeester (2010) and Hynes et al. (2009) argued that entrepreneurs have to be able to persuade people and communicate with various stakeholders including customers, clients, suppliers, competitors, and service providers. Moreover, competencies such as networking, deal making and emotional intelligence are aligned to the development of ‘relational capital’ which emphasizes the development of productive business networks (Pena, 2002). Hormiga, Batista-Canino and Sanchez-Medina (2011) describe relational capital as the value generated by entrepreneurs via their relations with suppliers, customers, investors but equally with internal stakeholders in their organisation and friends and family.
Managerial (Leadership) Competencies

In the current study, participants highlighted the importance of leadership and management ability, and also change management, goal making, talent management, and the ability to make a decision. The emphasis on managerial competency has a long tradition in the literature on entrepreneurship and was highlighted in one of the earliest definitions of an entrepreneur: Cantillion (circa, 1700) described an entrepreneur as a rational decision maker who assumed the risk and provided management for the firm (See Kilby, 1971). Later, however, Schumpeter linked entrepreneurship with “Strategic Decision making” and many studies were conducted to demonstrate the usefulness of a distinction between managers and entrepreneurs (Hartman, 1959). It may be that historical trends in the literature reflect a tradition of focusing on different competencies at different times, possibly reflecting a change in perspective over time as researchers continue to conduct research in the area and as the social and cultural conditions of entrepreneurship change.

Notably, all of the four competencies identified in this study are categorised as soft ‘know-how’ competencies. These competencies are defined in the literature as the most influential but most difficult entrepreneurial competencies to be cultivated in university students. It can be argued that these competencies are necessary in order to educate students ‘for’ entrepreneurship and not only ‘about’ entrepreneurship. While four competencies above (Productive Thinking, Motivation, Interpersonal Skills, and Management) were selected as the most influential entrepreneurial competencies, for the purpose of developing solutions, the top 2, which received the vast majority of votes, were the main focus of enquiry. Therefore, this study suggests two important high-level entrepreneurial competencies - Productive thinking and Motivation - which should be cultivated in university students who intend to become entrepreneurs. These finding facilitates a deeper understanding of competency systems and how a curriculum could be designed to cover these competencies. It facilitates the determination of the ‘scope’ of entrepreneurship curricula, which represents one of the most significant challenges in designing curricula to promote entrepreneurial competencies (Nekka & Fayolle, 2010). This challenge addresses identifying a set of entrepreneurial competencies as valid targets (scope) for entrepreneurship education in universities.
Gap 2: Lack of exploring entrepreneurial competencies’ interrelationships

Despite the importance of exploring interrelationships among the entrepreneurial competencies, to the best of our knowledge, none of the previous empirical studies in the area of entrepreneurial competencies explored this issue. Drawing upon the consensus logic of stakeholders, the current study sought to explore the cause-effect interrelationships between key entrepreneurial competencies that need to be cultivated in university students, specifically, to help achieve a better understanding of the nature of those competencies as well as the sequence of an entrepreneurial education curriculum.

The interrelationships between the entrepreneurial competencies have been initially shown in the enhancement structures generated by the five IM groups of this study (see Chapter 4 for more details) and are summarised here.

In the sample as a whole, the critical mass and total influence scores for categories of competencies suggest that a focus on Productive thinking competencies may serve to significantly enhance specific Motivation, Interpersonal, and Leadership competencies. For instance, Irish students regard Opportunity identification as the important driver of some other competencies such as Information seeking ability, Intuitive ability, and Strategic thinking. Also, Iranian students believe Tolerance for ambiguity is the most critical driver of all other competencies including Persistence, Negotiation, Intuitive, Risk taking, Adaptability, Need for achievement, Proactivity, Creativity, and Information seeking ability.

In the current study, discourse analysis suggested that some of these Productive Thinking competencies such as ‘Opportunity identification’ and ‘Add value’ were conceptually related competencies, and, looking more closely at the enhancement structures, a number of similarities were observed in the antecedents and succeedents of these conceptually related competencies. Notably, Opportunity identification and Add value were found to be driven by a similar set of competencies including: Tolerance for ambiguity and Adaptability and flexibility. Moreover, another set of competencies - Tolerance for ambiguity, Tolerance for uncertainty, and Risk-taking – were found to be conceptually overlapped. Interestingly, these three competencies similarly placed in the enhancement structures and influenced a number of common competencies, including Adaptability and Flexibility, Persistence, Creativity and
Innovation.

It was argued that identifying interdependencies amongst the entrepreneurial competencies can facilitate the determination of the ‘sequence’ of entrepreneurship curricula, which represents the optimal design of a logical, orderly, cumulative framework for developing the targeted competencies (Nekka & Fayolle, 2010). In line with Novak and Cañas (2008), we believe that enhancement structures generated by this study provide a template or scaffold to facilitate developing entrepreneurial competencies through structuring them. This structure must be built up piece by piece with small units of interacting competencies. This structure provides a sequence in training entrepreneurial competencies by suggesting that the most influential competencies have to be targeted by educational programmes first. This sequence can be defined in two levels:

- Overall, since Productive thinking competencies may serve to significantly enhance specific Motivation, Interpersonal, and Leadership competencies, they have to be addressed by entrepreneurship education programmes first. This may strengthen the following educational programmes for stimulating students’ Motivation, Interpersonal, and Leadership competencies.
- Specifically, enhancement structures could provide some suggestions for the sequence of addressing entrepreneurial sub-competencies by entrepreneurship education programmes. For instance, tolerance for ambiguity was selected as important by three out of the five expert groups and was mostly placed at Level 1 and 2 in the enhancement structures, which suggests that independent groups perceived it to be a critical driver of other entrepreneurial competencies. Tolerance for ambiguity was argued to enhance many other entrepreneurial competencies including Adaptability, Negotiation, Opportunity identification, Persistence, Creativity and Need for achievement. Therefore, it can be suggested that in order to effectively stimulate these entrepreneurial competencies, first, Tolerance for ambiguity needs to be cultivated in students.

This sequence should allow for what Bruner refers to as the ‘courteous translation of knowledge’ (1960, cited in Lawton, 2011) that is reflective of the epistemology of the domain (entrepreneurship) and sequenced in a developmental process (derived from participant input) to support conceptual growth and the ability to demonstrate competencies. Determining the scope and sequence of preferred entrepreneurial competencies to be
educated in universities has also the potential to enhance the coherence of related educational programmes in universities (Rezaei-zadeh et al., 2014).

**Gap 3: Lack of cross-cultural research on entrepreneurship especially between developing and developed countries**

Despite the growing interest in cross-cultural studies in the area of entrepreneurship, there are a number of limitations and gaps in our knowledge. Two of these limitations are: the lack of cross-cultural entrepreneurial studies comparing developed and developing countries; and, the use of frameworks for interpreting cultural differences which are not necessarily appropriate for the field of entrepreneurship.

With regard to the first limitation - the lack of cross-cultural entrepreneurial studies comparing developed and developing countries - in an effort to advance the literature in this regard, the current study sought to examine similarities and differences in the nature of entrepreneurial competencies and competency systems that are identified, ranked, and structured by stakeholders in Iran and Ireland.

Regarding the differences between Iranian and Irish participants, for example, some competencies such as Task motivation, Need for achievement, Imagination, and Talent management were only identified by Iranian entrepreneurs and were not identified by any of the Irish groups. Interestingly, with regard to Task motivation and Need for achievement, Pillis (1998) found no relationship between the level of achievement motivation and entrepreneurial intentions in an Irish sample, suggesting that the level of achievement motivation is not a critical marker of entrepreneurial activity in an Irish context. Also, while a broad literature supports that Irish people are innovative in areas such as literature, drama, visual arts (Bayliss, 2004), and traditional dance and music (Cinneida and Henry, 2007), Pillis (1998) suggests that, in the Irish context, “it may be difficult to conceive of venturing outside expected norms of behaviour to become an entrepreneur” (p.11). In contrast, some competencies were identified by Irish experts only, including Competitiveness, Independence and Financial and cash management. In relation to Independence, for instance, there are cultural differences between Iran and Ireland. For example, traditional Iranian
culture values dependency and interdependency among youth and adults (Gable, 1959), and the Iranian National Curriculum Policy (Iranian Ministry of Education, 2012) does not seek to explicitly enhance students’ independence as such; in contrast, it focuses on highlighting the role of students’ family as a key factor in students’ educational success. Conversely, the stated objectives of Irish universities often includes fostering students’ independent thinking (Kenny et al., 2009) and the overall objective of Irish first level curriculum includes: “Fostering children’s natural curiosity to develop independent enquiry and creative action” (Irish Department of Education and Science, 2004).

On the other hand, there are many commonalities between Iranian and Irish participants’ ideas regarding the most important entrepreneurial competencies such as: Leadership and Management; Belief in the effect of personal efforts on outcomes; Determination; Need for achievement; Communication skills; Deal making and negotiation; Creativity and Innovation; Opportunity identification; evaluation and grasping; Persistence; Willing to take on challenges; Self-confidence; and Positive attitude. It may be that these competencies are necessary for entrepreneurs working in a variety of different contexts and those who are less determined by social and cultural environments. Interestingly, there was some consensus in the level placement of these common competencies across different enhancement structures. For example, communication was placed at Levels 3 and 4 in three structures (i.e., Irish entrepreneurs, Irish students, and Iranian entrepreneurs) and it was driven by common motivational competencies - Determination and Persistence - in two of these structures.

The second potential limitation of cross-cultural research to date is the use of frameworks for interpreting cultural differences which are not necessarily appropriate for the field of entrepreneurship. Hofstede’s cultural dimensions theory has dominated much of the literature on entrepreneurial culture (e.g., Williams and McGuire, 2010; Brinckmann et al., 2010; Gupta et al., 2004; Hofstede et al., 2002; Mueller and Thomas, 2001, Thomas and Mueller, 2000; Mitchell et al., 2000; Steensma et al., 2000; Shane, 1993; Baum et al., 1993; McGrath et al., 1992). Hofstede’s cultural dimensions theory provides six lenses for characterising cultures within different borders. These dimensions are: Power distance, Individualism, Masculinity, Uncertainty avoidance, Pragmatism, and Indulgence. The data for Hofstede’s cultural comparison has been derived from an employee opinion survey in over 70 national subsidiaries of IBM around the world. However, there have been some
criticisms with regard to applying this theory in cross-cultural entrepreneurial studies, including the argument that it was originally developed to understand management practices and may thus be less relevant to the field of entrepreneurship (Hayton et al., 2002; Busenitz et al., 2000). Therefore, it was argued that Hofstede's measures of culture, alone, do not adequately describe cross-country differences in entrepreneurial activity. Having said that, since Hofstede’s cultural dimensions are dominantly used in cross-cultural entrepreneurship studies, they have been described in Chapters One and Two and Iran and Ireland have been compared across these dimensions. A summary of this comparison presented below in order to interpret the cross cultural similarities and differences found between Iranian and Irish participants’ ideas with regard to Productive Thinking and Motivation solutions.

Table 7.2 compares the number and percentage of solutions generated by Iranian and Irish participants within the different themes. Owing to the fact that Iranian participants generated more solutions than their Irish counterparts, to give a more accurate comparison, the percentage of solutions generated by both groups has been taken into account for this comparison.

<table>
<thead>
<tr>
<th>Solution Theme</th>
<th>Solutions generated by</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Iranian</td>
</tr>
<tr>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>Promoting “learning from each other”</td>
<td>9</td>
</tr>
<tr>
<td>Pre-eminence of free thinking</td>
<td>2</td>
</tr>
<tr>
<td>Highlighting practical applications</td>
<td>9</td>
</tr>
<tr>
<td>Valuing experience (learning by doing)</td>
<td>12</td>
</tr>
<tr>
<td>Reflective observation</td>
<td>4</td>
</tr>
<tr>
<td>Involving students in curriculum design</td>
<td>6</td>
</tr>
<tr>
<td>Curriculum integration</td>
<td>0</td>
</tr>
<tr>
<td>Interactive learning environment</td>
<td>9</td>
</tr>
<tr>
<td>Stimulating students’ curiosity</td>
<td>2</td>
</tr>
<tr>
<td>Promoting students’ critical thinking</td>
<td>5</td>
</tr>
<tr>
<td>Scaffolding students’ confidence</td>
<td>5</td>
</tr>
<tr>
<td>Theme</td>
<td>Iran</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Providing personal development programmes</td>
<td>9</td>
</tr>
<tr>
<td>Improving students’ recruitment system</td>
<td>4</td>
</tr>
<tr>
<td>Rewarding students</td>
<td>0</td>
</tr>
<tr>
<td>Increasing transparency in an educational environment</td>
<td>2</td>
</tr>
<tr>
<td>Connecting students to the job market</td>
<td>4</td>
</tr>
<tr>
<td>Increasing positivity in an educational environment</td>
<td>3</td>
</tr>
<tr>
<td>Pushing students hard</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>85</td>
</tr>
</tbody>
</table>

The Iranian participants - compare to the Irish ones – have devoted higher percentage of their generated solutions to the following themes:

- Highlighting practical applications,
- Valuing experience (learning by doing),
- Involving students in curriculum design,
- Interactive learning environment,
- Providing personal development programmes, and
- Increasing positivity in an educational environment

The rationale behind the differences above could be better understood by reviewing the cultural contexts of these two countries. As it was mentioned before, Hofstede’s cultural dimensions and its comparative data have been used hereafter for this cultural comparison. Iran and Ireland have been compared across these dimensions and the results of this comparison have been extracted from the online ‘Country Comparison’ tool provided at Hofstede’s website (http://geert-hofstede.com/countries.html) (See Chapter 2 for the full results). For instance, it was argued by Hofstede that Iran is considered a collectivistic society. It fosters strong relationships where everyone takes responsibility for fellow members of their group. In collectivist societies hiring and promotion decisions take account of the employee’s in-group, and management is the management of groups. In contrast, Ireland, compare to Iran, is classified by Hofstede as an individualistic culture. Employees
are expected to be self-reliant and display initiative and hiring and promotion decisions are based on merit or evidence of what one has done or can do (Hofstede, 2014). This cultural difference between Iran and Ireland sheds some light upon why Iranian participants dedicated more percentage of their solutions to group-based and interactive learning. In other words, some themes such as Involving students in curriculum design, and Interactive learning environment are more compatible with the collectivistic Iranian society rather individualistic Irish culture.

Furthermore, according to Hofstede’s cultural comparison data extracted from his online ‘Country Comparison’ tool, Iran, compare to Ireland, relatively has a culture of restraint. Hofstede (2014) pointed out that these societies have a tendency to pessimism. Perhaps due to this cultural background, Iranian participants, in contrast to their Irish counterparts, highlighted the importance of increasing students’ positivity in the educational environment.

On the other hand, the Irish participants in comparison to their Iranian counterparts have devoted higher percentage of their own suggested solutions to the following themes:

- Rewarding students,
- Pre-eminence of free thinking
- Reflective observation,
- Increasing transparency in an educational environment, and
- Pushing students hard

Again, cultural context of Irish society helps us to have a better understanding of some of these differences. According to Hofstede’s cross cultural comparison data retrieved from his online ‘Country Comparison’ tool, despite the relatively feminine Iranian society, Ireland is a masculine society – highly success oriented and driven. Behaviour in school, work, and play are based on the shared values that people should strive to be the best they can be and that the winner takes all. The Irish are proud of their successes and achievements in life, and it offers a basis for hiring and promotion decisions in the workplace. Conflicts are resolved at the individual level and the goal is to win. Taking this cultural context into account, it may help to explain why ‘rewarding students’ has only been mentioned by Irish participants in this study.
Furthermore, according to Hofstede’s cultural comparison data, Iran has a high preference for avoiding uncertainty; and therefore, innovation may be resisted and security is an important element in individual motivation. Unlikely, since Ireland has a low score on uncertainty avoidance, ideas are important and being imaginative is appreciated in this society. Therefore, Irish businesses embrace creativity and are always looking for new ways to approach problems (Hofstede, 2014). This cultural context provides a better understanding about why Irish participants of this study, in comparison with their Iranian counterparts, dedicated more percentage of their solutions to ‘pre-eminence of free thinking’.

Despite the differences between solutions generated by Iranian and Irish participants, there is also a considerable level of commonality between them. The percentage of solutions generated by Iranian and Irish participants in some themes is almost the same. These themes are:

- Promoting “learning from each other”,
- Stimulating students’ curiosity,
- Promoting students’ critical thinking,
- Scaffolding students’ confidence,
- Improving students’ recruitment system, and
- Connecting students to the job market.

In some cases of these commonalities, while there is a considerable difference between Iranian and Irish cultural contexts, both of these groups agreed on a solution theme. For instance, Hofstede’s cultural comparison data suggested that creativity and risk taking are more embraced by Irish people in comparison with Iranians. However, despite this different cultural background in terms of uncertainty avoidance, both Iranian and Irish participants highlighted the importance of: Stimulating students’ curiosity, and Promoting students’ critical thinking which are in an effort to promote students’ creativity and innovation. Furthermore, while, according to Hofstede, Ireland is classified as an individualistic and Iran is categorised as a collectivistic society, our participants from the both countries highlighted the importance of ‘learning from each other’ as a rich source of entrepreneurial learning.

To sum up, a number of similarities and differences have been identified between Iranian and Irish participants of this study in regards to both identifying ‘entrepreneurial
competencies’ and their ‘cultivating approaches’. These similarities and differences were discussed and the impact of culture upon them was outlined above. Four conclusions can be made based on these discussions.

First, as can be seen above, while Hofstede’s cultural dimensions can help us to gain a better understanding about the cross-cultural differences in the context of entrepreneurship, in some cases it cannot provide a rational for interpreting cross-cultural differences and similarities in the context of entrepreneurship. Furthermore, some of Hofstede’s measures of culture are questionable. For instance, Hofstede classified Ireland as an individualistic country. In contrast, Ireland ranked no. 1 in the recent ‘good country index’ which measures contribution to humanity (http://www.goodcountry.org/overall). Moreover, OECD Better Life Index reported that there is a strong sense of community and moderate levels of civic participation in Ireland, where 95% of people believe that they know someone they could rely on in time of need, higher than the OECD average of 89% (http://www.oecdbetterlifeindex.org/countries/ireland/). Therefore, in line with Hayton et al. (2002) and Busenitz et al. (2000), it can be argued that Hofstede's measures of culture, alone, do not adequately describe cross-country differences in the context of entrepreneurship. To have a better and more complete understanding of interplay between culture and entrepreneurship, further information from other resources such as Global Entrepreneurship Monitor (GEM), OECD, Gallup, and national reports and databases should be used.

Moreover, specific attention should be paid to other variables which affect the interrelationship between culture and entrepreneurship. Oviatt and McDougall (2005), highlighted some of these variables by pointing out that interrelationship between entrepreneurship and culture is complicated and is affected by a number of enablers (e.g. transportation, communication and digital technology), motivators (e.g. competitors), mediators (e.g. entrepreneurs’ personal characteristics and psychological traits), and moderators (e.g. knowledge-intensity of the opportunity). These variables help us to better understand what was found by Freytag and Thurik (2007). Using Eurobarometer survey data (some 8,000 respondents) from the 25 member states of the EU as well as the US for the year 2004, they found that culture seems to explain the preference for entrepreneurship, but not actual entrepreneurship. It was concluded that while the preference for self-employment can be traced back to culture, the actual decision is determined rather by hard economic
factors such as tax rates, direct regulatory burden and the level of unemployment. Therefore, the second conclusion of this part of the study is that ‘culture’, alone, do not adequately describe cross-country similarities and differences in the context of entrepreneurship. Other determinants of entrepreneurship such as economic, politic, infrastructures (technology, communication, transport), and individual characteristics of people in different countries have to be taken into account in an entrepreneurship cross-country study.

Third, the study also highlights the value of considering the cultural, social and economic contexts of entrepreneurship, which may have implications for understanding which competencies are valued in different contexts and what implications this might have for the design of training programmes. Notably, the similarities and differences between Iranian and Irish participants in identifying competencies and generating solutions highlight their common and different preferences and expectations from an entrepreneurship education programme. This provides a contextually relevant understanding of entrepreneurship education programmes and suggests that the cultural, economic, and infrastructural contexts have to be taken into account if these programmes are to be effective. This is in line with Dodd and Hynes (2012) who argued that context a) shapes the institutions within which entrepreneurship education is embedded themselves; and b) takes the form of storying entrepreneurship, of presenting credible local identities and expressing the meaning of entrepreneurship for these communities.

Fourth, in line with Oviatt and McDougall (2005), Freytag and Thurik (2007), and Dodd and Hynes (2012), this study moves beyond more static models of the connection between culture and entrepreneurship and suggests that dividing countries into “developing” and “developed” categories may cloud our understanding of the subtle similarities and differences across cultures. A similar argument has been made by Oyserman et al. (2009), who found that the gross distinction between individualist and collectivist mind-sets do not always hold true under close scrutiny.
Gap 4: Limited movement beyond traditional educational methods when teaching entrepreneurship

As it was mentioned in Chapter 2 of this study, there is a lack of generating unconventional teaching methods which could affect students’ entrepreneurial competencies. This is especially important when we are talking about students’ right-brain thinking and stimulating their soft know-how competencies such as creativity, pro-activeness, leadership, and risk taking propensity which are highlighted by the current study. Against this context, taking into account the definitions and examples of traditional and unconventional teaching methods presented in Chapter 2, while the most of solutions generated by this study can be categorised as unconventional teaching methods, a few of them can also be defined as traditional ones. For example, applying brain-storming, participatory teaching-learning, peer-teaching, semi-structured and flexible educational planning, using educational games and simulators, personal development programmes, self- and peer-assessment, putting students in the position of group leadership, and outlining practical applications of modules can be categorised as the unconventional teaching methods. In contrast, business plan writing is an example of a traditional teaching method in the area of entrepreneurship. While the majority of these solutions are non-traditional and sought to stimulate students’ intuition by emphasising on their right hemisphere, a few number of traditional teaching methods which target students’ rationality by emphasising on their left hemisphere are also included in the package of solutions generated by this study. This combination of traditional and non-traditional teaching methods is consistent with the arguments made by previous entrepreneurship commentators. For instance, Kirby (2004, 2007) argued that while successful entrepreneurs prefer right-brain thinking, both intuitive and rational thinking are needed in order to develop students’ entrepreneurial competencies; and therefore, a few number of traditional methods alongside the non-traditional methods are useful to be included in entrepreneurship education programmes.

The characteristics of an appropriate entrepreneurship education method outlined above are much aligned with cooperative learning key features (positive interdependency, individual accountability, promotive interaction, social skills, and group processing) and experiential learning major cycles (concrete experience, reflective observation, abstract conceptualisation, and active experimentation). The affordances of cooperative-experiential
learning for implementing the solutions generated by this study are outlined in Chapters 5 and 6 and are briefed in below.

A. Cooperative Learning
   a. Positive interdependence

A relatively high number of solutions generated by this study values experience and encourages students to learn by doing. For instance, students are suggested to launch a business and do a trial start-up. This task is a complex work that requires different expertise and abilities to be completed. For example, students need to be advised with regard to the legal, financial and marketing issues. They cannot possess all of the required skills for launching a business. Therefore, students feel a positive interdependence to their tutors, advisors and classmates to achieve their goals. All four dimensions of positive interdependence including ‘goal’, ‘reward’, ‘resource’ and ‘role’ have affordances here. ‘Positive Goal Interdependence’ encourages and unites them to define and try to achieve their common goal (in this case, launching a business). ‘Positive Reward Interdependence’ provides a cooperative instead of a competitive reward for whole of the group including student, tutor, advisor and perhaps his/her classmates when they achieve their goal by launching the business. ‘Positive Resource Interdependence’ helps students to be benefitted from others’ resources, information or materials necessary for the task to be completed. And finally, ‘Positive Role Interdependence’ assigns a complementary and interconnected role to each member in the group that specify responsibilities that the group needs in order to complete the joint task. These four dimensions of positive interdependence motivate students and their teammates to cooperatively work in order to do their practical tasks within and outside of the class.

It was also argued that positive interdependence obligates students to a dual responsibility to learn the expected material and ensure that all members of the group learn that material. This dual responsibility is supposed to facilitate ‘learning from each other’ which was suggested by this study.

   b. Individual accountability

Since most of the solutions generated by this study promote group-based learning activities,
it is important to make sure that there is no student(s) in the group seeking a free ride. Otherwise, it would be possible that individual students do not do their tasks within the group in some solutions such as participatory teaching activities, involving students in the establishment of assessment criteria, self- and peer-assessment, and peer-teaching.

Another solution of this study suggested that the number of students in each class should be reduced. This is in line with individual accountability which proposes that as much as the size of the group is smaller, the possibility of doing the fair share of the joint work by individual students is greater.

Another solution made by this study recommended that a known assessment strategy (no anonymous) should be applied in the class. It means that all students in a group should be aware of the results of each group member’s assessment results. In line with this solution, individual accountability proposes that when the performance of individual students is assessed, the results have to be given back to both the individual and the group, and the student is held responsible by group mates for contributing his or her fair share to the group’s success. This assessment pushes each student as a member of the cooperative group to work hard in order to be a stronger individual in his or her own right. That is why, after participating in a cooperative lesson, group members should be better prepared to complete similar tasks by themselves. This application of individual accountability facilitates implementing another solution generated by this study which recommends to push students hard by more exams.

c. Promotive interaction

Promotive interaction requires students to generate as many ideas as possible and discuss the nature of the concepts being learned in the class. Therefore, it facilitates implementing brainstorming in the class which is suggested by this study. Moreover, it promotes opportunity of face-to-face interactions among group members. Hence, it facilitates another solution generated by this study which encourages students to enhance their communications and interactions with each other and with their learning environment. Furthermore, it could be argued that other students’ support, feedback and admiration helps students to maintain a moderate level of arousal, characterized by low anxiety and stress through acting in trusting
and trustworthy ways; and being motivated to strive for mutual benefit. Therefore, promotive interaction facilitates providing a calm and no-stress environment for students in the class which is suggested by this study.

Another solution of this study suggested that joint rewards should be offered to the student teams who work better in order to facilitate their learning. Promotive interaction facilitates offering joint rewards through motivating students to promote each other’s efforts by helping, assisting, supporting, encouraging, and praising each other. It also encourages students to take part in two other solutions named ‘peer-teaching’ and ‘peer-assessment’ since it gives students accountability to their peers and ability to influence each other's reasoning and conclusions.

d. Social skills

It was suggested by this study that students should be put in the position of group leadership. In line with this solution, social skills feature of cooperative learning requires students to be taught in order to enhance their interpersonal and small group skills such as: leadership, decision-making, trust-building, communication, and conflict-management skills just as purposefully and precisely as academic skills. These skills are also required for students’ interaction and communications with each other. Without these social skills, they cannot cooperatively work with and learn from each other in the class activities. Johnson and Johnson (1991) mentioned that the whole field of cooperative group dynamics is based on the premise that students’ social skills are the key to group productivity.

e. Group processing

Participants of this study suggested that elements of previous modules should be integrated into the module being delivered where applicable. It was argued that connecting and scaffolding modules together helps to enhance curriculum coherence and students’ achievement in terms of the course learning outcomes. However, there is a lack of connection between modules as student move from one lecturer to another, each starting anew with a very discrete focus. Cooperative learning has an affordance to diminish this drawback by facilitating the discussion between students and tutors about how well they are achieving their goals and maintaining effective working relationships by describing what
member actions are helpful and unhelpful and making decisions about what behaviours to continue or change to solve the problems and work together effectively (group processing).

This process, which tends to value students’ voice, has an affordance for implementing another solution which requires students to evaluate their educational system. This evaluation is worthwhile only when its results are implemented to improve the current situation and solve ongoing problems. Group processing helps students and tutors to make decisions in order to implement students’ evaluation in the educational system.

Furthermore, a group of the solutions generated by this study highlighted the importance of seeing students’ theoretical studies from a practical perspective. They advised that students’ feedback regarding the practicality of their modules should be taken in order to map students’ required skills onto their studies. Johnson and Johnson (1991) pointed out that cooperative learning facilitates the process of getting this feedback (group processing) in order to: 1) identify what student actions were helpful or unhelpful; and 2) make decisions about what activities to continue or change. This feedback could provide a good resource for assessing the practicality of students’ modules and learning activities. Roger and Johnson (1994) pointed out that this group processing could be done on two levels: in small groups and with the whole class. While the feedback provided in the first level addresses each small group of students’ cooperative activities, the latter one combines the feedback results of the small groups and provides a report for the whole class.

Notably, the nature of cooperative feedback in group processing stage is more ‘formative’ and constructive. Johnson and Johnson (1991) pointed out that the main aim of assessing individuals in the groups is to know that who needs more assistance in completing the assignment. Therefore, other students in the group as well as the tutor could help the weak student(s) in order to reduce their stress, improve their contribution in the group, and enhance their learning in the group. This feedback is aimed to positively describe member actions in the group and provide information for making decisions about what actions to continue or change. Roger and Johnson (1994) stressed that the positive side of this feedback has to be emphasised in group processing. Therefore, it could help students to build their confidence in a positive learning environment. This feature facilitates implementing another group of solutions generated by this study which sought to scaffold students’ confidence
through providing a calm and no-stress environment.

Group processing has an affordance for some other solutions of this study as well. For instance, in line with one of the solutions made by this study, it helps students to reflect on their curriculum and provide feedback in order to help their curriculum designers and tutors to make decisions about what components of the curriculum should continue or be changed. The purpose of group processing here is to clarify and improve the effectiveness of the members in contributing to the curriculum to achieve the group’s goals.

B. Experiential learning

Exposing students to study the cases relevant to their course is one of the solutions generated by the participants of this study. It was argued that the case study approach to teaching students in higher education, if properly facilitated, is an effective way to provide students with the opportunity to become involved in all four cycles of Kolb’s experiential learning framework. When students are introduced to the case, they become engaged with a real life situation (concrete experience). Then, they need to reflect on the case being studied by analysing the problem in order to distinguish its overt symptoms from its underlying causes. At this stage, students begin to brainstorm on alternative problem-solving strategies. Here, students’ intuition and creative faculties are called upon. While being judgmental is not part of this learning phase, learners are encouraged to generate as many alternatives as possible without considering their implications (reflective observation). Then, students evaluate each alternative for its possible consequences, select the best alternative and develop a theory or hypothesis to explain and solve the problem (abstract conceptualisation). Finally, they need to put their ideas into practice and test their feasibility by designing an implementation plan to experiment with their solution strategy (active experiment).

Stimulating students’ questioning skills is another solution suggested by this study. Again, experiential learning seems to have some affordances for this solution. In fact, a person who wants to learn through experiential learning cycles needs to respond to a unique question at each stage. As was mentioned by Murphy et al. (2012), in the first cycle (concrete experience), the question is: “what happened?” In the second cycle (reflective observation) s/he needs to reflect on his/her feelings by asking the question that “what did I experience?”
The third cycle is to review and reconceptualise the findings by asking this question that “why did this happen?”; and finally, the fourth cycle is for finding the applications of the findings for the future by asking “what will I do?” As could be seen in the above, questioning is one of the core skills required to do experiential learning. Therefore, it could be argued that experiential learning is much aligned with enhancing students’ questioning skills and it affects students’ journey through all four cycles of experiential learning.

The experiential learning affordances can be assumed for other solutions generated by this study as well. A summary of some of these affordances is presented below.

a. Concrete experience

Concrete experience –as the first step in experiential learning cycle- encourages students to take part in some of the solutions suggested by this study, such as: involving in the curriculum design, engaging in participatory teaching methods, peer-teaching, peer-learning, and working in industry and workplaces.

b. Reflective observation

Reflective observation encourages students to actively take part in some solutions such as: getting students’ feedback regarding the practicality of their modules, expressing their expectations from their studies and their tutors, and applying brainstorming in the class. Reflective observation also encourages students to reflectively observe everything surrounding them as potential learning opportunities and resources. Therefore, it facilitates implementing some solutions such as: reviewing stories of other entrepreneurs, site visits, and case studies. Through reflective observation, students are required to reflectively and critically think about the problem being studied and, then, provide the possible solutions to solve that problem. Therefore, it is also supposed to have an affordance for another solution which addresses enhancing students’ critical thinking through stimulating their problem solving ability.

c. Abstract conceptualisation

Abstract Conceptualisation encourages students to formulate tentative hypotheses for generalizations based in these theories and their related experience. Therefore, it can help
students to have a better performance when they are required to compare themselves with achievers in case studies, site visits, and reviewing stories of other entrepreneurs. According to the description provided for these solutions, students are required to learn and generalise their understanding from the case being studied in order to use this learning in their own similar cases.

d. Active experimentation

Active experimentation is assumed to help students to make their goals and plan for their futures based on their previous observation, reflection and information. Another solution suggested by this study highlights the importance of illustrating practical applications of modules to students. In line with this solution, active experimentation encourages students to think and find the practical applications that they could get from their studies towards their future. This mind-set helps students to see their studies from a practical lens and consider the applications of the given module/course in their real life. In this case, it could be expected that they are more motivated to have a better achievement in their studies.

So what?

In line with Murphrey (2010), we believe that while the benefits of experiential and cooperative learning activities have been well documented by previous studies, little focus has been placed on designing cooperative and experiential learning opportunities within the educational environments, in general, and in online learning environments, specifically. Furthermore, while there is an almost common understanding that traditional methods are inappropriate for teaching entrepreneurship, non-traditional cooperative and experiential learning have not been a strong feature of entrepreneurial education programmes, which have focused instead on lectures and business plan writing methods. Requiring trainers to spend more time providing continual feedback to students and requiring institutions to spend money and allocate more resources and facilities for both the trainer and student in smaller class sizes are some of the factors that prevent academics and universities from using the appropriate educational methods in entrepreneurship programmes (see Garavan and O’Cinneide, 1994; and Mwasalwiba, 2010). The contribution of this study to the current literature, therefore, should be summarised as: suggesting a hybrid cooperative-experiential
curriculum for entrepreneurship and also generating a variety of solutions for improving cooperative and experiential learning. This curriculum is supposed to provide a non-traditional framework which stimulates students’ right-hemisphere in order to enhance their soft know-how competencies such as their creativity, imagination, risk taking propensity, hard-working, etc. It can be argued that without such an evolution and radical movement to non-traditional teaching systems, entrepreneurship education programmes cannot be effective in cultivating students’ entrepreneurial competencies and mind-set. Most of the students and entrepreneurs and even academics engaged with this study were unsatisfied with the current entrepreneurship education programmes. That is why most of the successful entrepreneurs did not attend university formal courses and preferred to learn in the real environments. Therefore, if universities want to be an effective part of their societies and change their current passive role, they must change their current dominant teaching-learning approaches. This study provides some solutions which should be replaced with most of the traditional teaching methods of universities.

Since covering all five key features of cooperative learning and four cycles of experiential learning are recommended for achieving more powerful and effective learning environments focused on enhancing Productive thinking and Motivation, notably, the detailed discussions in Chapters 5 and 6 summarised above illustrate that the solutions generated by this study cover all of those dimensions. This implies that incorporating a combination of these cultivating approaches in an e-learning platform could effectively enhance the effectiveness of that online environment in enhancing the key entrepreneurial competencies of Productive thinking and Motivation.

One of the features of these cooperative-experiential solutions, which may allow for the training of entrepreneurial competencies to be extended across a variety of different fields of study and departments, is that the majority of them address the ‘teaching approaches’, specifically, by focusing on the unconscious teaching-learning and assessment procedures and rules rather than designing, pilot testing and publishing a ‘specific content’, which can be only applied to a specific course or programme. For instance, when practical applications of studies are highlighted for students or when they are required to learn from each other through conducting concrete experiences, they are not told that these procedures are to
impact upon their Productive Thinking and Motivation. These outcomes will be unconsciously achieved through students’ participation in these solutions. Therefore, one of the recommendations of this study is that it may not be necessary to design and implement a new module or course for enhancing students’ entrepreneurial competencies. Instead, a set of processes focused on aspects of teaching and learning, assessment, and student support could be applied to any module and in any e-learning environment, possibly coupled with more focused exercises designed to promote and support specific entrepreneurial competencies.

Gap 5: Lack of stakeholders’ engagement in identifying entrepreneurial competencies and designing entrepreneurship curricula

Another limitation of previous studies that is addressed in this study is the limited engagement with stakeholders in identifying entrepreneurial competencies and their cultivating approaches. Against this context, this study sought to explore the ideas of three internal and external entrepreneurship curriculum stakeholder groups in relation to the most important entrepreneurial competencies, their interdependencies, and key solutions that can be used to cultivate them. From an ‘internal’ educational point of view, the results of this study could benefit 1) students to develop a better understanding of entrepreneurial competencies and how they can be cultivated in an e-learning environment; and 2) academics to have a better perception of students and entrepreneurs’ preferences in order to improve their entrepreneurship education programmes. From an ‘external’ practical perspective, future entrepreneurs could benefit from this study through an enhanced entrepreneurship education that may effectively enhance students’ entrepreneurial competencies and the future potential of their entrepreneurial activities. More generally, the approach adopted in this study may also help the broader community to have a better understanding of stakeholders’ preferences, needs and learning patterns. This understanding has implications for how entrepreneurship education initiatives are designed, delivered and assessed to meet the needs of different stakeholders. It can be argued that without meeting stakeholders’ needs, entrepreneurship education programmes cannot be successful and efficient because perhaps they target some other competencies and capabilities which are not in the priority of their stakeholders. This requirement (engaging curriculum stakeholders)
can complete the impact of the previous requirement of an effective entrepreneurship education programme (moving from traditional to non-traditional cooperative-experiential teaching methods).

**Gap 6: Lack of research about entrepreneurship education in the specific context of virtual learning environments**

Lawless et al. (2000) compared face-to-face and distance training modes of entrepreneurship education programmes in the UK and Ireland, and identified some key differences in implementing these programmes in these two modes, including size of the target audiences, the amount of activity based learning, synchronous vs. asynchronous nature of course delivery, and the learning location. They conclude that the requirements of these two modes of entrepreneurship education are different and these requirements have to be taken into account when we are designing an educational system. For instance, they pointed out that since most of the communications between students and tutors in the virtual education are asynchronous, students may feel a lack of regular support from their peers and tutors. Therefore, some specific mechanisms have to be devised to make sure that students get enough timely support in virtual classes. Consistent with this study, Ponzurick et al. (2000) indicated that a consistent course structure can be developed across different delivery formats but some pedagogical adjustments may be required for the distance education format, particularly in the areas of class participation and course-related activities. The current study sought to focus on the virtual learning environments and explore how students’ entrepreneurial competencies could be cultivated in an e-learning platform.

This issue is especially addressed in the second research question of this study where we sought to generate solutions to cultivate entrepreneurial competencies in students. The question, in that stage, was how the entrepreneurial competencies identified by this study could be cultivated in students and facilitated by an e-learning environment. While most of the solutions could also be simultaneously used in the face-to-face educational environments, they were originally generated in the context of e-learning. The specific affordances of e-learning for implementing these solutions are outlined in the next section. These affordances are supposed to complete and trigger the effectiveness of the previous pre-requirements of a
successful entrepreneurship education programme including: implementing non-traditional teaching methods and engaging the curriculum stakeholders.

Gap 7: Lack of use of technology for enriching entrepreneurship education

The lack of use of technology was identified in the literature as a challenge at the forefront of entrepreneurship education. In response to this challenge this study sought to explore the potential affordances of technology as the base of an e-learning platform to cultivate students’ entrepreneurial competencies. These affordances are outlined in Chapter 5 and Chapter 6 of this study. The dominant themes in the affordances of e-learning and educational technologies for the solutions generated by this study are:

- Facilitating ‘communications’ and ‘interactions’ between students with the learning material, students with tutors, and students with students. E-learning liberates these interactions from limitations of time and space through the dynamic asynchronous and synchronous communication tools. With no restrictions on time and space in e-learning, students can communicate instantaneously, anytime, anywhere and without awkwardness associated with face-to-face communication in traditional classrooms. Learners can express their thoughts without reticence and ask questions through discussion group or bulletin board systems (Sun et al., 2008). Therefore, e-learning environments can improve frequency, quality, and promptness of interactions in the learning environment. As it was mentioned by Salmon (2000), these interactions foster establishment of opportunities for cooperative learning by encouraging students and tutors to work with each other. Moreover, Jones et al. (2001) pointed out that technology facilitates implementing cooperative learning in the class by empowering students’ communications in two ways:
  
  o First, since technology provides the possibility of anonymous communications amongst students, it lowers the risk of being embarrassed by a wrong answer and helps students to have a more open and creative debate in the small cooperative groups;
  
  o Second, unlike debates in face-to-face sessions which are dominated by a
minority of students, using educational technology in class allows all students to contribute in class discussions in some way. There was a particularly positive reaction from students with less communication ability who felt that they could contribute on more equal terms in the class discussions. In line with cooperative learning, technology can maximise the advantage of students’ learning experience while ensuring equal participation of all students in the class discussions.

- Providing ‘structure’ for the cooperative-experiential solutions generated by this study. Slavin (1980) pointed out that the main affordance of educational technologies and virtual learning environments for implementing cooperative learning in the class is providing ‘structure’ in three sections: a task structure, a reward structure and an authority structure. Task structure helps teaching-learning environment by facilitating class discussions, grouping students in homogeneous or heterogeneous small groups and lectures. The reward structure facilitates rewarding students interpersonally in the cooperative groups by grades, teacher approval and tangible rewards due to their appropriate behaviour and achievements. The authority structure refers to the control that students exercise over their own activities, as opposed to that exercised by teachers and other adults. These three structures which have a wide affordance for implementing the solutions generated by this study are outlined in Chapters 5 and 6. An example of each of these three structures is provided below:

  o ‘Authority structure’ is assumed to have an affordance for some solutions such as ‘providing semi-structured and flexible educational planning’. It was pointed out that one of the main considerations of involving students in the process of educational planning is to keep curriculum cohesion. Biggs (2003) suggested that curriculum cohesion could be kept through alignment to intended learning outcomes. E-learning could facilitate involving students in the curriculum design process and at the same time control the curriculum coherence by providing an automated structure that connects different parts of the curriculum - including learning outcomes, content and assessment approaches - together. This structure directs students to a sequential order of curriculum design in which they do need to first select their preferred learning outcomes; and then, select syllabus, learning material, assessment approaches, and teaching methods. More importantly, this
structure does not allow students to select a syllabus, for example, which is not aligned with the learning outcomes have already been selected.

- ‘Reward structure’ is assumed to have an affordance for ‘offering rewards to students’. This structure facilitates monitoring and reviewing students’ behaviour and achievements such as their grades, communication levels and teacher approvals. This structure also can illustrate the criteria for distributing rewards, helping students to meet those criteria and qualify themselves for getting the reward by performing the rewardable behaviour.

- ‘Task structure’ facilitates implementing solutions such as conducting ‘participatory and collaborative teaching and learning’. The dominant theme in this solution is enhancing students and tutors’ communications, interactions and group activities as the rich learning opportunities in the class. In order to encourage students to be advantaged by this solution, task structure provides a platform for class discussions and facilitates grouping students in homogeneous or heterogeneous small groups and lectures.

- Providing innovations and educational tools that support key solutions generated by this study. The affordances of three examples of these technological innovations to support the solutions of this study are presented here:

  - Educational Games: It was argued that educational games provide a personalised learning experience and they criticise the one-size-fits-all approach to education (Peirce et al., 2008). It was recommended that using educational games helps tutors to enhance students’ autonomy in a cooperative learning environment. Piaget (1962) suggested the main organizing element in game play consists of explicit rules that guide group behaviour. Games with rules are very organized compared with socio-dramatic play (such as free play, creative, and imaginative social interaction) (Annetta, 2010) and, when used appropriately, can result in increasing students’ participation in the learning process (Newswander and Newswander, 2012).

  - Simulators as another type of educational innovations are suggested to support
the solutions generated by this study. These simulators are defined as the educational environments, where students gain conceptual understanding of scientific ideas through interactive engagement with materials (real or virtual), working with each other, and with their instructors. Participants of this study addressed the potential of simulators in educating students in a virtual environment before requiring them to go to the real environment and experience difficulties in the process of their work. One of these business simulators is named *Entrepreneur*. It is a computer based business simulation that allows students to start up a "real" company from scratch. The simulation, based on the low volume, handmade car industry creates a realistic business environment in which learning takes place. Marriott (2004) implemented *Entrepreneur* for a group of accounting students and then outlined the learning outcomes of implementing this simulator from the students and tutors’ perspectives. He argued that the use of such a simulation presents an opportunity for students to develop their algorithmic thinking, to use spread sheet-modelling skills in a realistic setting, to enhance cognition in understanding the ‘whole’ of a business problem, and to reduce instrumentality through the intrinsic enjoyment of problem-based learning.

- **Mind-map tools:** Mind-mapping software create diagrams of relationships between concepts, ideas or other pieces of information in order to facilitate learning. There are a wide variety of open-source and commercial mind-mapping software, such as: FreeMind\(^{11}\), Docear\(^{12}\), and 3D Topicscape\(^{13}\). These tools can support some of the solutions generated by this study such as ‘promoting students’ critical thinking’. Mueller et al. (2002) pointed out that in order to map out the interconnectedness of all components of the subject being studied, students must first make those connections in their minds. They need to determine how different aspects of the subject affect one another. Mapping requires students to make meaning of given information for themselves by creating these links amongst the data, rather than copying unthinkingly from the

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\(^{11}\) For more information visit [www.freemind.sourceforge.net](http://www.freemind.sourceforge.net)

\(^{12}\) For more information visit [www.docear.org](http://www.docear.org)

\(^{13}\) For more information visit [www.topicscape.com](http://www.topicscape.com)
books. This type of thinking leads to the development of higher-level critical thinking. ‘Applying Brainstorming method in the class is another solution which can be supported by mind map tools. Because brainstorming is a critical component of creating a mind map, students are required to brainstorm as the first step of mind-mapping. Moreover, the creation of mind maps in small cooperative groups instead of by individual students facilitates a deeper analysis of the topic through brainstorming (Budd, 2004).

- Providing social networking tools which could be used for enriching educational activities. While these tools such as blogs, forums, wikis, webinars, LinkedIn, and Skype were not initially developed for educational purposes, they have a history of applications in educational settings. In the context of the solutions generated by this study, it was suggested that, for instance, job opportunities should be introduced to students. The affordance of some social networks such as LinkedIn in creating an incredible job and expertise network is very obvious and it could be generalised— to some extent—to the other social networks as well. Furthermore, due to the cooperative nature of the solutions generated by this study and due to the virtual-based delivery system which is presumed for this study, these social networking tools are considered highly important and are therefore embedded in the platform of implementing these solutions. Consistent with this argument, Dunlap and Lowenthal (2009) expressed their experience of using Twitter in their class. They described their use of Twitter to encourage free-flowing just-in-time interactions and how these interactions can enhance social presence in online courses. Furthermore, from their experience, Twitter helped them to address their students’ issues in a timely manner, help their students to write concisely and for an audience, connect their students with a professional community of practice, support their students’ informal learning and maintain their on-going relationships with their students. As a result, Twitter helped their students to further learn from each other and their tutors, and to also have the opportunity to learn from many practicing professionals who are not a part of their class. However, it was argued that while using social networks can provide more sources of novel ideas and therefore increase the probability of creativity, there is a curvilinear relation between the number of social network contacts and creativity. Since the amount of time the individual can devote to fruitful discussions with each contact
decreases as the number of contacts increases beyond some optimal level, diverse ideas and different perspectives are unlikely to surface; and consequently, social networks become meaningless as network size grows beyond a manageable size (Zhou et al., 2009).

Furthermore, the affordances of educational technologies for implementing the solutions generated by this study can be seen from another perspective. As was already mentioned in Chapter 6, Hattie (2013) confirmed that educational technologies effectively increase the probability of cooperative learning when a) there is a diversity of teaching strategies, b) there is a pre-training for using educational technologies, c) there are multiple opportunities for learning, d) the student – not teacher – is in ‘control’ of learning, and e) peer learning and feedback is optimised. It can be argued that most of these conditions have been met – to some extent – by the solutions generated by this study. Those solutions provided a variety of teaching-learning approaches and techniques to be implemented in the class, such as: case study, business plan writing, idea writing, trial start-up, educational games and brainstorming. The paragraphs above described how an e-learning platform could support implementing these teaching methods in the class. Also, many of those solutions tend to value students’ voice and preferences. These solutions are: identifying and balancing students’ expectations from their studies, making students aware of the results of their previous feedback, putting students in the position of group leadership, mapping students’ required skills with their studies, getting students’ feedback regarding the practicality of their modules, providing semi-structured and flexible educational planning, supporting students by providing their required information, and expanding on students’ strong points. Finally, peer-learning and feedback are dominant themes that emerge in most of the solutions generated by the different participant groups of this study. They identified aspects such as peer-teaching, peer-assessment, self-assessment, getting students’ feedback, and letting students know the results of their previous feedback as most valuable. The arguments above do not mean that all of the conditions pointed out by Hattie are met by the solutions generated by this study. More efforts and research are needed to help educational approaches to meet those requirements in order to make sure that educational technologies are effectively used in cooperative learning environments. Moreover, Jones et al. (2009) mentioned that if e-learning is to be effective in improving students’ entrepreneurial
competencies in a cooperative environment, students require a high level of information communication technology competence, motivation and self-discipline.

**Gap 8: The limited application of qualitative research methods in entrepreneurship research**

It has been noted that many substantive issues in entrepreneurship are rarely addressed and can only be addressed through qualitative methods and approaches (Gartner and Birley, 2002). Despite this fact, Hindle (2004) noted that while the use of qualitative methods in almost every domain of the social sciences is rapidly accelerating, entrepreneurship literature continues to be one of the exceptions. Molina-Azorín et al. (2012) reviewed 955 refereed journal papers in five top-tier entrepreneurship journals. They found that only 16.7% of the empirical studies in their sample employed any qualitative techniques whatsoever.

Against this context, we make use of a qualitative collective intelligence method and systems thinking tool, named Interactive Management (IM), in an effort to address key gaps in our understanding in relation to the issue of consensus-based understanding of entrepreneurial competencies, their interdependencies, and their cultural, social and economic contexts. Based on John Warfield’s (1994) science of generic design, the IM process is a system of facilitation and problem solving that helps groups to develop outcomes that integrate contributions from individuals with diverse views, backgrounds, and perspectives. Established as a formal system of facilitation in 1980 after a developmental phase that started in 1974, IM was designed to assist groups in dealing with complex issues (see Ackoff, 1981; and Argyris, 1982). The IM approach carefully delineates content and process roles, assigning to participants responsibility for contributing ideas and to the facilitator responsibility for choosing and implementing selected methodologies for generating, clarifying, structuring, interpreting, and amending ideas.

IM has been previously applied in a variety of situations to accomplish many different goals, including supply chain management (Balasubramanian, 2012; and Singh et al., 2010), Management (Wan and Jones, 2013), education (Georgakopoulos, 2009), and politics (Laouris et al., 2009). To the best of our knowledge, this study represents the first
application of IM to the study of cross-cultural differences in entrepreneurial competencies.

The value of implementing IM in this study can be summarised as follows:

a) IM utilizes a carefully selected set of methodologies, matched to the phase of group interaction and the requirements of the situation. There were five steps involved in this process: (1) generate and clarify ideas, (2) vote, rank order, and select elements for structuring, (3) structure elements using ISM software, (4) evaluate graphical representation of group logic with the group and amend if necessary, (5) transcribe the audio recorded group discussion and evaluate discourse and reasoning to further understand the nature of competencies and interdependencies.

b) Facilitating collective stakeholder engagement in the design process and enhancing consensus in their discussions.

c) Maximizing collective intelligence in the group process by implementing some techniques such as Nominal Group Technique (NGT), idea-writing, Interpretive Structural Modelling (ISM) and facilitating the logic and democratic design process of participants.

d) Developing a systems view in relation to key enhancement systems that facilitate design thinking.

e) Identifying the interrelationships between the competencies identified by this study.

f) Building options and solutions that derive from systems-thinking.

g) Generating novel ideas that are suggestive for future lines of research.
7.4. Limitations and suggested future research

The limitations of this study and some suggestions and directions for the future research studies are highlighted here:

- The possible impact of cultural and socio-economic factors on models of entrepreneurial competencies generated by Irish and Iranian experts was discussed by this study. However, further research is needed to understand how social and cultural factors influence the development of entrepreneurial mind-sets and behaviours in different contexts.

- The current study is exploratory and further research is needed to confirm the models of entrepreneurial competency generated by groups in this study. These further studies should focus on both identifying entrepreneurial competencies as well as highlighting their interdependencies.

- As it was mentioned by Warfield (1993), Interactive Management (IM) has the unique strength in that it is thoroughly grounded in systems science, and successful applications of IM as part of an applied design process have been documented. However, the success of the IM process depends in part on the ability of the IM facilitator in conducting NGT and ISM techniques, and without good facilitate the ideas, logic, trust and consensus within the group may be negatively affected. Another potential limitation of IM is if participants have limited expertise and knowledge in relation to the triggering question of the IM. Therefore, while the study highlights the value of Interactive Management (IM) as a collective intelligence and systems thinking tool that may help us to further understand entrepreneurial competencies and the cultural, social and economic contexts of entrepreneurship, further research is needed to examine the implications of this form of systems-thinking on the design of successful entrepreneurship training programmes. Also, additional studies could be conducted in order examine how these competences and interdependencies develop over time.

- Since this study is limited to the cultural-economical contexts of Iran and Ireland, further IM studies could be conducted in order to explore entrepreneurial
competencies and their interrelationships in other cultural contexts (especially in other developing and developed countries), in other types of organisations, and on other types of entrepreneurship such as ‘social entrepreneurship’.

- While the interdependencies amongst the entrepreneurial competencies were identified by this study, other methods such as Structural Equation Modelling (SEM) could be used to quantify competency interdependences.

- The cooperative-experiential cultivating approaches suggested by this study consist of a broad set of solutions which is purposely designed to stimulate students’ entrepreneurial competencies. However, the efficiency and effectiveness of these solutions needs to be investigated in terms of the factors below:

  o a) To what extent the solutions really help students to develop their explicit intentions in relation to business start-ups;

  o b) To what extent the solutions provide students with any knowledge of the business world;

  o c) To what extent the solutions help students to explicitly understand and acquire the key skills and competencies that are needed to run a business.

- While this study generated two broad sets of solutions which could be applied to any module or course in the virtual learning environments, the actual effect of these solutions on students’ Productive thinking and Motivation needs to be empirically investigated by the future pre-test-post-test experimental studies, especially in e-learning environments.

- The virtual learning environment was selected as the context for cultivating entrepreneurial competencies in the current study. While most of the identified solutions generated by focus group participants could also be implemented in the face-to-face educational environments, further research is required to examine the differences of implementing these solutions in a virtual and face-to-face educational environment.
While the solutions generated by this study sought to stimulate students’ entrepreneurial competencies in an e-learning platform, these ‘theoretical solutions’ need to be translated into a technical language for designing ‘software-based solutions’ which could be embedded in the e-learning platforms as single or collective ‘plug-ins’. Standard models for designing software should be used in this process. One of these models named ‘Prototyping Development Model’ is presented in Chapter 5 of this study and the process of translating the theoretical solutions into a technical language in order to design a software-based solution for embedding in the e-learning platforms is described by illustrating a sample of these potential solutions.

The current study has some implications for practitioners and policy makers as well. Some of these implications are:

- The importance and necessity of revisiting current dominant teaching methods in entrepreneurship education programmes was highlighted in many parts of this study. It was concluded that a cooperative-experiential teaching framework should be the most appropriate approach for enhancing students’ entrepreneurial competencies. Applying the cooperative-experiential solutions generated by this study in the current entrepreneurship education programmes requires an evolution in the teaching-learning systems. Same to other evolutions, these changes are expected to be highly resisted by both academics and university administrators. Perhaps academics do not like these unconventional teaching methods because they are very time consuming. University administrators also do not like these solutions because they do need significant finance, infrastructure and human resources. However, the reality is that the current entrepreneurship education programmes are not sufficiently effective and fruitful. If universities do want to have a constructive role in building a better future for their societies and if they do want to have a better connection with the business environment and markets, they should start changing their current methods and approaches.

- Another implication of this study for practitioners and policy makers is highlighting the importance of virtual education environments and educational technologies for entrepreneurship education programmes. E-learning is seen as the dominant medium
of delivering education in the near future. Consistent with this trend, universities increasingly extended their e-learning programmes over the last decade. However, one of the shortcomings in this extending process is that they do not pay enough attention to the specific requirements and affordances of educational technologies and e-learning platforms. It is wrong to copy and paste the in-house processes to the virtual environments. The specific requirements of virtual learning systems have to be taken into account when we do want to extend our e-learning courses. This study provides an understanding about the requirements and affordances of e-learning systems when we do want to use them in entrepreneurship education programmes.

7.5. Overall Conclusion

In order to find why most of the current entrepreneurship education programmes are not sufficiently effective, eight gaps have been identified in the relevant literature including: Lack of consensus about which entrepreneurial competencies are most important to be cultivated in university students, Lack of exploring entrepreneurial competencies’ interrelationships, Lack of cross-cultural research on entrepreneurship especially between developing and developed countries, Limited movement beyond traditional educational methods when teaching entrepreneurship, Lack of stakeholders’ engagement in identifying entrepreneurial competencies and designing entrepreneurship curricula, Lack of research about entrepreneurship education in the specific context of virtual learning environments, Lack of use of technology for enriching entrepreneurship education, and The limited application of qualitative research methods in entrepreneurship research.

Against these gaps, the main focus of this study was to design an effective curriculum for stimulating students’ entrepreneurial competencies. To do so two main questions were addressed: who can be defined as an entrepreneur and how should entrepreneurship be taught? In order to take the contextual factors into account, three ‘internal’ and ‘external’ stakeholder groups of entrepreneurship education including: academics, students, and entrepreneurs in two different countries, Iran and Ireland were engaged with this study.

The first part of this question leaded us to suggest four important high level entrepreneurial competencies, including Productive Thinking, Motivation, Interpersonal Skills and
Managerial and Leadership competencies which should be cultivated in university students who intend to become entrepreneurs. All of these competencies can be categorised as soft know-how competencies which are the most effective competencies in enhancing students’ entrepreneurial mind-set. More importantly, the interdependencies amongst these competencies were explored in order to facilitate a deeper understanding of competency systems and how a curriculum could be designed (scope and sequence of the curriculum) to cover these competencies. Our study also highlights the value of the Interactive Management (IM) method in generating consensus amongst experts working together to model interdependencies between entrepreneurial competencies.

The second part of the question above brought us to another empirical work in order to identify cultivating approaches or solutions for the top two competencies (Productive Thinking and Motivation), which received the vast majority of votes. Against the dominant traditional theme in the current entrepreneurship education programmes which emphasises on students’ left hemisphere in order to educate them about entrepreneurship, these solutions sought to stimulate students’ balanced thinking by targeting both left (rational) and right (intuitive) hemispheres of students’ brain across all university departments in order to educate them for entrepreneurship. While some scholars believe that non-traditional teaching methods need to be applied to entrepreneurship education programmes and in practice, the most focus of entrepreneurship educators is on traditional teaching methods. The solution themes suggested by this study highlighted that both traditional and non-traditional teaching methods are needed to help students as the potential entrepreneurs to stimulate their rationality and intuition. It was also argued that cooperative and experiential learning frameworks as well as educational technologies have some affordances for implementing these solutions in a virtual learning environment. These affordances are supposed to facilitate linking our respondents’ solutions to a curricular structure.

Furthermore, it was concluded that while culture influences entrepreneurship education to some extent, the current cultural framework, such as Hafstede’s cultural dimensions, alone, do not adequately describe cross-country differences in entrepreneurial activity. To have a better understanding of interplay between culture and entrepreneurship, other determinants of entrepreneurship such as economic, political, infrastructures (technology, communication, transport) and individual characteristics of people in different countries have to be taken into account.
account. Moreover, this study moves beyond more static models of the connection between culture and entrepreneurship and suggests that dividing countries into “developing” and “developed” categories may cloud our understanding of the subtle similarities and differences across cultures.

Overall, the findings of this study can facilitate the determination of the ‘Scope’, ‘Sequence’ and ‘Solutions’ which can be used as an entrepreneurship curricula in universities. ‘Scope’ refers to identifying a set of entrepreneurial competencies as valid targets for training. ‘Sequence’ refers to the optimal design of a logical, orderly, cumulative framework for developing the targeted competencies. ‘Solution’ refers to the cultivating approaches which may influence the development of entrepreneurial competencies in students in an e-learning platform. The final target of all of these outputs is to empower students in order to be more capable for creating their own innovative jobs in the future. This helps them to have a clearer picture of their future and encourages them to have a more constructive role in their societies. Further to decreasing the unemployment rate of university graduates, this constructive role provides more opportunities for improving societies from different economic, cultural and societal perspectives. The results of making any changes in educational systems cannot be immediately seen in societies. They take time to affect different layers of societies; and therefore, we cannot expect immediate obvious results from implementing these solutions. Furthermore, there are some other internal and external factors which moderate or mediate the impact of these solutions in the learning environments. Most of these environmental factors are vary and dependent on the specific context of each learning environment. Therefore, it can be strongly recommended that the specific requirements and contextual factors of each learning environment have to be carefully identified and taken into account when implementing these solutions are targeted.

To sum up, the main objective of the current research was to design an e-learning-based entrepreneurship curriculum in order to enhance students’ entrepreneurial competencies. These competencies – in turn – are supposed to help university graduates and students to create their own innovative jobs in order to reduce their unemployment rate. The curriculum suggested by this study has some features and requirements. All components of an entrepreneurship teaching-learning environment including students, tutors, and university administrators/policy makers need to pay enough attention to these requirements if those
programmes are to be effective. These pre-requirements include but not limited to: engaging curriculum stakeholders in the process of curriculum design, effective use of educational technologies, and moving from traditional teaching methods to non-traditional cooperative-experiential ones. Meeting these requirements help entrepreneurship education programmes to effectively cope with the dilemma of university graduates unemployment.

Further research is needed to understand how social and cultural factors influence the development of entrepreneurial competencies and behaviours in different contexts. The current study is exploratory and further research is needed to confirm the models of entrepreneurial competency generated by groups in this study. While the study highlights the value of Interactive Management as a collective intelligence and systems thinking tool that may help us to further understand the cultural, social and economic contexts of entrepreneurship, further research is needed to examine the implications of this form of systems thinking on the design of entrepreneurship training programmes.
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383


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384


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399


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# 9. Appendices

## Appendix A: list of Productive Thinking and Motivation sub-competencies provided to the participants of focus groups

Table 9-1 List and definitions of competencies associated with Productive Thinking

<table>
<thead>
<tr>
<th>Component</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creativity and Innovation</td>
<td>The production of novel ideas that is useful and appropriate to the situation.</td>
</tr>
<tr>
<td>Opportunity identification, evaluation and grasping</td>
<td>Relatively sophisticated skills of counterfactual thinking which can result in reorganization and capitalization on opportunities.</td>
</tr>
<tr>
<td>Tolerance for ambiguity</td>
<td>The perceived extent of desirability or undesirability of a situation.</td>
</tr>
<tr>
<td>Adaptability and Flexibility</td>
<td>The capacity to adapt across four dimensions; temporal, range, intention and focus. These dimensions define areas within which flexibility can be achieved.</td>
</tr>
<tr>
<td>Questioning everything</td>
<td>Being habitually inquisitive</td>
</tr>
<tr>
<td>Risk taking</td>
<td>Willingness to engage in business ventures in which the outcome may be highly uncertain</td>
</tr>
<tr>
<td>Stress and failure coping</td>
<td>Using problem-focused coping in response to stress and failure, rather than rumination or a focus on the emotions experienced</td>
</tr>
<tr>
<td>Willing to take on challenges</td>
<td>Showing initiative and taking on new challenges</td>
</tr>
<tr>
<td>Imagination</td>
<td>Visualising futures and possibilities and solutions to problems</td>
</tr>
<tr>
<td>Seeing market from a different angle</td>
<td>Trying to have a different perspective about market. Entrepreneurs try to consider on long time rather than short time benefits.</td>
</tr>
<tr>
<td>Intuitive ability</td>
<td>Involves reception of information not gained through the</td>
</tr>
</tbody>
</table>
(6th sense) recognized physical senses but sensed with the mind.

| Information seeking ability | Process of sense-making in which a person is forming a personal point of view. |

Table 9-2 List and definitions of competencies associated with Motivation

<table>
<thead>
<tr>
<th>Component</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proactivity and Hardworking</td>
<td>Anticipatory, change-oriented and self-initiated behaviour in the work place. Proactive behaviour involves acting in advance of a future situation, rather than just reacting. It means taking control and making things happen rather than just adjusting to a situation or waiting for something to happen.</td>
</tr>
<tr>
<td>Need for achievement</td>
<td>An individual's desire for significant accomplishment, mastering of skills, control, or high standards</td>
</tr>
<tr>
<td>Persistence</td>
<td>The fact of continuing in an opinion or course of action in spite of difficulty or opposition</td>
</tr>
<tr>
<td>Determination</td>
<td>The ability to continue trying to do something, although it is very difficult</td>
</tr>
<tr>
<td>Belief in the effect of personal efforts on outcomes</td>
<td>individual's expectancy that a certain effort will lead to the intended performance, and the instrumentality of this performance to achieving a certain result</td>
</tr>
<tr>
<td>Task motivation</td>
<td>Process involved in arousing, directing, and sustaining behaviour</td>
</tr>
</tbody>
</table>
Appendix B: Sample of solutions Productive Thinking and Motivation solutions provided in the beginning of focus groups

Some example solutions for cultivation Productive Thinking and Motivation sub-competencies can be seen in the below:

a. Some prior studies’ focused on cultivating “Productive Thinking” sub-competencies have suggested:
   
   i. Applying transformational leadership\(^{14}\)
   
   ii. Selecting students with more prior experience in [successful] business ownership
   
   iii. Forcing students to work under a planning process
   
   iv. Use open-ended, authentic and negotiatory questions rather than close-ended
   
   v. Having a list of productive questions prior to entering each class

b. Some prior studies’ focused on cultivating “Motivation” sub-competencies have suggested:

   i. Offering valued rewards for successful students
   
   ii. Selecting students with the preference for moderate rather than extreme level of risks
   
   iii. Selecting students who score higher on certain personality measures, e.g. proactive, extraversion and openness
   
   iv. Decreasing the learners’ anxiety

---

\(^{14}\) Transformation leadership occurs when leaders broaden and elevate the interests of their employees, when they generate awareness and acceptance of the purposes and mission of the group, and when they stir their employees to look beyond their own self-interest for the good of the group (Bass, 1991).
Appendix C: The form used for generating solutions by focus groups (See Introduction of Chapter Five)

Title of solution (Few Words):

Sub-competencies covered by this solution:

Brief description of the solution (Few sentences):

Figure 9-1 The form used for generating solutions by focus groups
Appendix D: University Research Ethics Submission and Approval

University of Limerick
Faculty of Education and Health Sciences Research Ethics Committee
Research Ethics Application Form

Title of Research Project
Developing an effective model for promoting entrepreneurial competencies in Higher Education students facilitated by virtual education.

Period for which approval is sought

<table>
<thead>
<tr>
<th>From</th>
<th>Date of approval</th>
<th>OR</th>
<th>Specific date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>OR</td>
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</tbody>
</table>

Until March 2014 (please complete)

Undergraduate / taught postgraduate Research OR Research postgraduate/ Staff research

Principal Investigator details

<table>
<thead>
<tr>
<th>Name</th>
<th>Department</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. John O'Reilly</td>
<td>Education &amp; Professional Studies</td>
<td>Lecturer</td>
</tr>
</tbody>
</table>

Qualifications
BSc.(Hons), Ph.D., H.Dip.Ed.

Telephone Number
353,872,201,305

Email address
john.oreilly@ul.ie

Other Investigators:

<table>
<thead>
<tr>
<th>Name</th>
<th>Position and Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morteza Rezaei Zadeh</td>
<td>Researcher</td>
</tr>
<tr>
<td>Eamonn Murphy</td>
<td>Professor</td>
</tr>
</tbody>
</table>

Head of Department(s) Approval

I have read through the application and I am aware of the possible risks to participants in this study. I hereby authorise the Principal Investigator and other investigators named above to conduct this research project.

<table>
<thead>
<tr>
<th>Name</th>
<th>Department</th>
<th>Date</th>
<th>Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Roland Tormey</td>
<td>Education &amp; Professional Stu</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Section 1: Study Design and conduct of the study.

a. What are the aims of this research?

The major goal in this study is to identify the key competencies associated with entrepreneurial practice and thinking in order to explore the development of these competencies in a virtual learning environment for higher education students.

This reflects the increasing focus on the development of transferable skills and life-long learning in order to promote a system of education that is flexible in response to rapidly changing economic needs.

b. Provide a description of the study, clearly outlining what is required of all participants. Describe all procedures to be used and describe the data that you aim to collect (e.g. measures of a psychological nature, interviews, observational data, physiological measures etc). Include the name and number of any University of Limerick approved Risk Assessment Procedure. Indicate how the data will be analysed. Note that this section should be accessible to non-subject specialists, so avoid technical language and abbreviations.

There are two principle stages in this research; the first involves the identification of the core characteristics, competencies and dispositions of an entrepreneur; the second seeks to develop and trial a virtual learning curriculum to support the development of the characteristics identified in stage one in a diverse group of learners. Since the second stage strongly depends on the results of the first, ethical approval is only sought for the first stage at this point. The developed curriculum will eventually be evaluated in a comparative study in between UL and the University of Tehran.

Identifying entrepreneurial competencies and dispositions (referred to as "characteristics" from now on) is not readily achieved. As a starting point, the literature will be reviewed to identify and classify these characteristics and develop a conceptual framework.

This will be compared to empirical data that will be collected in two ways; firstly through a methodological approach called "Interactive Management (IM)". IM was designed to analyse complex fields in order to determine the key elements involved, how these elements relate to each other and their relative importance in order to suggest a systematic course of action to achieve the desired goal. In this case two focus groups (in each of Ireland and Iran) of academics and entrepreneurs will participate in IM sessions to identify and rank characteristics. Each group will have approximately 10 participants and take 3 hours to complete. Two sessions will likely be necessary to complete the work. Follow-up interviews will determine if the output from the IM sessions is coherent with the participants' views of the characteristics of an entrepreneur.

This will inform the design of a questionnaire that will be distributed to a wider population to examine the validity and reliability of the findings from the IM sessions. The culmination of these investigations will be a description of the ideal entrepreneur which will inform the design of the second stage of this research to develop a virtual learning curriculum to develop those characteristics. The survey is therefore not presented for ethical consideration at this stage but will be submitted and referenced to this application at the appropriate time.

The methodology proposed is a mixed methods approach, utilising rigorous qualitative approaches (IM) to develop a quantitative survey instrument. NVivo and SPSS will be used for data analysis.
Section 2: Recruitment of research participants.

a. Describe the population you will recruit from, including their gender, age range and ethnicity (if ethnicity is relevant). Provide information on any additional specific inclusion or exclusion criteria.

The purposed population for this study includes faculty members involved in entrepreneurial education and entrepreneurs in Ireland and Iran. Purposive sampling will be used to identify and invite participants of appropriate expertise to get involved in this study. Every effort will be made to achieve an even gender distribution.

b. How will you source or identify your participants?*

Members of the research team (in particular Prof. Eamonn Murphy and Mr. Morteza Rezaei Zadeh) are working with entrepreneurs (who themselves have appropriate networks) who will be contacted by e-mail/phone call to invite their participation. E-mails will also be used to contact academics in the field.

*If you plan to recruit via a letter, email or a poster, a copy of this must be submitted to the committee with this application.

c. How many participants will you recruit? (the number should be the maximum that you will recruit, allowing for drop-outs and other losses).

| Number of participants | 40 |

d. Provide details of any financial remuneration or any other form of reward which the participants will receive

None

e. Where will the research work be done? (either “UL” or name the external location)

UL and University of Tehran
Section 3: Consent

Remember that you must submit a participant informed consent form and information sheet with this document; or provide other evidence of how consent will be obtained where these are not possible (e.g. in telephone interviews, Internet based research). In the case of children (under 18) and adults unable to provide consent, please provide the documentation to be used to obtain parent or guardian consent. For work in schools provide a copy of the cover letter to the school principal.

a. If you are using adults or children who are unable to give consent, please explain how consent will be obtained. If your participants can’t read or speak English (or Irish, if your research is aimed at Irish speakers), explain how you will obtain consent. In situations where obtaining free consent may be difficult (e.g. in prisons), explain how you will ensure that free consent is given. (Enter N/A if none apply to your project)

All participants in Ireland will be fluent in English. In Iran, all appropriate forms will be available in both English and Farsi (in which Mr. Razaei Zadeh is fluent) although the majority of Iranian entrepreneurs and academics would have a high level of functionality in English.

Section 4: Care and protection of research participants

a. Provide detailed information on any potential risks to the participant or researcher from procedures or techniques to be employed in this research. Where a substantive risk is identified, provide detail on steps that have been taken to minimise this risk. Note that risk is defined by the committee as the potential to cause short or long term discomfort, pain, physical injury or emotional distress that is greater than that which would be experienced in the participant’s everyday life.

There are no substantive risks involved in the IM sessions (which are equivalent to focus groups) as the participants of this study are very familiar with voicing their opinions and participating in discussions.
b. What is the total participation time for each participant (in hours /minutes)?

<table>
<thead>
<tr>
<th>Participant Group</th>
<th>Hours</th>
<th>Minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entrepreneurs</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Academics</td>
<td>8</td>
<td></td>
</tr>
</tbody>
</table>

c. If there are multiple testing sessions for each participant, please provide a breakdown detailing how the total participation time is divided over the course of the experiment or research study.

The initial IM session will list and discuss the core characteristics of the entrepreneur. This will take approximately 3 hours. The second IM session will determine the relationships between these characteristics and their relative importance. This will also take 3 hours. A final 2 hour session will be offered to share the results of the work and determine if the model produced is reasonable.

d. Explain what the potential benefits of the study are. Explain why these potential benefits of the study justify any risks to participants (as outlined in section 4a) and participant time input (as described in section 4b). (i.e. provide a justification of the predictable risks and inconvenience to participants weighed against the anticipated benefits for the participants and the wider community).

As mentioned above, it is considered that there are no significant risks associated with participation in this study. It is the case though that participants are extremely busy and that they must be convinced that their time will be well used and of potential benefit. It is proposed that the following two benefits be highlighted:

1. This work will be useful for expanding virtual and distance learning in entrepreneurship which will potentially increase the population and quality of entrepreneurs.
2. The knowledge and interest of all participants in the characteristics of entrepreneurs will be increased.
3. Participants will gain significant experience in the IM methodology which may be of use to them in their own professional practice.
Section 5. Protection of participant confidentiality.

a. Who will have access to the data collected from participants?
Only the investigators of this research will have direct access to the data although the initial findings will be shared with all participants.

b. How will confidentiality be ensured? (outline the steps taken to ensure data security in collecting and storing information).
The IM sessions and their analysis will be managed only by the investigators who have the responsibility to ensure data security. All participants will be assigned pseudonyms to ensure confidentiality. All data will be stored on the password protected computers of the principal investigator and Mr. Rezaei Zadeh.

c. How long will the data be kept? How will data be destroyed at the end of the storage period? (Note that you are obliged to store the data for between 7 and 10 years, and ensure that it is effectively destroyed at the end of this period)

<table>
<thead>
<tr>
<th>Duration of data storage (years):</th>
<th>10</th>
</tr>
</thead>
</table>

**Date of Destruction:** Note - Destruction date is calculated automatically. On page 1, please ensure that you have indicated the date for which approval from the ethics committee will no longer be required.
December 31, 2023

Destruction method:
Deleting all the files

Section 6. Feedback to Participants and Relevant Communities

Describe how the results of the research will be made available to the participants and to any community group that the research findings would be relevant to.

We will provide the summary of our results and send it to all participants. Results will be published in scholarly journals.
All research undertaken by UL employees requires indemnity insurance. The insurance policy and exemptions are shown on the EHS Ethics Web Page.

If your planned research methodology is substantially different to that which you have obtained ethical approval for before at UL, and has identifiable potential risks to participants or experimenters you should contact Cliona Donnellan (cliona.donnellan@ul.ie) to confirm that the research project will be insured. You should also contact Cliona if the planned work requires invasive procedures. This may involve contacting the insurers, so allow several days for this process if it is required.

Note that UL’s current insurance does not cover clinical trials.

This research project will be covered by UL’s indemnity policy:

Yes  No

Document checklist: which documents are attached?

<table>
<thead>
<tr>
<th>Document</th>
<th>Yes</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volunteer information sheet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parent / carer information sheet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Volunteer informed consent form</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parent / carer informed consent form</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Letter to school principal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Questionnaire</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interview / survey questions / focus group script</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recruitment letter / email / poster</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acceptance of UL child protection form</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EHSREC or PESSREC Procedures</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The information in this application form is accurate to the best of my knowledge. I undertake to abide by the ethical principals outlined by UL ethics policy. If this proposal is approved by the Ethics Committee, I undertake to adhere to the study protocol without unagreed deviation and to comply with any conditions required by the ethics committee.

I undertake to inform the UL research ethics committee of any changes in the protocol, and to submit a Report Form upon completion of the research project.

<table>
<thead>
<tr>
<th>Name of Principal Investigator</th>
<th>John O'Reilly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signature of principal investigator</td>
<td></td>
</tr>
<tr>
<td>(or HOD if PI is not on permanent contract)</td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td>17Feb2011</td>
</tr>
</tbody>
</table>
From: Anne.Obrien
Sent: 27 May 2011 14:29
To: John.OReilly
Cc: Morteza.RezaeiZadeh; Eamonn.Murphy
Subject: EHSREC10-94

Dear John, Morteza, Eamonn

Thank you for your Research Ethics application which was recently reviewed by the Education & Health Sciences Research Ethics Committee. The recommendation of the Committee is outlined below:

Project Title: EHSREC10-94 Developing an effective model for promoting entrepreneurial competencies in Higher Education students facilitated by virtual education.

Principal Investigator: John O’Reilly

Other Investigators: Morteza Rezaei Zadeh, Eamonn Murphy

Recommendation: Approved

Yours Sincerely

Anne O’Brien
Administrator, Education & Health Sciences
Research Ethics Committee
Appendix E: Thesis related publications and presentations

- **Book:**

- **Papers published in peer-reviewed journals:**
  
  
  
  
  
  
  
- Papers published in peer-reviewed conference proceedings


- Conference Presentations

  o Rezaei-Zadeh, Morteza. (2014). Entrepreneurship Education: A review on ten drawbacks and gaps in the literature, presented in Entrepreneurship Education Conference, University of Tampa, Florida, USA.


- Rezaei-Zadeh, Morteza. (2013). Encouraging students’ experience-based learning through their studies in an e-learning environment; Two Schematic Storyboards. The 7th International Conference on E-learning and e-Teaching, University of Shiraz, Iran.

- Rezaei Zadeh, Morteza. (2012). Exploring the entrepreneurial potential of LMSs and Web 2 technologies: A literature review. Has been accepted to be presented and published by “the 11th international conference on science-to-business marketing – Entrepreneurial Universities Conference”, Munster University of Applied Sciences, Munster, Germany.


Appendix F: Initial interactive mock-up: Others Stories

The initial interactive mock-up designed for the storyboard entitled ‘Others Stories’ can be found in the CD attached here.
Appendix G: Usability Test questionnaire

Usability & Ecological Validation Questions – mock-up: Date:

General information:

Sex: Male ☐ Female ☐ Age:

Field: Humanities ☐ Engineering ☐ Science ☐ Medical Science ☐
Level: Undergraduate ☐ Postgraduate ☐

How much is your computer literacy?
Very Good ☐ Good ☐ Medium ☐ Poor ☐ Very Poor ☐

Please rate each of the propositions below by selecting only one of the options provided for each proposition.

1- It was easy to complete this mock-up.
   Strongly Agree ☐ Agree ☐ No Idea ☐ Disagree ☐ Strongly Disagree ☐
   Comment: ……………………………………….

2- Did you use the instructions to complete and understand the different stages of the mock-up? Yes ☐ No ☐
   (If yes, please respond to the next question; otherwise, please go to Question 4.)

3- When I used the instructions, the information was easy to understand.
   Strongly Agree ☐ Agree ☐ No Idea ☐ Disagree ☐ Strongly Disagree ☐
   Comment: ……………………………………………………….

4- This mock-up is useful and effective.
   Strongly Agree ☐ Agree ☐ No Idea ☐ Disagree ☐ Strongly Disagree ☐

5- I am willing to use this mock-up in a real e-learning environment.
   Strongly Agree ☐ Agree ☐ No Idea ☐ Disagree ☐ Strongly Disagree ☐

6- What are the main benefits/strengths of implementing this mock-up in an e-learning setting?

7- What are the main obstacles/weaknesses of implementing this mock-up in an e-learning setting?

8- What amendments do you suggest in order to improve the effectiveness of this mock-up in an e-learning environment?
Appendix H: Revised interactive mock-up: Others Stories

The revised interactive mock-up designed for the storyboard entitled ‘Others Stories’ can be found in the CD attached here.