The Potential for the Constructive Use of a Virtual Learning Environment in a Post Leaving Certificate College in Ireland – A Case Study.

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Declaration: “I hereby declare that this is entirely my own work and that it has not been submitted for an award at any other university.”

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Abstract

The use of a Virtual Learning Environment (VLE) is becoming an increasingly important facility within education in Ireland. The research topic was chosen to reflect and highlight the technological changes happening in the delivery of educational courses where students learning expectations are often influenced by the range of social networking opportunities available.

A Post Leaving Certificate (PLC) college in Ireland was chosen and research carried out in order to investigate, analyse and address the potential for the constructive use of a VLE in terms of the opportunities and constraints that directly apply to its current use in Ireland.

Existing peer reviewed research was analysed in relation to the communication and pedagogical opportunities offered, through the use of the VLE, in relation to the potential applicable to learning and teaching in a PLC college.

Facilities for carrying out course management activities, using the VLE, were also investigated in order to encourage and facilitate online course administration as a means of encouraging teachers to actively use the VLE to streamline existing practice.

The case study model enabled a holistic approach and data was collected by combining quantitative and qualitative research methods.

A primary objective entailed researching current practice in terms of VLE usage both nationally and internationally in order to inform and to make recommendations which could aid the enhancement of learning and teaching using the VLE as a platform for change in PLC colleges.

Findings indicated that although the facilities inherent and the pedagogies implicit in the current use of the VLE were being used successfully by a core group of teachers and students there was the potential to recognize and enhance usage across the board.

Recommendations based on research and observations seek to enhance the educational potential for constructive use of the VLE across PLC colleges in Ireland.
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<td>Association of American Colleges and Universities</td>
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<td>ADDIE</td>
<td>Analysis, Design, Development, Implementation, and Evaluation</td>
</tr>
<tr>
<td>BECTA</td>
<td>British Educational Communications and Technological Agency</td>
</tr>
<tr>
<td>CAD</td>
<td>Computer Aided Design</td>
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<td>CAMEL</td>
<td>Collaborative Approaches to the Management of e-Learning</td>
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<td>CPD</td>
<td>Continual Professional Development</td>
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<td>CSCL</td>
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<td>KM</td>
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<td>Zone of Proximal Development.</td>
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Chapter 1

Introduction to the Potential of a Virtual Learning Environment in a Post Leaving Certificate College

1.1 The Case Study

The potential for the use of a Virtual Learning Environment (VLE) within a Post Leaving Certificate (PLC) college was chosen as the topic for this case study in order to bring to prominence and to highlight the opportunities to be gained by the constructive use of the technology to address the changes available in the delivery of courses in the chosen PLC college in Ireland.

Existing peer reviewed literature was researched and analysed in order to gain an insight into the use of VLEs both nationally and internationally.

The communication and pedagogical opportunities facilitated through the use of the VLE was researched in relation to the potential applicable to the learning and teaching cohort in the PLC college. The facility for carrying out course management activities using the VLE as a platform was also investigated in order to encourage and facilitate online course administration as a means of encouraging teachers to actively use the VLE in order to streamline existing practice.

The author teaches in a PLC college and is also responsible for coordinating a mandatory FETAC module. This position allowed the author access to students and teachers within a department and also across a range of courses. The advantage of using the case study model in the PLC area was that it presented a naturalistic approach and enabled engagement with students in their educational environment.
Students come from a range of educational backgrounds and secondary school leavers predominate. Primarily students attend PLC colleges to seek to enhance their Leaving Certificate qualification in a vocational setting in order to help facilitate entry to third level colleges through the FETAC links scheme. Other students aspire to enter the workplace directly on completing their course of study. Typically students gain a portfolio of skills that can enable a wide range of progression opportunities.

With the current downfall in the employment sector some students attend the college for the purpose of retraining or up-skilling and these tend to be mature students. PLC colleges attract a range of non-Irish students, some of whom enter with prior learning experience in both a practical and professional capacity.

The PLC college chosen for this study currently has 650 students on the register and the majority of courses are full-time. All courses have at least one Information and Computing Technology (ICT) subject and there is open access to computers in the college, albeit on a timetabled basis.

The college has a wireless facility with a range of hotspots throughout the building enabling an increasing number of students to use laptops as part of their learning.

There are 80 teachers in the college and this comprises an average of 70% on permanent contract. The 30% of part-time teachers generally come from specialist backgrounds and bring additional skills and expertise which helps to create a successful and dynamic college environment.
Virtual Learning Environment software was introduced into the college in 2008 and teachers have received four hours of Continuing Professional Development (CPD) over the academic period to date. The college in question introduced combined Virtual Learning Environment (VLE) and Course Management System (CMS) software largely in response to trends in other colleges and to address the needs of the student cohort, many of whom already have technological experience.

1.2 Research Topic

The topic of this research was selected in order to explore the existing use and potential of the VLE, in a PLC college, in order to reflect and highlight the opportunities and constraints that may exist in the chosen educational setting. The research looked at existing use of a VLE and explored the potential for enhanced pedagogies that are applicable to the changing technological expertise, of both students and teachers that can be enhanced through constructive use of the VLE in a PLC college. The opportunity to carry out course management activities was also investigated as a means of enabling online course administration with the objective of encouraging and facilitating teachers to actively use the VLE as an integral part of their day to day delivery of courses.

The study sought to discover if the personal learning styles and technological expertise of students were currently being addressed using the VLE and to analyse the opportunities and constraints that exist in relation to the use of the VLE in the college.

This study researched peer reviewed literature, analyzed data findings from within the PLC college and highlighted the potential of the constructive use of a VLE in terms of the pedagogies and course management opportunities for future use. The study has presented a
range of recommendations designed to facilitate the potential for the constructive use of the VLE currently and into the future.

1.3 Aims of the Research

The aims of the research were as follows:

- To gather data based on the current use of the VLE and how it is integrated into the delivery of courses in the PLC college
- to explore the potential of course management using the VLE in relation to the PLC college
- to present a series of recommendations that will give teachers greater scope to provide enhanced opportunities for students whose technological skills may not be fully utilised at present in the learning environment.

1.4 Objectives of the Research

- The primary objective of this study was to examine the potential of the VLE within the college and to address the technological expertise of students in the learning environment in order to increase awareness of the constructive use of the VLE
- to ensure that the pedagogies that are relevant to today’s learners and which are suitable for VLE application are researched and highlighted for future dissemination
- to look at existing methods of addressing FETAC module requirements through the use of the VLE in the current setting
- to illustrate by data findings the current use of the VLE in the PLC college with the objective of creating a set of recommendations as an aid to the enhancement of the use of the VLE in keeping with best practice in PLC colleges in Ireland.

1.5 Relevance of Research into the Potential of the VLE

Current research indicated that there were both pedagogical and practical opportunities that may be being overlooked in relation to the concept of a VLE and its educational use within the PLC college.
The primary relevance of this study is in seeking to look at the pedagogical and course management opportunities and to provide for a set of recommendations that will enable, facilitate engagement with, and realise the potential of VLEs within the PLC area of second level education in Ireland.

1.6 Significance of the Research

It is hoped that this study will pave the way for significant constructive dialogue into the use of a VLE and its ability to address and enhance the technological learning needs of students, pedagogical opportunities and course management issues surrounding education in Irish PLC colleges.

This study presented a range of recommendations, based on current research, to enable discourse and the adoption of CPD opportunities for the purpose of technological enhancement using a VLE in relation to education in Ireland at PLC level.

Future research into the potential and viability of online assessment and the use of e-portfolios as an assessment tool will be undertaken in relation to the certification awarding body FETAC. Future research also seeks to further expand the use of the VLE within the college and to encourage engagement with other PLC colleges whose prospectuses are similar in construct and delivery.

1.7 Research Methodologies Appropriate to this Study

Through the use of appropriate quantitative and qualitative research methods the author sought to investigate, by engaging directly with peers and students, the level and scope of current use of the VLE.

Based on earlier peer reviewed research it was decided that personal learning styles and the pedagogies applicable within the scope of the
VLE would be researched on a broad level in order to address the needs of students who are familiar with technology and who can often see the benefits of technology to their learning.

The questionnaires used simple random sampling methods and were designed within the paradigm of positivism following the epistemological model of being objective and non-directive. Questionnaires were piloted among peers and students to ensure clarity, reliability and validity.

Permission was sought from the Principal of the college, at the outset of this study, to carry out research. This request outlined the function of the questionnaires with an assurance of the confidentiality of data sources. Permission was also sought from all participants. See appendices 8 and 11.

Interviews with the student and teacher were recorded and transcribed for analysis.

Qualitative research methods were used in the form of interviews and developed a thread for discussion in order to develop an awareness of the topic in hand.

Surveymonkey.com was used to create the questionnaires which were distributed by emailing a link to teachers who were encouraged to ask their students to follow the link and to complete the questionnaire. The author decided not to use the VLE as a means of distributing the questionnaire in order to prevent bias and to ensure the inclusivity of participants.

Focus groups comprising a range of students and teachers were organized with the author facilitating and enabling all participants to contribute.
1.8 **Scope of the Study**

The author was able to avail of valuable peer reviewed research materials through online libraries and journals. This material enabled the author to look at the use and potential of a VLE both nationally and internationally.

The scope of the research rested within the chosen PLC college and data was collected using the research tools indicated above. Administration data was provided by the VLE coordinator. This enabled an overview of general usage and indicated VLE activity relating to specific subject areas within the college.

1.9 **Structure of the Study**

Chapter 1 highlighted the setting in which the study took place and a statement of the research topic formed part of the introduction to the study. The aims and objectives were established and the research methodology decided upon. The significance and relevance of the topic were outlined in this chapter along with a section on the scope and limitations of the study. The structure of the study concluded this chapter.

Chapter 2 focused on existing peer reviewed research into the pedagogies applicable to and the potential for the constructive use of a VLE within the PLC college. Existing surveys into the use of a VLE in other colleges were also researched and analysed in order to gain a broad insight into the opportunities and constraints involved in the use of a VLE.

An examination of research methods in Chapter 3 enabled and encouraged the author to decide on a pluralist approach where quantitative and qualitative methods were combined to formulate a methodology for the collection of data within the chosen college. This
approach enabled the author to achieve a balanced, unbiased and holistic approach to the research topic.

Chapter 4 presented data findings from the range of research tools used. Questionnaires were presented as bar charts with interview and focus group data presented in a narrative format for discussion.

Discussion of the findings in Chapter 5 combined earlier peer reviewed research with the data obtained across the range of research tools used in order to present a viable insight across the board. Triangulation of data was incorporated into this chapter in order to corroborate or refute findings at all levels.

The concluding chapter gave the opportunity to draw together all research in a holistic way and to enable the author to produce a set of recommendations that related directly to early research and the combined data findings collected within the PLC college.
Chapter 2
The Potential for a Virtual Learning Environment in a Post Leaving Certificate College.

2.1 Introduction

This review of existing research and literature sought to investigate the potential of a Virtual Learning Environment (VLE) and looked at the relevance of pedagogies and the incorporation of a course management system into the daily activity of teachers in a Post Leaving Certificate (PLC) College.

A number of sources were accessed ranging from online journals and conference papers to books and academic research sites. The main emphasis was on researching material with specific significance and importance to the PLC area of education and to the learning cohort whose technological skills are already established.

FETAC is the major national awarding body for Further Education in Ireland:

Programmes leading to FETAC awards at Levels 1 to 6 of the National Framework of Qualifications are offered nationwide by a range of providers in education and training centres, in colleges and in the workplace. Over 750,000 awards were made by the Council since FETAC’s establishment in June 2001 to the end of 2008.

(FETAC 2009)

Certificates are awarded for the achievement of major awards, where learners achieve the national standard in a prescribed number of component areas. Eight modules are required to fulfill the requirements for a full award at Levels 5 and 6.

Further Education courses are essentially vocational and designed to prepare students for the work environment by giving them specific
skills and training and also to act as a stepping-stone, through the FETAC Links scheme, to third level progression to institutes of technology, universities or other colleges. These courses are often run at Post Leaving Certificate (PLC) colleges which fall within the second level remit of the Department of Education and Science:

There are about 30,000 students taking a PLC course in Ireland’s further education colleges, with about 1,000 courses available ranging across approximately 60 disciplines and subjects. This presents a tremendous number of educational options for the school leaver, and ensures no student can complain about the lack of courses available that suit them.

(gotocollege.ie)

This area of education also attracts teachers from across the spectrum of expertise and is increasingly attracting professionals from a diverse range of backgrounds whose teaching contribution is invaluable particularly in today’s technologically advanced knowledge era.

The variety of courses and the range of students produces a dynamic learning environment that is well equipped technologically and physically to address the potential for the constructive use of a VLE.

2.2 What is a Virtual Learning Environment?

A VLE is a system that creates an environment designed to facilitate teachers in the management of educational courses for their students. The system uses computer hardware and software and often involves distance learning. In North America, a virtual learning environment is often referred to as a "learning management system" (LMS):

A system and methods for implementing education online by providing institutions with the means for allowing the creation of courses to be taken by students online, the courses including assignments, announcements, course materials, chat and whiteboard facilities, and the like, all of which are available to the students over a network such as the Internet.

(JISC 2009)
The above definition of a VLE acts as a broad description of the systems currently in use in schools and colleges.

In order to gain an insight into the area of VLEs it was necessary to look to the past as a way of understanding the early advances in technology that have a bearing on today’s technology. An examination of the immediate history of pedagogy and learning through the use of technology and the precursors to VLEs follows.

2.3 Precursors of the VLE

To look at the history of VLEs and learning, using the computer as a tool or machine, it was of relevance that consideration be given to the work of Sidney Pressey (1932), an educational psychology professor at Ohio State University, who in the 1920s developed the first “teaching machine.” Pressey (1932) was influenced by Thorndike’s (1912) theory which indicated that the most basic form of learning was through trial and error. His machine offered “drill and practice “ exercises and also a range of multiple choice questions where the student had to achieve a correct answer before proceeding to the next question.

In an article he stated that:

*education was the one major activity in this country which has thus far not systematically applied ingenuity to the solution of its problems.*

*(Pressey 1932, p 668.)*

Pressey (1932) was confident that the machine he developed would lead to an “industrial revolution in education.” Of particular interest in relation to the VLE was that Pressey (1932) also believed that his machine provided the user with immediate knowledge of the results with the aspiration that his machine could:

*Lift from her [the teacher’s] shoulders as much as possible of this burden and make her free for those inspirational and thought-stimulating activities which are, presumably, the real function of the teacher.*

*(p. 374)*
This reiterated Thorndike’s (1912) view in his book called Education: a first book that:

*If, by a miracle of mechanical ingenuity, a book could be so arranged that only to him who had done what was directed on page one would page two become visible, and so on, much that now requires personal instruction could be managed by print.*

(p. 165)

In the 1960s a new generation of learning technologies came on board and was mainly developed in the universities. A system called Programmed Logic for Automated Teaching Operations (PLATO) was developed and based on the concept of computer assisted instruction. PLATO offered specifically designed coursework and by the early 1970s there were around 1000 terminals worldwide.

In the 1980s The Open University began to realize the potential of online learning and piloted a trial of the OPTEL Telewriter which was an early version of a teleconferencing system, accessed via passwords and dial-up from home.

With the availability of personal computers and the growth and spread of technology the rate of increase in the development of educationally specific software increased exponentially so that in relation to VLEs there was a lot of choice on the market. Of the range of VLE software available currently, the most popular are: Moodle, Blackboard and webCT. The British Educational Communications and Technology Agency (BECTA) offer advice and guidance to schools and colleges on the selection criteria and potential of VLEs.

The extensive use and the potential of the VLE in education led the author to revisit pedagogies in order to assess new methods for the delivery of learning in the current technological era.
An examination of the potential of some pedagogies and their value in relation to VLEs within the context of a PLC college in Ireland is required.

2.4 Pedagogy in Relation to VLEs

The perceived pedagogical opportunities inherent in and applicable to the use of VLEs led the author to research theorists of the past in order to reappraise their relevance for future teaching and learning.

Vygotsky (1978) and Piaget (1969) offered key insights that were of great significance where constructivism can be seen to be of paramount importance to the use of VLEs in the PLC college.

2.4.1 Constructivism and the VLE

...every function in the 'learners' cultural development appears twice; first, on the social level, and later, on the individual level; first, between people (interpsychological) and then inside the learner (intrapsychological). This applies equally to voluntary attention, to logical memory, and to the formation of concepts,

(Vygotsky 1978)

Lev Vygotsky (1896-1934) was a Russian psychologist whose socio-cultural theory was largely unknown in the West until his work began to be published in English in 1962. Through his work in child development and educational psychology he saw learning as an activity based on experience, both social and environmental, as a key to developing future learning abilities and problem solving skills. Vygotsky (1978) perceived the process of “concept formation” as both dynamic and of intellectual merit. From his perspective, "a concept emerges and takes shape in the course of a complex interaction aimed at the solution of a problem." This was corroborated by Higgs and Hall (2008) in a paper entitled “Integrating Concepts of Integrative Learning” where they stated that:
“Grasping a threshold concept is transformative, causing a significant shift in the learner’s perception of the subject and allowing further learning to proceed.”

(Higgs and Hall 2008)

In relation to VLEs research showed that learners readily identified with technology in an experiential way based on their social and cultural environment and often indicated a high level of technological skills that could be harnessed educationally.

Opportunities for concept formation and problem solving were fostered pedagogically through “scaffolding” where blended learning within a classroom setting had the potential to address the second element of Vygotsky’s socio-cultural theory - the zone of proximal development (ZPD). Vygotsky (1997) believed that any teaching experience could create a process that led to the development of the learner. ZPD has been described as the difference between the actual developmental level as determined by individual problem solving and the level of potential development as determined through problem solving under teacher guidance or collaboration with peers, resulting in heightened cognitive development. His perception of the overall goal of education was to:

\[
\text{generate and lead development which is the result of social learning through internalization of culture and social relationships.}
\]

(Vygotsky 1997)

With the promotion of higher level thinking and critical analysis, Vygotsky’s (1997) theory was perceived by the author to have positive implications for use in VLE methodologies and pedagogies where peer to peer as well as online communication with teachers can offer the opportunity to promote a dynamic learning environment; where learners maximize on their potential and build on cognitive skills in a way that may recognise their self worth and achievement through the use of technology and also through the use of a VLE in particular.

In researching constructivist theories in relation to VLEs it was seen that Piaget (1896-1980) saw the learner:
as continually interacting with the world around him/her solving problems that are presented by the environment....... learning occurs through taking action to solve the problems.... In this way thought is seen as deriving from action; action is internalized, or carried out mentally in the imagination, and in this way thinking develops.

(Piaget 1969)

Piaget’s theories revolved around the concept of “cognitive constructivism” which highlighted the process by which a person takes material into their mind from the environment. He encouraged the incorporation of practical activities as an aid to future learning and the development of problem solving skills. Experiential and discovery learning were also encouraged to enable the formation of hypothesis and deduction. Research has shown that this ability in students can have a positive impact on collaborative and integrative learning practice thus forming a key role in the successful uptake of VLEs pedagogies:

The principal goal of education in the schools should be creating men and women who are capable of doing new things, not simply repeating what other generations have done; men and women who are creative, inventive and discoverers, who can be critical and verify, and not accept, everything they are offered.

(Piaget 1980)

Vygotsky’s (1978) “cognitive constructivism” and Piaget’s (1980) “social constructivism” theories were often linked in their recognition of the importance of the social and cultural environment and the building of problem solving skills as a key to cognitive development. The only real difference is whereas Piaget (1980) focused on the practical aspect of problem solving, Vygotsky (1978) laid more emphasis on the development and use of language skills and the importance of interpersonal skills as a key to learning.

2.4.2  Collaborative Learning Using a VLE

Referring to Vygotsky’s (1978) social development theory; social and cultural tools can be enhanced through collaborative learning, involving a group of learners who work towards an understanding of each other
in order to learn a specific skill or to attain a range of goals. The collaboration learning theory is corroborated by Jameson, Ferrell, Kelly, and Walker (2006) in a paper entitled, “Building trust and shared knowledge in communities of e-learning practice: collaborative leadership in the JISC, eLISA and CAMEL lifelong learning projects”. This paper indicated that:

*Team performance in innovative e-learning projects is crucially affected by the degree to which the team involved has high levels of social and project management skills and also fosters reflexivity amongst team members (Hoegl & Parboteah, 2006). These skills can be facilitated and enhanced through collaborative leadership and a willingness to engage in critical reflection to improve practice.*

This observation could be perceived to have a direct connection with the constructive use of a VLE.

In the collaborative learning environment, learners are challenged both socially and culturally as they become aware of and begin to comprehend the different perspectives and ideas that are communicated within the group. Learners are encouraged to articulate and critique their ideas.

In an article entitled Computer-supported Collaborative Learning: An historical perspective it can be seen that:

*CSCL stresses collaboration among the students, so that they are not simply reacting in isolation to posted materials. The learning takes place largely through interactions among students..........
Stimulating and sustaining productive student interaction is difficult to achieve, requiring skillful planning, coordination and implementation of curriculum, pedagogy and technology.*

*(Stahl, Koschman, and Suthers 2006)*

VLEs offer the potential for collaborative learning through computer-supported collaborative learning (CSCL) allowing students the benefit of communicating with peers and the teacher, using available technology. Research indicated that CSCL was seen to encourage the
enhancement of learning and enabled learners to engage in additional study outside of the classroom. It was observed that a major function of CSCL was to enable “scaffolding” by the teacher in order to support students to learn together effectively. The use of CSCL methodologies, through VLEs, can enhance the communication of ideas and information among learners and assist in the creation of a dynamic learning environment.

Research indicated that collaborative learning required a challenge that gave opportunity for the learner to actively engage with his/her peers, in order to analyse, hypothesise and synthesise information and concepts rather than simply to memorize and regurgitate information. Research also showed that collaborative learning was successful when specific outcomes or learning goals were set within the learning brief and that “scaffolding” by the teacher could enable targets to be reached within a realistic framework.

Also indicated by research was that enhancement of a critical-thinking ability through collaborative learning methods increased the potential for learning, both within the current learning environment and as an aid to lifelong learning.

Within the PLC college, the FETAC system currently allows for collaborative learning in some of its modules. It was seen that assignments and projects form the primary assessment tools and opportunities can exist through the use of VLEs to encourage and enhance collaborative learning in this regard.

Of particular relevance to the PLC college, where many students work part-time, was the facility to encourage heightened communication and learning through CSCL which could enable students to study outside of the classroom situation.
2.4.3 Integrative Learning in a PLC College

Integrative learning can be seen to be directly related to and aligned with collaborative learning where learners are enabled to use newly acquired and previous knowledge coupled with existing skills to define and build connections that will further increase their knowledge and lead to enhancement of learning.

An initiative under the auspices of the Carnegie Foundation for the Advancement of Teaching and the Association of American Colleges and Universities (AAC&U) was found to be of value to the understanding of the pedagogical and cognitive importance of integrative learning. Huber and Hutchings (2005) brought together a body of research relating to integrative learning called “Integrative Learning: Mapping the Terrain.” Of significant interest was the observation that pedagogical methods often remained in seclusion within the each subject area. This dichotomy was observed in the PLC college where students often perceived that modules stand in isolation as evidenced by comparison of attendance records across the subject areas:

Indeed, the very structures of academic life encourage students to see their courses as isolated requirements to complete. 

(Huber and Hutchings 2005).

Of key importance to the PLC college chosen was the range and diversity of FETAC certificates, at both Levels 5 & 6, currently in place that have the potential for the use of integrative learning and assessment methods through a VLE:

A holistic approach should be taken in planning the assessment for a programme. The tendency to over-assess should be avoided and opportunities to integrate assessment across a number of minor awards should be explored. The total assessment load and the needs of the learners should be considered when the assessment is being planned.

(FETAC 2007, p12)
Research has shown that the successful uptake of a VLE has the potential to encourage and facilitate integrative learning by addressing the enhanced communication and technology skills prevalent amongst today’s learners.

An examination of VLE software indicated that distribution and reuse of learning materials combined with enhanced communication and sharing of resources can be actively facilitated through the use of VLEs.

Research by Huber and Hutchings (2005) also indicated that such learning is, "unlikely to occur without commitment and creativity from our educational institutions." In this regard it was seen to be important that the teacher provide an element of “scaffolding” in order to facilitate the learning process.

FETAC endorsed integrative learning as follows:

*Programme design, delivery and assessment are coordinated so as to facilitate learners to maximise the value of their assessments across the programme. i.e. the assessment of programme modules is integrated wherever possible and the needs of learners are considered when assessments are being scheduled.*

*(FETAC 2007, p 35)*

The growing use of VLEs and e-portfolios, that enable students to document and reflect on their learning across modules, can provide a very constructive tool in the development of integrative learning by reinforcing pedagogy, heightening motivation, self direction and awareness of the student creating a “breadth of outlook, a capacity to see connections and hence an ability to make fundamental decisions and judgements.” (Rothblatt 1993, p28.)
Research also indicated that:

*Learning that helps develop integrative capacities is important because it develops habits of mind that prepare students to make informed judgments in the conduct of personal, professional, and civic life.*

*(Huber and Hutchings 2005)*

### 2.4.4 The Potential for Blended Learning

In terms of pedagogies, research showed that ‘blended learning’ was an eminently suitable pedagogy for the PLC college in that it can enable both teachers and students to avail of a range of opportunities that lead to an enhancement of learning styles using the VLE.

Blended learning has been defined by Graham (2006) in three ways as follows:

1. **Blended learning is equivalent to combining instructional modalities.**
2. **Blended learning is equivalent to combining instructional methods.**
3. **Blended learning is equivalent to combining online and face-to-face instruction.**

*(Graham 2006)*

This definition, which highlighted the combination of online and didactic teaching methods, particularly applies to the PLC college because it allows the teacher to avail of the facilities presented by the VLE whilst maintaining the traditional model of face-to-face teaching.

Given the attendance policies currently in place in the college, research indicated that blended learning could be the primary pedagogy and motivator that has the potential to address the technological enhancement of learning that is expected by today’s student cohort through the vehicle of a VLE.

By constructively using the online facilities within the VLE in combination with direct teaching methods research indicated that:
Research by Graham (2006) indicated that blended learning provided for a heightened level of communication between student and teacher and a “pedagogical richness” in terms of motivation and access to knowledge.

Research by Garrison and Kanuka (2004) also showed that blended learning can increase the options for a heightened quality of interaction and communication between students and teachers and can give students the opportunity “to be both together and apart.”

It follows then that blended learning can provide the capacity to combine integrative and collaborative learning and in doing so could positively enhance the potential for use of the VLE in a PLC college.

2.4.5 The Relevance of Metacognition to Learning

Metacognition refers to a large body of research concerned with the concept of realising what one knows and how learning happens. It has been described by Glaser (1984) as the recognition of knowing what one knows and does not know. The ability to plan ahead, manage time and engage in problem solving, in order to attain a suitable outcome or learning goal, were seen as key elements to this pedagogical theory. In a paper entitled ‘The role of metacognitive knowledge in learning, teaching, and assessing’, it was observed:

*Authors agree that with development students become more aware of their own thinking as well as more knowledgeable about cognition in general. Furthermore, as they act on this awareness they tend to learn better (Bransford, Brown and Cocking 1999). The labels for this general developmental trend vary from theory to theory, but they include the development of metacognitive knowledge, metacognitive awareness, self-awareness, self-reflection, and self-regulation.”*

*Pintrich (2002)*
Flavell (1979) outlined three criteria in relation to metacognition – knowledge of strategy, task and personal attributes. In relation to this study, knowledge of the strategies related to metacognitive learning in the PLC college could include awareness of the resources, methodology and problem solving skills necessary to carry out assignments, collection of work, e-portfolios and projects using the VLE.

Where and how to access information and familiarity with the VLE are also key factors that relate to metacognition and can be assisted through “scaffolding” by the teacher. Knowledge of the task in this respect involves the ability to disseminate an assignment brief in order to obtain a clear understanding of the learning goals while knowledge of the person includes an awareness of intrinsic motivation, reflection, time planning and the ability to set realistic goals.

In facilitating and encouraging metacognitive learning strategies, through the use of a VLE, teachers can actively enable students to see learning as a lifelong activity:

They (students) approach learning with high levels of self-awareness, understanding their own processes and goals as learners and making choices that promote connections and depth of understanding. They know how to regulate and focus their efforts as learners—how to make the most of their study time, to practice new skills, to ask probing questions.

(Bereiter and Scardamalia 1989, p363)

The function of creating an e-portfolio can also provide a valuable opportunity for the enhancement of metacognitive abilities in students. The processes involved in creating an e-portfolio answer Flavell’s (1979) criteria and the results of this learning activity have the potential to produce a self awareness in the student, an attainment of learning goals and can enable a dynamic presentation of student skills.

Goal-setting and reflection are intertwined processes that support learning, and were clearly part of the purpose of the e-portfolio work.... Setting goals requires self-knowledge as well as knowledge about the possibilities ahead, whether pertaining to curriculum,
Looking back to section 2.4.1, which highlighted the importance of constructivism in relation to the use of VLEs, it can be perceived that the influence of Vygotsky’s (1978) “cognitive constructivism” and Piaget’s (1980) “social constructivism” theories are relevant to engendering metacognitive ability for the enhancement of student learning in the PLC college where FETAC modules can present opportunities for self awareness, and the realisation of learning goals.

Metacognitivism is a valuable tool in realising, assembling and managing knowledge. As a vehicle for encouraging metacognitive strategies the facilities and resources implicit in the constructive use of a VLE can be a valuable asset. The next section looked at knowledge management as a system for focusing and enhancing metacognition.

2.5 The Relevance of Knowledge Management

It can be seen that the traditional didactic and behavioral teaching methods of the past did little to foster the sharing of knowledge and integrative learning. With the uptake of constructivist teaching methods and the enhancement and availability of VLEs, research illustrates the potential to bring the concept of knowledge management (KM) into education through the use of VLEs. It must be realised however that:

Teachers, for example, traditionally have had limited encouragement for sharing and collaborating, so among widely
Research by Schlager, Fusco and Schank, (2002) highlighted that within educational development there was an increasing awareness of the potential of KM and the creation of “communities of practice.” It could be perceived that the VLE presents opportunities for KM and collaborative working in relation to students and teachers by the acknowledgement of the importance and viability of communities of practice that could be facilitated through the VLE.

The facilitation and encouragement of the use of KM is of particular relevance within the PLC college where some mandatory modules, for example Work Experience and Communications, are taught by a number of teachers. Both teachers and college management have the potential to benefit from the collaborative opportunities presented by KM and realised through the constructive use of a VLE.

Research indicated that the concept of KM, when applied to education, could be of benefit by actively encouraging teachers to work together in a dynamic and creative way in order to produce learning materials that are consistent with the learning outcomes across a range of modules.

The ability to identify and access knowledge sources within a college environment and outside are central to course planning and administration forming key elements that pertain to constructive teaching and KM through the use of VLEs.

There is a cogent link between the integrative learning theories already discussed and the use of KM strategies in relation to addressing issues raised in FETAC’s Quality Assurance in Further Education and

It has also been identified that KM skills are important in terms of ensuring that there is a consolidation in delivery of courses. Likewise it is important to understand and engage in course planning for the delivery of learning through recognised instructional design models in order to maximize on the potential of KM through the constructive use of the facilities offered by a VLE.

2.6 Instructional Design at PLC Level

In 1975, Florida State University developed the ADDIE model as a format for Instructional Design. Analysis, Design, Development, Implementation, and Evaluation were highlighted as key stages for instructional design and delivery. Although perceived as being linear and inflexible this model could provide an excellent starting point for the planning and development of the delivery of courses within the FETAC system particularly when that delivery is presented primarily through a VLE.

FETAC awards, at Level 5 & 6, comprise of eight modules of which Work Experience and Communications are mandatory across the system. Within each award there are course specific, additional mandatory modules and a range of electives. The structure of modules includes a range of learning outcomes with an accompanying marking scheme. Assessment is based on a range of tools including collection of work, project, written examination and assignment.

Of particular relevance and importance to this study was the recognition that:
Collaborative and integrative learning methods coupled with KM can offer the potential to be incorporated into the ADDIE model in order to provide a college wide template enabling all teachers to consolidate and rationalise their course planning for delivery through a VLE.

The ADDIE system was enhanced by Dick & Carey with the inclusion of “rapid prototyping”. This offers the potential for problem solving, KM and ongoing enhancement during the course delivery process.

**Figure 2.1 The ADDIE model**

The importance of evaluation on a regular basis was highlighted by Kruse:

*Evaluation is of two levels. The most important is to gauge the success of the participant obtaining and retaining the demonstrated skills and understandings. The second is to determine how successful the instructional design package was in facilitating effective participant learning. The final question becomes, “How can I modify the package to improve its next presentation?”*  
(Kruse 2002)

Course management and regular communication amongst peers can enable the ADDIE model to be successfully used within the PLC college and can facilitate course management strategies through the VLE.
2.7 Course Management and the VLE

A major advantage of the use of a VLE in education is the facility to carry out management tasks online. Course management in the PLC setting includes attendance collection, exam registration and submission of results, assessment, feedback, evaluation and FETAC Quality Assurance. Currently this involves a time consuming paper based activity with errors and loss of vital information occasionally being a natural consequence.

Within the course management facility of a VLE the administrative functions, if properly utilised, could increase efficiency and cut down on time, freeing up teacher time and enabling a consistency of administration materials:

*online teaching requires at least as much effort by human teachers as classroom teaching. Not only must the teacher prepare materials and make them available by computer, the teacher must motivate and guide each student, through on-going interaction and a sense of social presence. While online teaching allows students from around the world to participate and allows teachers to work from any place with Internet connectivity, it generally significantly increases the teacher effort per student.*

*(Stahl et al, 2006)*

Research indicated that the pedagogies of relevance to the VLE, as discussed in section 2.4 of this chapter, have direct opportunities and challenges in relation to course management. With particular reference to blended learning it was observed:

*An institution must create the necessary policy, planning, resources, scheduling, and support systems to ensure that blended learning initiatives are successful.*

*(Garrison & Kanuka 2004)*

According to BECTA a VLE can help teaching and support staff in relation to course management by facilitating the delivery of a variety of daily tasks as follows:

- general class administration and organisation
- the creation of lesson plans using existing resources
By far the largest volume of administration material required in the PLC college is the implementation of the Quality Assurance policy. This material consists of forms that are currently completed across a range of policies and comprise contributions from all subject teachers in relation to each course. By streamlining this material through the constructive use of a VLE it would be possible for each teacher to add their individual contributions.

The monitoring of attendance in the PLC college is at present cumbersome and time consuming. Attendance data is presently collected using four different formats namely the Department of Education and Science register, a subject teacher roll book, a daily class register and a cumulative sheet that totals absenteeism. Constructive use of the course management system within the VLE has the potential to streamline this process by facilitating collaboration and sharing of information among teachers thus saving both time and resources. It can be seen then that collaboration and communication among teachers is of vital importance to the successful outcomes implicit in the use of the course management facility available within a VLE.

Having researched management processes it is now necessary to investigate assessment methods currently in use and the methods of implementing management and planning in order to achieve the assessment requirements of the FETAC system.

2.8 Assessment Methods in a PLC College

Assessment of integrative and collaborative learning within project work necessitates planning and collaboration among teachers in order to ensure that the learning goals can be broken down and quantified - that is, to develop instruments and approaches that are appropriate to
the assessment procedure and that fully realise the connections between modules. The assessment of integrative learning and the constructive use of a VLE also implies more focus on student self assessment. Research at Alverno College, Milwaukee indicated that using an e-portfolio as a vehicle for self-assessment was a constructive method of assuring self reflection on the part of the student and also provided an opportunity for both formative and summative assessment:

*Most students find reflective activities daunting and unfamiliar. They often resist engaging in self-assessment, referring that responsibility back to faculty. Initially, learners expect teachers to tell them how they are doing....*  
*(Loacker 2000)*

By constructively engaging with students using ‘scaffolding’ techniques in order to encourage self awareness and by explaining the function and intrinsic value of integrative and collaborative learning methods, the teacher can enhance student motivation and self reliance whilst addressing and realising the technological attributes inherent in the student cohort.

2.8.1 Formative Assessment

Formative assessment enables the teacher to give feedback to students at intervals throughout a course of study. Research by Clariana (1993) showed that the constructive use of formative assessment and feedback can lead to an improvement in student performance and learning outcomes and that this in turn could lead to higher levels of intrinsic and extrinsic student motivation.

Within the scope of VLEs there is the potential to develop formative assessment type assignments where feedback in terms of comments and results can facilitate student self assessment and enable the teacher to ascertain which areas of teaching require further consolidation of knowledge.
The facility to use integrative teaching methods is enhanced through the use of the course management system provided within the VLE where online worksheets could provide opportunities for formative assessment.

The application of formative assessment through the use of a VLE in the PLC college provides an opportunity to address some of the assessment materials required by FETAC. For example the Work Experience module enables a number of worksheets to be designed and posted on the VLE to form a “learner record” giving the opportunity for formative assessment and feedback. Likewise there is the opportunity to upload this element of the module to the VLE for use across the college. This activity would, in part, address one of the research questions of this thesis namely, “how can the FETAC certification requirements be addressed constructively through the use of a VLE?”

As this part of the Work Experience module is taught early on in the course there is the opportunity here to actively encourage and facilitate students and teachers in their use of the VLE on an ongoing basis.

2.8.2 Summative Assessment

Within the FETAC system summative assessment tools that apply to the majority of modules include the assignment and project. The majority of assignments comprise written work using ICT skills and are carried out either in class time or more frequently at home. Project work is ongoing and benefits from regular feedback.

The facility for the teacher to post and the student to submit projects and assignments online through the VLE could be of major benefit to both students and teachers in ensuring that deadlines are met and that lines of communication are kept open. The potential to devise an acknowledgement receipt and to give timely feedback ensures that time can be minimized in the collection of assignments. The facility for the teacher to mark work, from any location where online access is
available, can be seen to be of importance to the constructive use and potential of the VLE.

In a paper entitled ‘A comparison of electronic and paper-based assignment and feedback’ it was stated that:

*Results indicated that 88% of students reported a time saving and many reported financial benefits using online submission. 93% of students preferred having their feedback available online rather than printed and handed to them. Overall, students preferred online assignment management to postal or physical hand-in.*  
* (Bridge and Appleyard 2008) p 644)

The high percentage of students returning positive results as shown above is a good indicator in relation to the potential opportunities presented for the use of a VLE in the PLC college. This directly addresses the second research question of this study namely, “What are the opportunities and constraints that determine the use of VLEs within a PLC college?”

In terms of summative assessment the ‘collection of work’ is an assessment tool that applies particularly within the design areas of FETAC awards offered in PLC colleges. Modules ranging from CAD to DTP, Graphic and Furniture Design all require a submission where images, evaluation and critiques play a central role and are presented in portfolio format:

*A typical focus of portfolio assessment is writing ability, which is highly relevant to integrative learning. But some campuses are employing the approach to assess a broader set of outcomes as well.*  
* (Cambridge 2001)

Research indicated the potential for the development of e-portfolios, through the VLE, that involve integrative and collaborative learning strategies that could satisfy the range of learning outcomes required by FETAC assessment.

Of the constraints highlighted by research, Bridge and Appleyard (2005) in a colloquium under the heading ‘System failure: A comparison
of electronic and paper-based assignment submission, marking, and feedback’ pinpointed system failure as a significant factor in relation to submission of assignments for assessment:

Unfortunately, the assignment submission date coincided with a crash of the VLE, resulting in a week of down time and loss of data. A submission back-up procedure was initiated, and the students were asked to email assignments to the module leader.

This indicates the need for in-house technical support and CPD across the range of teachers using the VLE in a PLC college.

Other constraints perceived, in terms of this study, were issues related to inequality in terms of access to online facilities and access to a computer outside of class time. These issues have always been a consideration within the PLC college and adequate and open internet access has been made available within the college to facilitate all learners.

The following section will look at surveys that have been carried out in both the UK and Ireland as a way of analysing the uptake and constructive use of VLEs in education.

2.9 Existing Use of VLEs in Education

In a paper entitled, “The current state of affairs with regard to Virtual and Managed Learning Environments in UK schools.” Tolley and Vanhegan (2008) presented findings across a range of areas. Of particular significance were the opportunities and constraints related to day to day usage and what can be learned in relation to the constructive use of a VLE in a PLC college:

Where progress has been made in the introduction of a VLE into schools it has been generally down to the interest and enthusiasm of individuals rather than any clear sense of leadership ‘from above’. In only a few schools have I discovered a ‘whole-team’ consensus or motivation.
Research indicated that there was a need for good communication at all levels and a willingness on the part of teachers to embrace new technologies in order to address the facilities implicit in the use of a VLE.

The need for consolidated course planning and the constructive use of instructional design methodologies as outlined in section 2.6 can also enable a holistic response to the use of a VLE.

In terms of “barriers to usage” Tolley and Vanhegan (2008) highlighted the qualities of leadership and vision as being of paramount importance and stated that those in the school leadership role require:

1. Reasonable technical ability – so as not to be hoodwinked by salesmen or technical staff;
2. A good understanding of the new teaching & learning strategies;
3. Charismatic leadership, management and communication skills.

(p 10)

Also indicated is the need for structured CPD to enable teachers to not only understand the technology but to engender motivation and the uptake of constructive, collaborative and integrative pedagogies:

There is a serious need for staff development. The classic syndrome still exists in many schools which are in the process of understanding their VLE: they are still using their old resources to underpin old didactic teaching styles. As long as this remains, the purpose and thus the motivation for using the VLE will not adapt to new teaching and learning styles.

(p 10)

In a survey entitled VLE Surveys - A longitudinal perspective, carried out between 2001 and 2005, in relation to Higher Education in the United Kingdom research by Browne and Jenkins (2005) indicated that the main opportunities that supported the successful use of VLEs could be prioritised as follows:

General enhancement in learning and teaching quality
Improving access to learning for students off campus
The realisation of student expectations and
Improved administrative processes.

(Brown and Jenkins 2005)
This survey also indicated that in relation to issues of pedagogical importance all colleges surveyed prioritised the functionality of the successful use of a VLE as follows:

- Access to course material
- Access to web based resources
- Collaborative working
- Assignment submission.

(Brown and Jenkins 2005)

In 2008 six Irish colleges participated in an online survey to look at student use of VLEs. The results of the survey were published under the title, “Uptake and Usage of Virtual Learning: findings from a multi institutional student usage survey”, by Cosgrave, Logan-Phelan, McAvina and Risquez (2008). The survey was based on student perception as opposed to the longitudinal survey already discussed and created a snapshot in time. This survey is of particular relevance to this study in terms of its geographical location and the prioritisation of student perceptions; focusing on the reality of the use of VLEs in education.

That the current cohort of students who are studying in Ireland are of an era where technology has positively impacted on all aspects of their lives formed one of the major premises of this survey.

Students attending Universities today are those born into the technology era, and the perception might be that most Irish students within these institutions have access to their courses on-line. But is this perception valid? While innovative users rapidly adopt the newest technical tools, where is the mainstream? How well used are VLEs?

(Cosgrave, et al 2008)

It is of interest that of the five colleges that participated in the survey, the greatest number of responders came from a small college with a recent uptake of VLE and a high level of support from eLearning staff. This indicated the importance of the initial encouragement and support from staff, when the VLE had been installed, in order to enable successful student engagement with the system. This observation

A significant but negative response showed overwhelmingly that students who did not use VLEs choose not to because, “My lecturers do not use it.” Cosgrave, et al (2008)

In terms of the functionality of the VLE in relation to student use it was seen from this survey that “to get copies of lecture notes” and “to get other course material” were the primary motivators for students. This would indicate that the VLE was perceived by students as being an online resource bank and that the potential for integrative and collaborative learning through forums and online discussion were not being fully utilised either pedagogically or technologically.

2.10 Conclusion

The research into the broad areas defined by the sub-headings to this chapter sought to address a range of topics that relate directly to the research questions posed in this study. Opportunities have been researched at this stage through the investigation of pedagogical theories, instructional models and course management. Of particular interest were the impact of Vygotsky’s (1978) and (1997) educational theories which remain true today and indeed he has been cited repeatedly in the majority of research papers that the author has accessed in relation to this study.

It was clear from research undertaken that good communication and a constructive willingness on the part of teachers were important to the successful use of a VLE in education.
This research has also looked at the structure of some awards offered by FETAC in order to look at methodologies that can be recommended in order to ensure that learning goals are met using the VLE.

By researching the current use of VLEs in education the author hopes to recognise the opportunities and constraints that determine the viable use of a VLE and to make recommendations within the college. This study proceeds to analyse current use of the VLE, which is now in its second year of use in the PLC college, in order to ascertain the level of uptake by students and teachers, the pedagogies used, the management opportunities in place and the communication opportunities being actively used.

It is intended that both quantitative and qualitative analysis methods will be used. Where quantitative methods are used it is the author’s intention to use ICT methods as a way of distributing the questionnaires. By engaging fully with the college VLE and encouraging students and teachers to do likewise it is hoped that a constructive dialogue will ensue that will pave the way to the technological enhancement of teaching and learning within the PLC college.
Chapter 3
Methodology

3.1 Introduction

The case study into the potential for the constructive use of a VLE was empirical by nature and followed methodological guidelines identified through research which indicated that data collected should have a range of goals to enable the author:

- To explore significant features of the case
- To create plausible interpretations of what is found
- To test for the trustworthiness of these interpretations
- To construct a worthwhile argument or story.

(Bassey 1999)

The research incorporated both quantitative and qualitative research methods and recognised the complexity, uniqueness and unpredictability of the research process whilst seeking to gain a deeper understanding and increased awareness of the topic within its setting.

3.2 Research Questions

1) Does the current use of a virtual learning environment within the college facilitate the personal learning styles and technological expertise of the current cohort of students?

2) What are the opportunities and constraints that determine the use of VLEs within a PLC college?

3) What teaching/learning theories directly apply to the use of VLEs in a PLC college?

4) Could the use of VLEs present enhanced communication opportunities within a PLC college?

5) What are the opportunities and constraints presented by course management facilities inherent in VLEs?

6) How can constructive use of a VLE address FETAC module requirements?
3.3 Research Methodology

Research took place within the environment of a PLC college and was carried out during the first twelve weeks of the academic year.

The questionnaires were compiled using Surveymonkey.com and were distributed through links within the student network folders and by email. Teachers were asked to encourage students to complete the questionnaires.

Students who submitted the questionnaires ranged across most of the courses in the college and comprised both first and second year students. The teacher questionnaire was distributed by email.

By addressing the potential for constructive, integrative and blended learning it was intended that recommendations could be made, if necessary, in order to enhance the pedagogical and communication opportunities presented by the constructive use of the VLE and to address the concerns outlined by Huber and Hutchings (2005) who perceived that the current structures within education can prevent students from viewing their courses in a holistic way.

3.4 Background to the Research

The PLC college chosen is typical of a range of second level institutions in the Republic of Ireland catering for both the traditional school leaver and mature students. All PLC colleges fall within the governance of local Vocational Education Committees and are part of the second level education sector in Ireland.

The Further Education and Training Awards Council (FETAC) are the main certification awarding body and courses in PLC colleges are offered at Levels 5 and 6.
3.5 Research Methods

Evaluative case studies - enquires into educational programmes, systems, projects or events to determine their worthwhileness, as judged by analysis by authors, and to convey this to interested audiences.

(Bassey, 1999)

By using and combining quantitative and qualitative research methods it was possible to achieve a balance between the positivist tenets, in terms of statistical data collection through the use of questionnaires, with the interpretivist perspective achieved through semi structured interviews and focus group activities.

Sechrest and Sidani (1995) indicated that there was greater potential for realistic research in terms of validity and increased awareness:

Most importantly, pragmatic authors are more likely to be cognizant of all available research techniques and to select methods with respect to their value for addressing the underlying research questions, rather than with regard to some preconceived biases about which paradigm is a hegemony in social science research.

(Sechrest and Sidani, 1995)

The objective of using interviews and focus groups as research tools sought to enable constructive dialogue through discussion and to hopefully assist in producing a range of recommendations that could enhance the use of the VLE in terms of the value of curriculum design as indicated by Kruse (2002) and Dick and Carey (1996).

By including both students and teachers the research aimed to look at course management in the light of the BECTA (2003) observation that class administration can be enabled and assisted through the constructive use of a VLE.

As a result of an examination of research methodologies the author decided to adopt a pluralist approach in order to combine both objective
and subjective analysis of the current use and potential of a VLE in a PLC college.

Quantitative and qualitative research methods were applied to this study. Research showed that both methods involve the use of observation as a research tool to:

*describe their data, construct explanatory arguments from their data, and speculate about why the outcomes they observed happened as they did.*

*(Sechrest and Sidani 1995, p.78)*

By using a range of research tools it was possible to engage in triangulation in order to corroborate or refute the findings in relation to the research questions.

### 3.6 Quantitative Research Methods Applicable

Quantitative research is by design a 'positivist' strategy to determine a deductive rationale from collected data. Presented in numeric format,
for example bar charts, quantitative research seeks to look at and examine a hypothesis by collecting data which is then analysed and tested to provide supported evidence in relation to the issue being researched.

### 3.6.1 Quantitative Research Tools

The main quantitative research tool is the questionnaire which is used extensively as a measuring device across a range of disciplines and activities.

#### 3.6.1.1 Questionnaires

When compiling the questionnaires it was important to plan the questions directly in relation to the topic being researched. A number of key points from came from Sellitz, Wrightsman and Cook, (1976) namely:

- Is the question necessary?
- Do respondents have the information necessary to answer the question?
- Does the question need to be more concrete, specific and closely related to the respondent’s personal experience?
- Can the question be misunderstood? Does it contain difficult or unclear phraseology?

(Sellitz et al 1976)

It was found useful to include Likert scales in the questionnaire in order to ascertain the depth of feelings and the attitudes of participants. A Likert item is a statement where the participant is asked to give a value judgment to a question in order to gain a subjective response. The level of agreement or disagreement is measured. Usually five response levels are offered, although this number can be increased depending on the level of response required. In a recent empirical study it was found that,

> a 5- or 7- point scale may produce slightly higher mean scores relative to the highest possible attainable score, compared to those produced from a 10-point scale, and this difference was statistically significant.

(Dawes 2008).
The function of the questionnaires was to survey students and teachers in order to inform VLE usage in a PLC college. Separate questionnaires were designed for each group with some overlap in the questions relating to usage.

Primarily the questionnaires set out to identify and quantify:

- student and teacher usage of the VLE
- the benefits to students and teachers of using the VLE in a PLC college
- constraints or barriers to usage of the VLE.

The results of the survey were presented as bar charts.

The questionnaires were constructed using the online survey tool Surveymonkey.com and were piloted by three teachers and three students in order to:

- check the clarity of questions and to eliminate ambiguities
- gain feedback on appearance and presentation
- gain feedback on response categories and types of questions
- check readability and to ascertain the time it will take to complete the questionnaire.

Questionnaires were distributed through a web link posted within the class folders and by email to teachers. Hardcopies were also available. It was decided not to distribute the questionnaires directly through the VLE in order to prevent bias in regard to non-VLE users.

The survey was conducted over a four week period when the students were twelve weeks into their course of study and contained the following types of questions:

- short questions with - yes/no answer
- open-ended questions to enable a personal and authentic response
• a Likert question was included in order to establish values and subjectivity in the questionnaire.
• multiple choice questions to enable a range of selection.

Quantifying volume of usage has also been determined from VLE administration data within the college.

A copy of the questionnaires is to be found in Appendices 3 and 5.

3.7 Qualitative Methods Applicable

Qualitative research methods enabled the author to elicit responses that often remain unarticulated and can show the level of understanding, knowledge and motivation possessed by participants within a group. An advantage of this research method was that it enabled the research to be set within the context and strived to consider opposing ideas by capturing the views of participants both ethnologically and experientially.

It was essential that the author presented an open and unbiased approach and allowed theories and hypotheses to develop rather than impose preconceived theories. This “grounded” research used the following research tools: questionnaires, interviews and focus groups.

3.7.1 Qualitative Research Tools

According to Stewart and Shamdasani (1990), questions to be included in an interview or focus group should relate directly to the research and should “grow directly from the research questions that were the impetus for the research.”
When formulating questions for an interview Stewart and Shamdasani (1990) suggested two principles for consideration as follows:

1. that questions be ordered from the more general to the more specific;
2. questions of greater importance should be placed early, near the top of the guide, while those of a lesser significance should be placed near the end.

Research findings were collected and analyzed in narrative form. This approach recognised the uniqueness of the individual, encompassed difference and sought to gain a holistic approach to the topic whilst seeking to avoid researcher bias.

3.7.1.1 Semi-structured Interviews in a PLC College

Within the environment of a PLC college it was feasible to conduct semi-structured interviews where a set of questions were used and the order of questions modified as appropriate.

The importance of preparation was crucial to the success of this research tool and the author drew on some headings from Chapter 2 by introducing the participants to the value of collaborative and integrative learning methods ensuring a full understanding of the nature of the study and its relevance within education.

Questions sought to discover attitudes and preferences in relation to the use of a VLE and interviews were conducted in a non-directive manner.

The student who elected to be interviewed volunteered to contribute after the author approached a second year class of students in the Media department. This male student participated out of a general interest in education and hopes to become a teacher in the future. The student declined to be taped so the author availed of help from a
colleague, with expertise in note taking, who remained unobtrusive during the interview session. The interview took place at a prearranged time, in a small classroom where desks had been rearranged to facilitate an informal setting. The interview was completed in forty-five minutes.

A transcript of this interview can be found in appendix 9.

The male teacher who was interviewed has had long experience in the teaching profession and has found it necessary to update his skills on a regular basis over the term of his teaching. This teacher readily volunteered to participate in order to facilitate research into the topic. The interview took place in teacher’s office and lasted for one hour. A tape recording of this interview enabled transcription.

See Appendix 12.

Participants were required to give permission to be interviewed in keeping with ethics requirements. The author was unobtrusive and sought to achieve a critical awareness and openness from participants at interview. Audio recording, note taking and transcription methods allowed for a narrative synopsis of findings.

3.7.1.2 Focus Groups in a PLC College

Focus groups from within the college formed the basis for a qualitative research tool that enabled the author to elicit responses that can remain unarticulated and can often show the level of understanding, knowledge and motivation possessed by the participants within the group. Kreuger (1988) defined a focus group as a:

*carefully planned discussion designed to obtain perceptions in a defined area of interest in a permissive, non-threatening environment*  

(p.18)
Research indicated that when using a focus group as a research tool it is usual to keep the group size to between six and ten people. However Stewart and Shamdasani (1990) suggested that the number of people in the group should reflect the objective of the research, this was corroborated by Kreuger (1998) who suggested that the group size be determined in relation to participant experience of the topic being researched and their ability to discourse on the topic. It was also of importance to realize that, in relation to the number of people in a focus group, Merton, Fiske, and Kendall (1990) suggested:

the size of the group should manifestly be governed by two considerations...it should not be so large as to be unwieldy or to preclude adequate participation by most members nor should it be so small that it fails to provide substantially greater coverage than that of an interview with one individual

(p.137)

The student focus group was assembled using random selection methods. Ten students participated and represented students from across courses, gender and year groups. Teachers were asked to encourage students to participate once a date and time had been agreed. The focus group session took place in an informal desk arrangement in a small classroom.

It was necessary to establish ground rules in relation to managing the discussion and to employ moderation skills to ensure that all participants felt safe within the setting and had an equal opportunity to contribute to the discussion. It was important to explain to participants the research topic and issues pertaining to the focus group discussion and this introduction helped to initiate discussion and acted as a motivator.

The student focus group session was taped and transcribed to facilitate a narrative format. This transcript can be found in Appendix 10
The teacher focus group comprised six teachers in an informal setting. Teachers who volunteered came from across the range of courses and declined to be taped. The group appointed a note taker and discussion lasted for forty five minutes. Although there was an awareness that some teachers present were non-expert in the use of the VLE the focus group session was proactive and constructively organized to enable all teachers present to participate freely and openly.

The author found that time constraints on the part of teachers made it difficult to arrange a suitable time for this activity to take place and acknowledged the patience of teachers involved.

The transcript of this session may be found in appendix 13.

3.8 Triangulation of Research

Triangulation is a powerful technique that facilitates validation of data through cross verification from more than two sources. In particular it refers to the application and combination of several research methodologies in the study of the same phenomenon. (Bogdan and Biklen 2006)

Triangulation tests the consistency of findings obtained through different instruments. In the case study, triangulation increased the opportunity to validate, or at least assess, some of the threats or multiple causes influencing results.

Because triangulation can be used to compare and contrast both quantitative and qualitative research methods, research showed that it was an appropriate instrument to be used in a case study where credibility and validity of qualitative analysis are of importance for a pluralist approach to research (see Figure 3.1 - Research Paradigms – towards a pluralist approach). Methodological triangulation as espoused by Denzin (2006) enabled the author to analyse data across the research tools used in this study.
Methodological triangulation: involves using more than one method to gather data, such as interviews, observations, questionnaires, and documents.

(Denzin 2006)

Triangulation of data was found by the author to be important particularly in a college setting where both students and teachers can be influenced by their peers in their immediate and spontaneous responses.

Figure 3.2 Triangulation diagram showing the relationship between participants and the research tools being used.

Triangulation has been presented in a narrative form, has referred across the range of research tools used and disseminated through the discussion of findings and conclusion to this study.

3.9 The Ethics of Carrying out Research in a PLC College

It is important that guidelines are followed in order to protect both the student and the college from the negative impact of coercion and manipulation of data that may arise from the failure to recognize protocols for consent of the individual.

The following extract from a table gave some guidelines to effectively explain informed consent to participants. The Institutional Guide to DHEW Policy offered recommendations as follows:
A fair explanation of the procedures to be followed and their purposes……..An offer to answer any inquiries concerning the procedures and an instruction that the person is free to withdraw consent and to discontinue participation in the project at any time without prejudice to the participant.

(DHEW 1971)

The principle of confidentiality is an assurance that data derived from the research will not be made available except to those who have a direct involvement in the study. It was possible to enable anonymity of participants by ensuring that questionnaires did not ask questions that could lead to future recognition of the participant and that all transcriptions of interviews and focus groups were identity coded as a matter of course.

It was a necessary requirement from the college in question to gain informed consent by fully informing all participants of how the research was to be used in the future and to ask students to sign a consent form before surveys or interviews were carried out.

Permission was sought from the principal of the college to distribute and analyze questionnaires and to carry out interviews and focus group activities within the parameters of the research. See appendix 1.

All participants have given informed consent in keeping with ethics requirements.

3.10 Presentation of Research Data

Quantitative analysis data has been presented as bar charts with a selection of long answer submissions being included in Appendix 7. Data in relation to the questionnaires can be found in Appendix 4 and 6.

Semi-structured interviews and focus group sessions followed a range of written questions and were recorded and transcribed before analysis. Qualitative data was presented in a narrative form as recommended by
Cohen, Mannion and Morrison (2007). See Appendices 9, 10, 12 and 13 for transcripts.

3.11 Summary of Research Methodologies

By combining quantitative and qualitative research methods it was possible to gain a holistic and constructive view of the use of a VLE, within the context of a PLC college, as posited by the research questions. The opportunities and constraints highlighted through the research acted as a focus for recommendations and for future research.

Where Chapter 2 shows Vygotsky’s (1978) perception of the overall goal of education to be to “generate and lead development” and the Tolley and Vanhegan (2008) observation that ‘whole-team’ consensus or motivation was of key importance to technological progress within the educational environment, this research aimed to analyse current use and the potential of a VLE within a PLC college.

Given the number of students taking PLC courses in Ireland and the range and diversity of courses on offer, under the umbrella of FETAC, the application of this research hopes to form a range of recommendations spanning the pedagogical and technological significance of the VLE.
Chapter 4
Research Findings in Relation to the Use of a VLE in a PLC College

4.1 Introduction
The research findings into the use of a VLE have been laid out sequentially in relation to the research questions posed by the author. The research tools used included a student questionnaire, teacher questionnaire, semi-structured interviews and focus groups with both teachers and students. Where college administrative data appears it has been used in a secondary way in order to address issues like the number of teachers and students actively using the facility and the range and spread of classes using the VLE.

4.2 Findings by Research Question
In the interest of clarity and for ease of reading it was found necessary to provide sub-headings as per the research tools used under each research question.

4.2.1 Current Use of the VLE
Does the current use of a virtual learning environment within the college facilitate the personal learning styles and technological expertise of the current cohort of students?

4.2.1.1 The Student Questionnaire
The majority of students who participated in the survey were male (68%) with female (32%) providing a good representation of the gender breakdown within the college.
The 17 – 24 age group (68%) and the percentage of students taking a FETAC Level 5 qualification (79%) indicated that the questionnaire was primarily taken up by first year students who, at the time of circulation had been attending the college for 12 weeks.
91% of students expressed confidence in using a computer with 88% stating that they had adequate access to the VLE.

**Chart 4.1 - student confidence and availability of access**

It was shown by the Likert scale item that where students were asked to indicate the relevance of the VLE in relation to their learning experience, 32% of students answered 2 out of 5 (where 5 is the highest value) and 2% answered 5 out of 5.

**Chart 4.2 – student value placed on the use of the VLE**
4.2.1.2 The Teacher Questionnaire

The majority of teachers who participated in the survey were female (53%) with male (47%).

The survey showed data representing FETAC Level 5 (76%) and FETAC Level 6 (53%), indicating that the survey covered the spectrum of teachers within the college.

See Appendix 6, chart 2 for participation of courses across departments.

Chart 4.3 indicated that the technical expertise of students was being addressed by the use of the VLE and that 65% of students were comfortable using the VLE. However, there is a mixed response in terms of usage with teachers observing that 35% of students use the VLE often and 29% of students used the VLE only when told to.

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**Chart 4.3 - teacher perception of student use of the VLE**

The chart below shows agreement in relation to enhancement of teaching (65%). Teachers (76%) stated that the technological advances in education were being met through the use of the VLE.
Teacher use of the VLE - enhances teaching and addresses technological advances.

![Chart 4.4 - pedagogical and technological advances](image)

4.2.1.3 Findings from Semi-structured Interviews

Student observation:
“It’s great for getting to grips with my entire course and all of my teachers use it. They have put a resource folder on the VLE.” See Appendix 9.

Teacher observation:
“I have had a few sessions in it (the VLE), and found that I have maybe forgotten how to use it. I am not sure that I appreciate its fullest advantages”.

“The younger age group has been brought up with computers and so they take to them pretty easily. I have some reservations about Moodle (the VLE) as a stand alone learning/teaching system. I really think that – maybe I am from an older generation of teachers – face to face is more important, or a combination.” See Appendix 12.

4.2.1.4 Findings from Focus Groups

Findings from the student focus group indicated, “There’s not much to comment on as we haven’t used it that often.”
“It is a good idea if it was used properly by all the teachers, if they put up all their lessons and things then I would be able to work at home and plan my study.”
“...depends on the quantity and quality of material provided by the college.”
See Appendix 10

Teacher focus group observations:
“I very rarely use (the VLE) Moodle because I prefer to be more hands on with my classes.”
“I like using it and find that the students expect teachers to be nearly as good on computers as they are. I regularly put on project briefs and notices but I don’t think that I am using it to the full.”
“I think (the VLE) Moodle is more related to e-learning and that we are not seeing the full potential because of the attendance policy in the college which penalizes students who do not show up for class.” See Appendix 13

4.2.1.5 Findings from Administration Data
The graph primarily indicates that at the start of the academic year there was a high level of VLE usage by both students and teachers. The findings indicated that the VLE was accessed by students approximately 649 times during mid term break.

![Chart 4.5](image)

*Chart 4.5 – administration data provided by the college showing trends of VLE usage during the research period.*
Findings showed that two departments were not using the VLE. See Appendix 14.

See also Appendix 14, Table 1 - Administration data showing student usage of the VLE by department in relation to total number of subjects being taught during the research period.

4.2.2 Opportunities and Constraints

What are the opportunities and constraints that determine the use of VLEs within a PLC college?

4.2.2.1 The Student Questionnaire

The range of opportunities presented to students through the use of the VLE fall into a number of categories in relation to the day to day management of their learning where 71% of students found that using the VLE enhances their learning. See appendix 4

This appears to contradict the findings of Chart 4.2 - value placed on the use of the VLE - which is concerned with feelings and subjective values.

![Chart 4.6 – student time management and enhancement of learning](image)
The opportunities presented indicated that the main benefit to students was the facility to pick up class announcements (57%). Findings also indicated that accessing course material (46%) is of paramount importance to the student.

**Chart 4.7 - student management and pedagogical benefits**

Findings indicated that the VLE presented opportunities for some students to access reading lists (13%) and to access subject related websites (30%).

**Chart 4.8 - student management and pedagogical benefits -2**
4.2.2.2 The Teacher Questionnaire

The survey found that there was a mixed reaction to using the VLE. 41% of teachers indicated that they did not know how to use it and 29% stated that time was a constraint.

![Chart 4.9 – teacher constraints to using the VLE](image)

4.2.2.3 Findings from Semi-structured Interviews

The student observed, “I am able to do more research and write better assignments because the resources are provided on the VLE. Ok so I can surf and find stuff but it is easy to get distracted on the internet and not find things that you really need.”

“I feel that I am lucky because the teachers on our course are very technology minded but I hear from other students in the college that not many teachers are using it. I can’t think of any barriers to using the VLE because we have good wireless hotspots and I can work at home more easily.” See Appendix 9

Teacher observation,” I think the VLE presents opportunities to give the students basic information very fast. You can monitor (the VLE), see who is using it and who’s not using it very easily and give reports quite easily - although I haven’t plumbed the depths of that either.......”
“The constraint for me is spending the time getting to grips with everything, but I do feel it is an excellent program. A constraint is that all students expect all teachers to use it, and yet some teachers perhaps do not have the time to learn the expertise and also some teachers are not computer literate...” See Appendix 12

4.2.2.4 Findings from Focus Groups

The opportunities and constraints that the teacher focus group observed were as follows:

“It (the VLE) probably does offer opportunities because the students like anything to do with computers but I like to use the overhead projector and the acetates that I have made over the years.”

“How do I know that the students have got the brief when using the VLE? At least when you hand it to them you know that they have it and can’t come back with excuses.”

“If we had some time in our timetable to prepare work for Moodle that would help.” See Appendix 13

4.2.3 Teaching and Learning

What teaching/learning theories directly apply to the use of VLEs in a PLC college?

4.2.3.1 The Student Questionnaire

The chart below shows that 71% of students considered that the VLE enhanced their learning. As was seen from charts 4.7 and 4.8 that students perceived that access to course materials and lecture notes provided a valuable learning opportunity.
Chart 4.10 – time management and enhancement of learning

It was of interest also that 70% of the students preferred online class notes for revision purposes and that 34% of students used the VLE at home in order to carry out college work. See also Chart 4.13 – student location of access to the VLE.

4.2.3.2 The Teacher Questionnaire

This chart shows that 76% teachers perceived that the VLE provided a valuable facility to enable them to post assignments for students. 24% of teachers used the facility in order to provide lecture notes for their students. Data findings indicated that the VLE is seen as a resource bank for students.
4.2.3.3 Findings from Semi-structured Interviews

Student, “The VLE helps you to pace your work. I have a part time job and sometimes have to miss the odd day or two at college so the VLE is a way of keeping up to date and it also allows me to do my assignments and upload them to my teacher. Also I think that the VLE is a more constructive way of using my time and my assignments have improved because of the resources provided by my teachers.” See Appendix 9

Teacher, “I think there are many teaching methods that could or are being used, like integrative and group work methods particularly in computer subjects where you can integrate your modules.”
We also operate somewhat from a didactic point of view and use chalk and talk a lot. I think particularly in computer subjects there are opportunities to introduce constructive learning methods.”
See Appendix 12.

4.2.3.4 Findings from Focus Groups

It was generally felt by students that collaborative learning was not taking place directly through the VLE but rather through other technologies e.g. Google Groups and Twitter. Two students stated that their teachers “integrated the modules” and gave examples of the facility to upload project work and link project briefs. They also highlighted the importance of the project deadlines and checklists that they can access and compare across modules. See Appendix 10
Teacher focus group observations:
“...would like to see more group work going on using (the VLE) Moodle but I am not sure how to pull this off.”
“That depended on the type of work and that project work would be suitable for group work but that assignments need to be done on an individual basis.”
Teachers talked about the potential to integrate modules at FETAC Level 6 but said that again this would need planning and cooperation from the teachers concerned. It was generally agreed that not many
teachers were using (the VLE) Moodle and that an improved in service course was needed. See Appendix 11.

4.2.4 Communication and the VLE

Could the use of VLEs present enhanced communication opportunities within a PLC college?

4.2.4.1 The Student Questionnaire

Findings indicate that students were not using the VLE as a method of communicating with their peers and that 84% of students felt that attendance at class is still necessary in order to achieve their learning goals. It was interesting that students were divided on the relevance of the VLE in terms of the opportunity to choose their own study time.

![Chart 4.12 – student time management](chart)

93% of students use the VLE in class with 63% of students accessing remotely.

This would indicate that the vast majority of students see the VLE as a classroom activity. Qualitative research methods were utilized to analyze and qualify the actual functionality of the VLE in terms of pedagogy and it was found that blended learning was recognized as an important opportunity in terms of using the VLE.
4.2.4.2 The Teacher Questionnaire

It can be seen from Appendix 6, Chart 12 that 71% of teachers did not receive communications from their peers through the VLE and that 53% of teachers would be unwilling to communicate with students from home.

4.2.4.3 Findings from Semi-structured Interviews

Student observed, “If our teachers gave feedback on the VLE and I could contact them at night that would be good. I always use the VLE to email if I am going to miss a day.” See Appendix 9
Teacher observation, “For some students, if they are getting all or most of what they need on Moodle, there is less of an onus on them to attend classes.” The teacher also observed that, “this year there are many students who have contracted various illnesses such as swine flu... and can still do a large amount of college work, depending on the teacher’s use of Moodle, to keep up with their courses.”

In terms of communication the teacher stated, “Well, I think it won’t replace the classroom or the contact a teacher has in the classroom. See Appendix 12.

4.2.4.4 Findings from Focus Groups

From the student perspective communication opportunities were well informed.

“It is handy to know that all the required templates are stored in the one place.”

“It’s always good to see if anything has been added.”

Most students reiterated the importance of “picking up course material” as being important to their personal progress in learning in terms of communicating with their teachers. Students voiced concern that not all of their teachers used the VLE with one student saying that he hadn’t been issued with a login number yet. Another student stated, “no one I know uses it so what’s the point.” See Appendix 10.

Most teachers use the VLE to post assignment briefs and deadlines. It was generally felt that teacher to teacher communication was very poor. Teachers present wondered how many of their peers were actually using (the VLE) Moodle and that perhaps time constraints were a big issue for teachers.

Generally it was felt that no real progress was being made in terms of “enhanced teaching and communication opportunities because there was no initial discussion before setting it up.” It was observed that, “the
small amount of training focused on how to use it rather than the potential or even what other colleges are doing on the VLE.”
See Appendix 13.

4.2.5 Course Management Opportunities and Constraints

What are the opportunities and constraints presented by course management facilities inherent in VLEs?

4.2.5.1 The Student Questionnaire

The opportunities presented by VLE course management facilities benefited students by enabling them to pick up materials in relation to their courses (46%).
Of significance is that 57% of students availed from the VLE facility to access class announcements. This indicated an interest on the part of students in the day to day management of their course of study.
Findings indicated that accessing project deadlines (59%) was of great importance to students enabling them to organize and manage their time and progress through their course of study. Administration data in relation to the use of the VLE is highlighted in Appendix 14.

4.2.5.2 The Teacher Questionnaire

See Chart 4.11- benefits to the teacher (1) indicating that posting assignments (76%) is an important opportunity for the teacher in terms of course management.
This chart indicated that 47% of teachers surveyed found that posting assignment deadlines and giving feedback to students (29%) were important elements in terms of course management.
4.2.5.3 Findings from Semi-structured Interviews

The teacher commented “I think it would be terrific if the Quality Assurance system could be put on the VLE.... we still have to print out all the QA worksheets for return to the coordinator. There are so many different aspects to Quality Assurance which are so time consuming, and if that could be put on a vehicle such as Moodle using its full resources, it would be advantageous for every individual teacher...” See Appendix 12.

4.2.5.4 Findings from Focus Groups

It was observed by the majority of teachers in the group that it was good that class lists were on (the VLE) Moodle but that it was defeating the purpose because these files are “well locked up” PDFs and unusable for cutting and pasting into the many documents that a teacher needs to create for each student.

Most teachers agreed that it was great that assignment briefs could be posted on the VLE and that the facility to email students was working well. See Appendix 13
4.2.6 The VLE in Relation to FETAC Modules

How can constructive use of a VLE address FETAC module requirements?

4.2.6.1 The Student Questionnaire

It can be seen from data findings that 93% of students accessed the VLE during class time with 29% accessing from home. It would appear that students were using the functionality of the VLE as part of their class work. See Chart 4.13 – student location of access to the VLE

4.2.6.2 The Teacher Questionnaire

This chart showed that 24% of teachers surveyed use the assessment facility within the VLE and that 47% posted assignment deadlines. This indicated that some delivery of FETAC modules is taking place during class time. Teachers mainly highlighted Work Experience and Communications as the modules most suitable to delivery through the VLE.

4.2.6.3 Findings from Semi-structured Interviews

The student observed that the VLE was “Only (useful) for sending in assignments because all of the rest of my work is in very large files...I suppose we could get grades on the VLE but our teachers do not do that.” See Appendix 9

Teacher “If used properly, assignments could be on the VLE from week to week, and I think you could do a lot of things that are paper based at the moment - even the simple example of linking to a FETAC module facilitates the students a lot.”

“Examination systems and assignments at the moment come as paper based media and while the work is done on the electronic medium they all have to be reproduced in hardcopy for marking purposes.”
“We need Examining bodies to agree to go to an Internet based system like ECDL are doing at the moment.”
“I could indeed see the potential for FETAC modules being delivered on the VLE. I feel I am using it for delivery at the moment.” See Appendix 12.

4.2.6.4 Findings from Focus Groups

During the student focus group session students were asked to list the FETAC subjects that could be primarily carried out using the VLE. Participants listed the following subjects in relation to this question:

- Work Experience
- Communications
- Mathematics
- Spreadsheets

See Appendix 10

“The VLE could be used for FETAC modules that are mandatory and haven’t been updated over the years like for example Work Experience and Communications.”

It was pointed out that the registering of results with FETAC was done online and that the driving theory test was on line so maybe some of the FETAC exams could be actually done using Moodle.

In conclusion all teachers felt that using a VLE was forward thinking on behalf of the college but displayed mixed reactions on a pedagogical level. See Appendix 13.
Chapter 5
Discussion of Findings in Relation to the Use of a VLE in the PLC College.

5.1 Introduction

This discussion of the findings, in relation to the use of a VLE in a PLC college, has been laid out sequentially in relation to the research questions posed by the author. The chapter drew on findings from early peer reviewed research as outlined in Chapter 2 of this study and incorporates and discusses findings from the research tools used including: a student questionnaire, teacher questionnaire, semi-structured interviews and focus groups with both teachers and students.

Where administrative data, directly taken from the VLE, appears it has been used in a secondary way in order to address issues like the number of teachers and students actively using the facility and the range and spread of classes using the VLE.

5.2 Discussion of Findings by Research Question

In the interest of clarity and for ease of reading it was found necessary to provide sub-headings that relate specifically to each research question.

5.2.1 Current Use of the VLE

The research data collected from both students and teachers in relation to the current use of the VLE indicate that there has been poor uptake across the board. This was indicated clearly by findings from administration data which showed that 26% of teachers were regularly using the VLE as part of their teaching strategy. Research in the PLC college corroborates Tolley and Vanhegan (2008) who observed that
progress in the use of a VLE in schools in the UK is largely due to the, “interest and enthusiasm of individuals rather than any clear sense of leadership…” This was clearly corroborated within the PLC college during the teacher focus group session where there appeared to be the absence of collaboration among teachers in relation to use of the VLE.

In one instance where the Media and Sound department staff have collaborated to provide a resource bank for students this effort has been rewarded by the level of student access to the VLE. This can be confirmed through administration data provided in Appendix 14, and also through the teacher focus group. Indeed the student interview also confirmed the value of this resource.

There were clear indications that there was a need for good communication at all levels and a willingness on the part of teachers to embrace new technologies. The need for consolidated course planning and the constructive use of instructional design methodologies, as outlined in Chapter 2, section 2.4, could enable a holistic response to the use of a VLE.

In a survey entitled “Uptake and Usage of Virtual Learning: Findings from a multi institutional student usage survey” Cosgrave et al (2008) indicated that students who did not use VLEs choose not to because “My lecturers do not use it.” This observation was corroborated through the student focus groups where some students indicated that successful use of the VLE should be teacher driven. Students could see very real potential for learning through access to the course material and worksheets provided by some teachers.

It was of interest to note that the FETAC Work Experience module worksheets that have been posted on the VLE, were accessed regularly by students on five courses in the college and that primary use of the VLE took place during class time.
It was clear that initial and ongoing encouragement and support from teachers was necessary in order to enable successful and active student usage of the VLE. This concurred with findings by Huber and Hutchings (2005), Kim et al (2004) and Tolley and Vanhegan (2008).

The teacher questionnaire indicated that the technological expertise of students was being addressed by the use of the VLE with teachers having observed that 65% of students were comfortable using the VLE. It was significant however that the teachers observed that 35% of students used the VLE often and 29% of students used the VLE only when told to by the teacher. This reflected a lack of Piaget’s (1969) cognitive constructivism theory and directly related to student acceptance of the didactic approach highlighted in the teacher interview.

Triangulation of findings indicated that for some teachers, didactic methods of delivery were still predominant in the PLC college. In the teacher interview the didactic and direct approach to teaching was also stressed although this particular teacher could be seen as using the VLE constructively even though he felt, “a lack of experience and guidance.” It is clear that this didactic approach is evident among both students and teachers and indicates very real need for CPD, as espoused by Tolley (2008).

One teacher commented during the teacher focus group “I very rarely use Moodle because I prefer to be more hands on with my classes.” This reinforced the observation by Huber and Hutchings (2005) that pedagogical methods and structures within academic institutions often remain within the remit of individual subjects and, “encourage students to see their courses as isolated requirements to complete.”

It follows then that consensus, enthusiasm and planning are key factors that determine usage of the VLE in the PLC college.
5.2.2 Opportunities and Constraints

Findings, through all research tools used, have shown that there was an awareness of the opportunities implicit in the constructive use of a VLE in a PLC college. In a survey carried out in the UK between 2001 and 2005, Browne and Jenkins (2005) highlighted a range of criteria that support the opportunities to be gained by constructive use of a VLE. Research findings from both student and teacher questionnaires corroborated these findings and showed that there was indeed an enhancement to both learning and teaching quality; with 65% of teachers who completed the questionnaire and who use the VLE on a regular basis signaling that the VLE positively enhanced their teaching experience.

71% of students who use the VLE on a regular basis found that their learning was enhanced and listed the benefits to them through all research tools.

The VLE survey by Browne and Jenkins (2005) looked at pedagogical priorities and cited the availability of course materials as being an important opportunity for the successful use of the VLE. This was corroborated by the student questionnaires where 46% of those surveyed perceived that the availability of course materials on the VLE was of benefit to their learning. The findings from the student interview, teacher focus group and administration data also concurred with Brown et al (2005) in that access to web based resources in the Media Department provided an enhanced pedagogical opportunity.

The teacher survey also supported the importance of providing course material on the VLE (47%) while the teacher interview indicated a constraint in that an attendance issue may arise from the over provision of materials on the VLE.
In terms of constraints the transcript of the student focus group showed that the system was being underused by teachers indicating a very real barrier and one which had been highlighted by Cosgrave, et al (2008). In fact this constraint was clearly expressed by a student as follows, “What’s the point of having the system in the college if all the teachers do not use it?” This constraint was reiterated in the student questionnaire. The underutilization by teachers has been reinforced by administration data which showed that only 26% of teachers use the VLE at all. The significant constraint finding was that 41% of teachers surveyed did not or rarely used the VLE. This again reiterated findings by Tolley and Vanhegan (2008) who stated that “qualities of leadership and vision” were of key motivational importance to the successful introduction of a VLE.

Tolley and Vanhegan (2008) saw staff development as being of primary importance to the constructive use of a VLE. It was clear from the research findings that 41% of teachers surveyed did not know how to use the VLE and 18% found it difficult to use. Although the teacher, in interview, clearly stated that he had received three 2 hour expert sessions in how to use the VLE he felt that he did not understand the full potential of the VLE. This observation reinforces a need for constructive CPD and it is recommended that this necessity be implemented in order to facilitate use of the VLE among teachers in the PLC college.

Tolley and Vanhegan (2008) also observed that in beginning to use the VLE some teachers try to incorporate and underpin their previous didactic teaching methods. This observation was underpinned by the teacher interview as follows, “We also operate somewhat from a didactic point of view and use chalk and talk a lot. I think particularly in computer subjects there are opportunities to introduce constructive learning methods.” In this instance we saw a teacher who was attempting to bridge the divide between past teaching methods and
future opportunities to use the VLE as a constructivist teaching tool. Recommendations in relation to CPD will include reference to the inclusion to the pedagogies best suited to VLE usage.

The time constraints imposed by timetabling were echoed by teachers across research tools.
In the teacher interview the following was observed, “The constraint for me is spending the time getting to grips with everything, but I do feel it (the VLE) is an excellent program.”

Given the range of opportunities and constraints indicated by students and teachers it was important to focus in on the teaching and learning that was taking place through the VLE in order to find what teaching and learning methods were actually being used in the college.

5.2.3 Teaching and Learning

Research findings show that 71% of students who responded to the questionnaire agree that the VLE enhanced their learning and appealed to their technological expertise. This endorsed Vygotsky’s (1997) theory which stated that students learn firstly on a social level and then on an individual level.

Teachers in the PLC college recognize VLE enhancement to learning at 65% and that the VLE addressed the technological experience of students (76%). Of concern however was that students rated the actual value of their use of the VLE in relation to learning at 2 out of 5 on the Likert scale. This reinforced and reiterated the low number of teachers using the VLE constructively during the period of research. The teacher questionnaire reinforced this view when it was found that 29% of teachers use the VLE one to two times a week as opposed to 18% who use the VLE daily.
Where there is a high level of student and teacher usage in the Media Department it was seen that constructive and integrative teaching and learning was taking place through the VLE. This exception was evident through all the research tools used in this study. The student in interview observed, “I am able to do more research and write better assignments because the resources are provided on the VLE” and also that, “It is very important to relate the technologies to one another and the VLE is a way of doing this because it brings all the modules together under one umbrella.” This indicated that both constructivist and integrative teaching methods were being used on a small scale via the VLE and directly related to research carried out by Higgs et al (2008) and Huber and Hutchings (2005) into the value of integrative learning methods in terms of the student’s perception of learning and preparation for future learning.

The student focus group indicated constructivist teaching methods in relation to the Work Experience module, “Work Experience has been good because when you upload your work to the teacher she will send you an email to say she has got it. Then you get feedback and can change things that might be wrong.” This method of developing the concept of Piaget’s (1969) “cognitive constructivism” within the learning process and giving feedback to students through the VLE has been seen to increase motivation by utilizing the technological facilities inherent in the VLE. The teacher interview also recognized the advantages and potential that the VLE offered in constructivist teaching methods and had attempted to incorporate this method into his teaching of computer based subjects.

An example of constructivist and collaborative teaching methods was also indicated by an example from the student focus group where one student highlighted an activity that is part of the Architectural Technology and Design course. Here the teacher replicated the office environment by engaging the students in the modification of drawings
using the VLE. This student was aware of the interaction and corroboration with others that must take place in a design project and in addition has received valuable marks for his work. “In the CAD class the teacher sends us out drawings for redlining..... “ This example is to be found in Appendix 10, Question 3.

The contribution from this student reinforced the scope and capacity of the VLE where he was enabled to make connections, solve problems, make decisions and engage in critical reflection, through a practical activity, as espoused by Piaget (1969), Jameson (2006), Hoegl & Parboteeah (2006) and Rothblatt (1993).

Examples of blended learning as indicated by Graham(2006) and Garrison and Kanuka (2004) were evident in a minor degree and offered potential for enhancement of pedagogies in relation to the VLE for the future.

It was clear that constructivist theories, in particular integrative, collaborative and blended teaching methods were being used by a core group of teachers in the PLC college through active use of the VLE. To enable increased and enhanced use of the VLE it would be of value to encourage communication and a realization of the opportunities to be gained by constructive use of the VLE in the college.

5.2.4 Communication and the VLE

Communication in this section focused on provision of information, course materials and one to one communication. Stahl et al, (2006) highlighted the point, in relation to CSCL, that teachers need to meet the needs of students by ongoing motivation, interaction and a sense of “social presence”. Their observations have a particular relevance to holistic and educative communications using the VLE.
A comment from the student questionnaire indicated that the VLE worked, “to a certain degree, but not on the scale of a social networking site.” was reiterated by students in the focus group session where there was general agreement that communication through the social networking sites for example, Facebook and Bebo were used constantly and, “are part of or lives – the VLE just doesn’t have the same draw.”

This observation could perhaps be addressed by enthusiasm in the use of the VLE by teachers and again reiterates the need for CPD and the creation of “communities of practice” as espoused by Tolley and Vanhegan (2008 and Schlager et al (2002) respectively.

Kim et al (2004) also indicated the importance of on line communication for promoting the concept of knowledge management. It was clear from the student questionnaire that the ability to access project deadline dates (59%) and class announcements (57%) were the primary source of communication as perceived by the students. This observation was placed alongside the student comment that the VLE “would help a person catch up if they missed a class, if all the teachers used it.” See Appendix 10.

Findings also indicated that there was little evidence of communication among teachers using the VLE. The teacher questionnaire pointed to the lack of communication by highlighting that 71% of those surveyed do not send or receive communications from peers via the VLE. These findings point directly to the challenge observed by Kim et al (2004) in relation to knowledge management and communication, and also to observations by Tolley and Vanhegan (2008) and indeed Cosgrave et al (2008) in relation to constructive usage of the VLE. As stated by the teacher in interview “Well, I think it won't replace the classroom or the contact a teacher has in the classroom.”
For holistic communication and successful and constructive use of the VLE to take place it was clear that CPD was necessary in order to achieve the level of communication required to achieve the successful “communities of practice” as espoused by Schlager et al (2002).

Piaget’s (1969) observation in relation to his primary goal of education, where he stated that schools should be flexible in their adoption of new ideas in order to promote creativity, inventiveness and the ability to engage in problem solving, can present enhanced opportunities for both students and teachers in communicating interactively through the VLE.

Bridge and Appleyard (2008) highlighted student preference to receiving feedback online. This was corroborated in the student focus group session where there was an indication that feedback was a positive aspect of their use of the VLE.

Research indicated that management and planning were of major importance to the successful use of the VLE. This study aspires towards creating a set of recommendations based on existing research and the quantitative and qualitative findings within the PLC college.

Chapter 6 will endeavor to make recommendations that will address the importance of communication in relation to the constructive and successful use of the VLE.

5.2.5 Course Management Opportunities and Constraints

Findings show that the course management opportunities that exist in the PLC college presently centre on the facility to use the VLE as a repository for files and information. Research by JISC (2009) indicated the range of facilities offered by the Learning Management System implicit within the VLE. It was clear from data findings that the main
function, in relation to current use of the VLE, centered on the area of the provision of course materials, announcements and assignments. This concurs with JISC (2009) findings.

The student questionnaire indicated that 46% of students surveyed benefited from the potential to be gained from accessing course materials through the VLE and 47% of teachers surveyed also used this facility as part of their course management strategy. 76% of teachers indicated that “posting assignments” on the VLE was very beneficial in course management terms.

Research indicated that BECTA (2007) recognized that course management can be facilitated by the VLE in enabling teachers to carry out a range of tasks that form part of their daily routine. Examples given include class organization and administration. Brown et al (2005) also recognized and prioritized the “improved administrative processes” that are available to the teacher through the successful use of VLEs. It was clear from data findings that although current use of the VLE does address and concur with the above observations that there is potential for extension and enhancement of the course management facilities within the PLC college.

Given that student attendance records are currently replicated and produced in hardcopy it could be seen that a valuable course management opportunity is being missed.

Where there is evidence of a student resource library on the VLE being actively used in the Media Department, this facility and its use refutes findings by Huber and Hutchings (2005) in relation to the perception that students see their subjects in isolation and as separate entities. This resource also proved to be a constructive element in the area of course management and has been seen to be a very popular resource as evidenced by administration data findings.
In terms of assessment of student work it can be seen that 14% of teachers used the VLE facility. The teacher interview proposed that FETAC address the issue of online assessment in order to facilitate and enhance the potential for the constructive use of the VLE. Bridge et al (2008) highlighted this potential by indicating that students, “preferred online assignment management to postal or physical hand-in.”

As stated earlier the FETAC Quality Assurance requirement within the PLC college currently consists of a large and time consuming volume of work for the teacher. At present all of the files are presented in “locked” PDF format on the college network making it necessary for the teacher to print each sheet and fill it in by hand before circulating to other teachers who then complete their part of the requirement. Where the teacher questionnaire highlighted that 47% of those surveyed found that the VLE facilitated administration both the teacher interview and teacher focus group indicated the absence of QA worksheets on the VLE as being a constraint in terms of course management. It was noted that the requirement for hardcopy was standard procedure for FETAC Quality Assurance returns within the college.

"There are so many different aspects to Quality Assurance which are so time consuming, and if that could be put on a vehicle such as Moodle using its full resources, it would be advantageous for every individual teacher, the College and enable a whole overview of the system as well," Teacher interview. See appendix 12.

Findings indicated that initial consultation with teachers did not take place in relation to installing the VLE and a general lack of communication between teachers, with 71% of those who used the VLE did not communicate peer-to-peer. Early research by Schlager et al (2002) indicated the importance of “communities of practice” in relation to participation and enthusiasm by teachers and this may have negatively affected the uptake of the VLE among some teachers.
Research indicated that the ADDIE system could be of benefit in the area of course management where design and evaluation formed a major consideration. Kruse (2002) also indicated the importance of, “effective participant learning” through instructional design.

It was evident that both students and teachers are availing of the course management facilities inherent in the VLE and it is hoped that this research will enable recommendations to be made that will assist and enhance course management opportunities within the college using the VLE.

5.2.6 The VLE in Relation to FETAC Modules

Findings have shown that both students and teachers saw that there were opportunities to facilitate a range of FETAC modules through the planned use of the VLE. It has already been seen that the “posting of assignments” has been of great benefit to 76% of teachers surveyed. Students also benefited from this facility as it allowed them to pace their work and to see the relationship between their subjects.

Of the FETAC modules listed by students, as being suitable for delivery on the VLE, it was clear that the Work Experience module has proven to be a successful model in this regard. This was largely due to one teacher who had laid out the curriculum in such a way that it could be accessed by students using the VLE. This reinforced observations by Kim et al (2004) in relation to “facilitating knowledge capture and utilization.”

The student focus group highlighted the benefit of being able to upload completed worksheets to the teacher for assessment purposes. This supported and endorsed aspirations from FETAC in relation to the coordination of program design, delivery and assessment. Students also highlighted the potential to carry out course work for the following
modules on the VLE: Mathematics, Spreadsheet Methods, Building Construction (theory) and Computer Aided Design.

An important finding in relation to the delivery of FETAC modules was that some teachers posted the relevant module descriptors and that they provided checklists on the VLE to enable students to keep track of their submissions. This again corroborated and concurred with findings by Kim et al (2004).

Data findings indicated that where there was an overlap or repetition of tasks between modules, for example Work Experience and Communications there was the opportunity to maximize on the potential of the VLE. Again this addressed the FETAC (2007) suggestion that attempts to integrate assessment across a range of modules should be explored.

The findings also indicated that there was evidence of the integration of modules. See Appendix 10, where a student talked about the importance of the e-portfolio as a means of addressing the FETAC collection of work aspect of his modules. Here we saw an example of the holistic assessment methods and integration across modules as recommended by FETAC (2007) in its paper entitled “Quality Assuring Assessment Guidelines for Providers.” This innovative teaching and learning method also reflected observations by Hoegl et al (2006), Huber and Hutchings (2005), BECTA (2007) and Rothblatt (1993) who identified that a high level of project management skills were necessary in order to bring about a successful e-learning project.

The strict attendance policy within the PLC college was highlighted as a constraint by a teacher:

*I think Moodle (the VLE) is more related to e-learning and that we are not seeing the full potential because of the attendance policy in the college which penalizes students who do not show up for class.*
Taking the attendance policy into consideration it was seen from the student questionnaire that the VLE was primarily being used during class time. This indicated that interest in the use of the VLE from the teacher revolved around the posting of assignments and encouraging the students to work on these assignments in class. Some would see this method of engaging with the VLE as blended learning and an encouragement to the students to actively use the VLE confirming what Tolley and Vanhegan (2008) have observed in that the interest and enthusiasm of individuals were important to the successful implementation and constructive use of the VLE.

It must be stated that, as yet, FETAC does not provide for online testing as stated by the teacher at interview. It was generally felt by both students and teachers that this facility could be of benefit within the PLC college in keeping with observations by Bridge et al (2008). Given the broad range of FETAC modules that are offered by the PLC college further research would be required in order to ascertain exactly what modules could be administered, delivered and assessed using the VLE.

5.3 Summary of Answers to Research Questions

It can be seen from findings that only a small number of teachers were actively and enthusiastically using the VLE to its full potential. Nevertheless analysis and discussion of these findings when set against earlier research prove positive for the future use of the VLE in the PLC college.

Where opportunities are highlighted, findings corroborate earlier research in respect of pedagogical opportunities being met in relation to integrative learning and constructivism. Evidence indicated there was particular enthusiasm amongst students for the library of resources provided by the Media department; this facility has been the most
successful VLE function to date within the college. Another positive indicator was the implementation of the Work Experience module as a VLE activity and also the innovative use of the e-portfolio as a way of integrating modules within a FETAC award. In terms of constraints it was clear that there was insufficient CPD focusing on the potential for use of the VLE and a lack of vision in relation to course management and communication.

It is hoped that a series of recommendations will form a platform for discussion within the college and lead to an enhanced approach to the technological advantages to be gained both pedagogically and practically through the constructive use of the VLE at this level of education.
Chapter 6

Conclusion

6.1 The Virtual Learning Environment in a PLC College

This study sought to examine the current use of a VLE in a PLC college in Ireland. Of particular interest was that the VLE was introduced to the college two years ago and could be perceived to be still in its formative development stage.

The author combined quantitative and qualitative research methods and it was possible to achieve a balanced and holistic overview of the current use of the VLE in the PLC college.

Methodological triangulation was used across the research tools and indicated a low level of access and constructive use of the VLE by both teachers and students. There was evidence through the questionnaires that the personal learning styles and technological expertise of students who actively used the VLE were enhanced by constructive use of the VLE. This was reiterated and corroborated in administration data where the Media and Sound department resources showed maximum access.

It was evident that the PLC college does not differ unduly from the norm in relation to early peer reviewed research that was analysed both nationally and internationally and which was corroborated through data findings within the PLC college.

Of concern was that students rated the value of their use of the VLE in relation to their learning at 2 out of 5 on the Likert scale. In support of this finding it was indicated that, in a general sense, the majority of students surveyed felt disappointed that there was not enough emphasis by teachers on the active and constructive use of the VLE.
Here we can see corroboration of and a reiteration of the findings by Cosgrave et al (2008) who stated that in a survey of the perception of students in relation to constraints in the use of a VLE that students cited, “My lecturers do not use it” as a primary indicator in terms of constraints towards the constructive use of this technology as part of their education.

The author examined the current use of the VLE and it can be concluded that a low percentage of teachers and a commensurate number of students in the PLC college were actively using the VLE. A small core group of teachers and students primarily within the Media Department were benefiting from the VLE and that learning and teaching had been enhanced in a constructive and valuable way.

The author must conclude and agree with Tolley and Vanhegan (2008) and Brown and Jenkins (2005) that the main motivator rested with a core group of enthusiastic teachers.

Although it was evident that the PLC college does not in fact differ from the norm in its use of a VLE it can be seen that where active use is taking place within the college that there is the potential to enhance and further consolidate the wider use of the VLE.

Where opportunities and constraints in relation to use of the VLE exist, it was found that the primary example of opportunities prioritized the access to a resource bank of information. Teachers who offered the Work Experience module through the VLE and students who availed of this facility exhibited a level of blended learning which reinforced one of the pedagogical theories particularly relevant to the use of a VLE.

It can be concluded that opportunities existed for students to enhance their learning by availing of VLE course specific research materials and
that this enabled a higher level of cognitive skills as evidenced in student motivation the quality of assignment submissions.

The author concluded that students prioritized class announcements, access to course materials and project deadlines through the VLE and was able to confirm and corroborate this evidence through data findings and research by JISC (2009) and Cosgrave et al (2008). This conclusion proves positive for potential VLE enhancement in the college.

A repeated constraint indicated a lack of training and encouragement as one of the main inhibitors in relation to the use of the VLE. The author referenced observations and indications from Tolley and Vanhegan (2008), Brown et al, BECTA (2007) and Stahl et al (2006) and is in agreement that constructive CPD and CSCL, as well as student training in the use of the VLE, are relevant to opportunities and constraints that determine the use of the VLE in a PLC college.

The author can conclude that constraints highlighted by both students and teachers can be addressed by communication and collaboration in order to address future use of the VLE within the college. This again reiterates the need for constructive and relevant CPD.

In relation to research and findings into the teaching and learning theories that apply to the use of the VLE in the college the author can conclude that both integrative and blended learning theories were in place in instances where the VLE was being actively used by both students and teachers, particularly in relation to the Work Experience and CAD modules. There was also evidence that integrative methods using the VLE, as espoused by Huber and Hutchings, was in place in the PLC college evidenced through cross modularization and the creation of e portfolios. The student cohort highlighted course work activities in this regard and indicated enhancement of cognitive
abilities, time planning and in the quality of submission of their work for assessment.

Where initial research looked at collaborative teaching and learning (Hoegl and Parboteeah) it can be concluded that through the work by teachers in the Media Department progress is being made in relation to this pedagogy.

It was clear from research undertaken and subsequent findings that the FETAC recommendation of a holistic approach to assessment in relation to program delivery and design through the integration of modules was indeed facilitated, to a small degree, through the use of the VLE and that a number of students benefited in this regard.

CSCL with the implicit “scaffolding” opportunities as recommended by Stahl et al (2006) were absent from use of the VLE in the college. Recommendations by the author hope to address this issue in light of the pedagogical and technologically relevant benefits to be accrued in this regard.

In terms of the enhanced communication opportunities implicit in the use of the VLE it can be concluded by the author, that there was an apparent lack of awareness of the potential of knowledge management skills and again that communication throughout the college could well be enhanced by the provision of CPD.

The author took cognizance of and agreed with Schlager et al (2002) and Kim et al (2004) where the importance of “communities of practice” and knowledge management were key indicators to the successful integration and constructive use of the VLE as an online teaching tool.

It is hoped that recommendations in relation to knowledge management and the introduction of well constructed CPD will prove
valuable in assisting a holistic approach to today’s teaching technology in the PLC college through the facilities provided by the VLE.

Course management facilities were researched and it was found that the primary function of the VLE currently was to provide a teaching resource bank for students.

It can be concluded however that administrative functions namely the FETAC Quality Assurance procedures and student attendance requirements had not been assimilated into the VLE. It was found that teachers did not communicate with each other through the VLE and again the author looked to research by Schlager et al (2002), Kim et al (2004) and BECTA (2003) in making recommendations that could enhance course management within the college.

Recommendations will also look at the ADDIE model developed by Dick and Carey (1996) in order to bring about course planning and management strategies that may enable a viable response to the facilities presented by the VLE.

The author would reiterate that for course management to be enabled and facilitated through the VLE that there was the immediate need for CPD and the enhancement of communication and collaboration among teachers in the college. Ongoing CPD would be considered by the author and as corroborated by research to be of paramount importance in order to fully avail of the VLE potential that would undoubtedly enhance and further progress the use of the VLE technologies in the area of course management.

The author found a positive indicator in relation to addressing the requirements of FETAC modules in the implementation, by some teachers, of the Work Experience module as a VLE activity. It was also
clear that students found that this module was successful as a vehicle for completing the range of tasks, implicit in the module, on the VLE.

The innovative use of the e-portfolio, as a way of integrating modules within a FETAC award, also enabled students to see how their subjects related to each other and provided motivational impetus to use the VLE.

Further research and direct consultation with FETAC would be required in order to look more fully at the opportunities for incorporating module requirements and assessment into the VLE.

The author found that limitations existed at present in the area of FETAC assessment where hardcopy assignments and collection of work appear to be the required mode of submission. The facility to upload or receive online examination materials and to engage in summative or continuous assessment methods would greatly facilitate the holistic use of the VLE and address the students existing technological experience.

An aspiration of the study was to bring to prominence a range of recommendations that would seek to enhance and consolidate the existing use and potential of the VLE, by focusing on constructive elements that are within the reach and domain of the college in question.

It is hoped that the series of recommendations outlined below will form a platform for discussion within the college and lead to an enhanced approach to the technological advantages to be gained both pedagogically and practically through the constructive use of the VLE at this level of education in Ireland.
6.2 Recommendations Based on this Case Study

Although active use of the VLE in the PLC college is at present confined to a small core group of students and teachers this college already exhibits the potential to fully embrace the facilities offered by the VLE.

In order to increase usage of the VLE and motivation among teachers it would be necessary to provide CPD covering:

- an overview focusing on potential of the VLE as a vehicle for progressive technology based teaching methods with examples from within and outside the PLC college
- training in the use of the VLE for teachers where handouts and exercises are provided
- highlighting of the potential of CSCL as an effective encouragement strategy
- ongoing evaluation of VLE usage in the college.

It is envisaged that small group CPD, for example within departments, would enable teachers to gain knowledge and formulate strategies with particular relevance to their subject area as well as on a collegiate level.

The opportunities and constraints found by students and teachers through research can be enhanced and addressed as follows:

- that students receive training, at the beginning of the academic year, in using the VLE and on the potential for learning provided by the VLE
- students should be encouraged to see the VLE as an active part of their learning by the ongoing provision of tasks in order to consolidate learning, give encouragement and enable feedback to students
• formative assessment opportunities should be encouraged among teachers with timely feedback given to students using the VLE.

The above recommendations in relation to the opportunities and constraints could form part of course planning meetings with an emphasis on instructional design and knowledge management skills.

A general CPD session looking at the potential of the VLE in terms of pedagogies would be of value to teachers who are more used to didactic methods of delivery.

It is recommended that subject teachers meet, at the start of each course, to discuss the pedagogies that directly relate to the VLE.

Emphasis should be placed on encouragement of the establishment of “communities of practice.” This would lead to enhanced communication and a more holistic response to use of the VLE.

• All teacher college email addresses could be made available on the VLE.

• students and teachers should be encouraged to use the email facility within the VLE in order to communicate more fully with each other.

It is recommended that course management opportunities and constraints be addressed primarily as follows:

• college management to address the time constraints in preparing work for VLE use

• management should make every effort to enable Quality Assurance and attendance requirements to be facilitated through the VLE

• management should encourage examining bodies to provide online examination and assessment methods in order to fully avail of the potential of the VLE.
FETAC module requirements are being addressed in part by a small group of teachers at present. This is evident through attempts to integrate modules in some areas.

- FETAC consider the potential of introducing online examination and assessment methods
- FETAC embrace the potential for the constructive use of a VLE in order to address the technological expertise of both students and teachers.

Where time constraints pose a problem for teachers the author would like to see some time set aside for course development in relation to the use and pedagogical potential of the VLE. It is hoped that the set of recommendations above will encourage discourse, enhance and further progress the opportunities inherent in the constructive use of the VLE.

6.3 Limitations of the Study

In terms of limitations the author found that apart from administration data provided to the author there has as yet been no evaluation of the use and potential of the VLE within the PLC college. The author found that time constraints on the part of teachers inhibited the wider collection of research data.

6.4 Recommendations for Future Research

It is envisaged that future research could be carried out to look at the use of VLEs in other PLC colleges in order to evaluate and analyse usage and the potential for engaging in viable discourse in relation to the opportunities and constraints found nationally and internationally in relation to usage of a VLE.
Given that FETAC are the major awarding body at this level of education, future research into the potential for teaching a broader range of FETAC modules using the VLE would be required in order to look at the potential for formulating coursework for a range of modules using the VLE.

With advances in the provision of online assessment methods future research could be undertaken, under the auspices of FETAC, into the viability, validity and reliability of using a VLE for delivery and assessment of FETAC modules at Levels 5 and 6.
Bibliography


Flavell (1979) in The role of metacognitive knowledge in learning, teaching, and assessing in Theory Into Practice, Autumn, 2002 available: http://findarticles.com/p/articles/mi_m0NQM/is_4_41/ai_94872708/ [accessed 24 May 2009].


Appendices

Appendix 1

Permission and Consent

Permission Form
FAO Michael Condren, Principal

Dear Michael,

I am a teacher researching the use of Virtual Learning Environments in a PLC college.

I am using the following research tools: questionnaires, focus groups and semi-structured interviews.
I would like to ask for your permission to contact some teachers and students in this regard.

The results of the research findings will form part of my Masters thesis for the University of Limerick and may be published.

Names of individuals will not be used and all contributions will be confidential. Participation is voluntary. The college name will not be used in my research findings unless later permission is given by you.

If you are satisfied with these conditions, please sign the form below indicating your permission.

Yours faithfully,

Kirsten Briggs.

I am willing to give permission for this research and I understand that names of individuals will not be used or published. The college name will not be used in my research findings unless permission is given by me.

Signed:

Date: 23rd Sept 2009

Enclosed copy of questionnaires, interview questions, focus group questions and consent form.
Consent Form

I am a teacher researching the use of Virtual Learning Environments in a PLC college.

You are being asked to take part in some of the following:

- Questionnaires □
- a focus group □
- a semi – structured interview □

The results of the research findings will form part of my Masters thesis for the University of Limerick and may be published.

Your name will not be used and your contribution will be confidential. Your participation is voluntary.

If you are satisfied with these conditions, please sign the form below indicating your assent.

Yours faithfully,

Kirsten Briggs.

________________________________________

I am prepared to participate in this research and I understand that my name will not be used or published.

Name:____________________________________

Date:________________
Appendix 2

Figures and Tables

**Figure 2.1** The ADDIE model

**Figure 3.1** Research Paradigms – towards a pluralist approach.
Figure 3.2  Triangulation diagram showing the relationship between participants and the research tools being used.
Appendix 3
The Student Questionnaire

1. What is your gender?
- Male
- Female

2. What age group?
- 17 to 24
- 25 to 30
- 31+

3. What Course are you studying?
   Name of college
   Name of course of study
   Please list your main subjects
   What level is your course

4. I am confident in using computers
- Yes
- No

5. I have adequate access to Moodle
- Yes
- No

6. Is Moodle easy to use?
   - very easy
   - easy
   - difficult
   - very difficult
   Please comment:

7. On a scale of 1 to 5 where 5 is HIGHEST SCORE
   Please rate your interest in using Moodle as part of your learning
   - 1
   - 2
   - 3
   - 4
   - 5
   Please comment:
8. Please list your FETAC subjects where the VLE (Moodle) would be useful

9. I find it easy to set aside time for study
   - Yes
   - No
   Please comment

10. Using Moodle enhances my personal learning experience
    - a lot
    - some
    - very little
    - not at all
    Please comment

11. Where do you access Moodle?
    Tick as many as apply
    - At home on a PC
    - In class
    - Wireless on a laptop
    - Internet cafes

12. How often do you use Moodle?
    - Every day
    - 1 - 2 times a week
    - 3 - 5 times a week
    - Only when told to
    - Never
    Please comment

13. If you use Moodle, what do you see as the main benefits to you?
    Tick as many as apply
    - Checking my timetable
    - Getting lecture notes
    - Picking up course material
    - Online discussion with other students
    Other (please specify)
14. If you do not use Moodle, why not?
Tick as many as apply
- My tutors do not use it
- I do not have access to the Web
- I find it difficult to use
- The information is not useful
Other (please specify)

15. Do you find Moodle good for accessing
(Tick as many as apply)
- Class announcements
- Course reading lists
- Links to subject related websites
- Information about project deadlines
Other (please specify)

16. Using Moodle keeps me in contact with my classmates
- Yes
- No
Please comment

17. Using Moodle means that I do not have to be in class
- Yes
- No
Please comment

18. Using Moodle means that I can choose my own study time
- Yes
- No
Please comment

19. Getting class notes online helps me to revise for exams
- Yes
- No
Please comment
20. I would prefer to receive printed handouts
   - Yes
   - No
   Please comment:

21. I feel that using Moodle encourages me to do course work at home
   - Yes
   - No
   Please comment:

22. Do you have a disability or learning difficulty that affects your learning experience?
   Tick as relevant
   - Dyslexia
   - Hearing impairment
   - Vision impairment
   - Physical disability
   Other (please specify):


Appendix 4

Data in Relation to the Student Questionnaire

4.1 Chart 1 - gender, age and course level

4.2 Chart 2 - ease of use of the VLE
4.3 Chart 3 - frequency of use of the VLE

4.4 Chart 4 – benefits (4)
4.5 Chart 5 – respondents with a disability
Appendix 5
The Teacher Questionnaire
Appendix 6

Data in Relation to the Teacher Questionnaire

6.1 Chart 1 - gender and course level

6.2 Chart 2 – participation across departments
6.3 Chart 3 – number of computer subjects taught

6.4 Chart 4 – access and location of use of the VLE

6.5 Chart 5 – ease of use and preparation time
6.6 Chart 6 – frequency of use of the VLE

6.7 Chart 7 – benefits to the teacher (2)
Teacher use of the VLE - communicate with students from home.

6.8 Chart 8 – communicating with students from home
Appendix 7

General Comments Extracted from Questionnaires

Students:
“I feel it is an excellent service provided to students. I am able to access notes and information from home or anywhere which has internet access.”
“I can interact with all the students and teachers.......there is access to all the materials you need for your projects through the links on Moodle.”
“Moodle helps by organizing all the modules and assignments.”
In terms of constraints it was stated that, “no one has taught us how to use it.”
“I take lots of notes in my classes but it (the VLE) is very beneficial for research on my notes as the information on Moodle goes into greater detail should I have missed any notes in class.” This student understood the constructivist theory of learning and asserted that the VLE, in his terms, enabled him to extend and expand his knowledge outside of the restrictions of the class timetable.
“I am able to postpone study on some occasions because of Moodle. On weekends when not in class I am able to log on and print class notes and study them.”
The VLE works, “to a certain degree, but not on the scale of a social networking site.”

Teacher comments:
“(the VLE) requires a special effort and commitment.”
“this is the number one problem and the key reason for low adoption rates - teachers simply have not got the time.”
“It has got very busy here – I used to be able to find more time.”
Appendix 8

Semi-structured Interview & Focus Group Questions - Students

Question 1 What are your general impressions of your use of the Virtual Learning Environment (VLE)?

Question 2 In terms of your use of VLE can you please talk about the use of technology within your learning?

Question 3 What learning opportunities have you found through your use of the VLE?

Question 4 What learning constraints/barriers have you found through your use of the VLE?

Question 5 What potential for learning do you see through using the VLE?

Question 6 Can you see any potential for the use of the VLE in terms of your FETAC modules?

Question 7 As a communications tool what potential does the VLE offer to you?
# Transcript of Semi-structured interview – Student

<table>
<thead>
<tr>
<th>Question 1</th>
<th>What are your general impressions of your use of the Virtual Learning Environment (VLE)?</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>I have a lot of free time in the week and this gives me time to access the VLE. I enjoy using the VLE because I can see its potential. This is my first course where it has been used and I might want to go on to college and friends there tell me they use it all the time. It’s great for getting to grips with my entire course and all of my teachers use it? They have put a resource folder on the VLE. I would be quite a hard worker so I use it a lot – every day in fact.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Question 2</th>
<th>In terms of your use of the VLE can you please talk about the use of technology within your learning?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I am a second year in the Media department so we are using a wide range of technology all the time. It is very important to relate the technologies to one another and the VLE is a way of doing this because it brings all the modules together under one umbrella. We use digital cameras and sound and all the computer editing facilities we need to do our assignments.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Question 3</th>
<th>What learning opportunities have you found through your use of the VLE?</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>I am able to do more research and write better assignments because the resources are provided on the VLE. Ok so I can surf and find stuff but it is easy to get distracted on the internet and not find things that you really need.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Question 4</th>
<th>What learning constraints/barriers have you found through your use of the VLE?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I feel that I am lucky because the teachers on our course are very technology minded but I hear from other students in the college that not many teachers are using it. I can’t think of any barriers to using the VLE because we have good wireless hotspots and I can work at home more easily. I do not get much feedback because my teachers prefer to talk to us individually.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Question 5</th>
<th>What potential for learning do you see through using the VLE?</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>The VLE helps you to pace your work. I have a part time</td>
</tr>
</tbody>
</table>
job and sometimes have to miss the odd day or two at college so the VLE is a way of keeping up to date and it also allows me to do my assignments and upload them to my teacher. I can catch up easily because I like to study late at night. Also I think that the VLE is a more constructive way of using my time and my assignments have improved because of the resources provided by my teachers.

<table>
<thead>
<tr>
<th>Question 8</th>
<th>Can you see any potential for the use of the VLE in terms of your FETAC modules?</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Only for sending in assignments because all of the rest of my work is in very large files that have to be marked by the teachers actually watching and listening to our stuff. I suppose we could get grades on the VLE but our teachers do not do that.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Question 9</th>
<th>As a communications tool what potential does the VLE offer to you?</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>If our teachers gave feedback on the VLE and I could contact them at night that would be good. I always use the VLE to email if I am going to miss a day.</td>
</tr>
</tbody>
</table>
### Question 1
What are your general impressions of your use of the Virtual Learning Environment (VLE)?

<table>
<thead>
<tr>
<th>Student</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student 1</td>
<td>There’s not much to comment on as we haven’t used it that often. I have used it once or twice – trying to find out information about my exams and when assignments are due in. Not many teachers have put information on Moodle for me to gather my information from.</td>
</tr>
<tr>
<td>Student 8</td>
<td>I have never used it as it is supposed to be used. I think that we need lessons on how to use it and to be encouraged by our teachers.</td>
</tr>
<tr>
<td>Student 2</td>
<td>It is a good idea if it was used properly by all the teachers, if they put up all their lessons and things then I would be able to work at home and plan my study.</td>
</tr>
<tr>
<td>Student 1</td>
<td>“It (the VLE) does help but really the notes and books are more helpful.”</td>
</tr>
</tbody>
</table>

### Question 2
In terms of your use of VLE can you please talk about the use of technology within your learning?

<table>
<thead>
<tr>
<th>Student</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student 1</td>
<td>I use twitter a lot and of course some of our subjects are done on computer.</td>
</tr>
<tr>
<td>Student 5</td>
<td>Everyone uses Facebook and I like this way of keeping up to date with other students. Like for example “what are you working on now” That encourages me to do some work too.</td>
</tr>
<tr>
<td>Student 7</td>
<td>We all use the Internet, facebook, bebo, msn, gmail all the time. They are part of our lives. The VLE just doesn’t have the same draw.</td>
</tr>
</tbody>
</table>

### Question 3
What learning opportunities have you found through your use of the VLE?

<table>
<thead>
<tr>
<th>Student</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student 2</td>
<td>I have used it for work experience and I found it helpful because most of the module is in work sheets and you can do the work and upload back to the teacher. It’s nice to know that all the sheets we get in class are on the VLE.</td>
</tr>
<tr>
<td>Student 3</td>
<td>Work Experience has been good because when you upload your work to the teacher she will send you an email to say she has got it. Then you get feedback and can change things that might be wrong.</td>
</tr>
<tr>
<td>Student 6</td>
<td>Our Work Experience teacher is now putting deadlines on the work so that it has to be sent back on time. This is</td>
</tr>
</tbody>
</table>
good because it keeps you on track. She says that she is going to give us grades on Moodle too.

Student 4
Same with Spreadsheets we can get on with our work and send it back so we don’t have to waste paper by printing it out.

Student 3
With CAD we do work in class and upload it but sometimes the files are very big and I think I could email the drawings faster but I like using Moodle. We should get marks for using Moodle.

Student 5
In the CAD class the teacher sends us out drawings for redlining where we draw a red cloud round the parts that are wrong then we upload it back to the teacher. She then sends you a drawing redlined by another student and you have to make the corrections. This is great because they do this in Architects offices all the time. We get marks for this because it is part of our course work. We are also working on an e portfolio where we put examples of all our FETAC subjects together. It is a bit like a c.v. but more visual and a lot more interesting. We can use a copy of this e portfolio for our collection of work for 4 modules.

Question 4
What learning constraints/barriers have you found through your use of the VLE?

Student 2
I feel that it is a great piece of technology if it is used in the right context. If all the teachers were dedicated to actually putting what was in each lesson onto the website rather just hoping that the students would do everything they were told in class.

Student 4
Would help a person to catch up if they missed a class if all teachers used it.

Student 1
What’s the point of having the system in the college if all the teachers do not use it?

Question 5
What potential for learning do you see through using the VLE?

Student 1
Catching up if you get behind in your studies

Student 2
Tips on how work can be completed

Student 4
Working from home – e-learning

Student 3
I feel the same. It is very handy if the teacher was to use it properly, e.g. if someone just couldn’t make a class that they could find out from the Moodle website what was done in class and wouldn’t have to go through other students who might have forgotten when assignments were due in.

Student 5
Something like YouTube, where you could have a video on Moodle of the teacher recording a class would be very
**Student 5**
I used that for My Leaving Cert – some notes on YouTube where a teacher was doing Maths on the board – I found that very helpful so maybe some teachers could use videos to show us how to do things like spreadsheets and CAD, things that are hard to remember.

**Student 1**
Video clips through YouTube – is it possible to do this through Moodle – that would be another technology through Moodle.

---

**Question 6**
Can you see any potential for the use of the VLE in terms of your FETAC modules?

<table>
<thead>
<tr>
<th><strong>Student 1</strong></th>
<th>We all have to do 8 modules to get the FETAC Award and there are some that you must pass.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Student 5</strong></td>
<td>We actually have to pass all 8 of them</td>
</tr>
<tr>
<td><strong>Student 4</strong></td>
<td>Some teachers put the modules on moodle so that you see exactly what has to be done for each subject.</td>
</tr>
<tr>
<td><strong>Student 3</strong></td>
<td>Our teacher puts up a checklist for each module for us as well and gives us deadlines. This is good because it means that we become more responsible. Some subjects could be done totally on moodle like Work Experience</td>
</tr>
<tr>
<td><strong>Student 2</strong></td>
<td>Communications could be done too and some things that we do in Work Experience like c.v. and things are also needed for Communications. Maybe these could be pulled together so that we get the full benefit from our work.</td>
</tr>
<tr>
<td><strong>Student 1</strong></td>
<td>Building Construction would be really helpful if it was on moodle, otherwise it is all just taking down notes and more notes. Our teacher uses an overhead projector and we don’t get notes. You spend all your time in class writing and if you lose your notes its trouble.</td>
</tr>
<tr>
<td><strong>Student 4</strong></td>
<td>You could say Maths as well. Because it is all theory and we could do with a lift with some videos – on maths of course like that guy mentioned.</td>
</tr>
</tbody>
</table>

---

**Question 7**
As a communications tool what potential does the VLE offer to you?

<table>
<thead>
<tr>
<th><strong>Student 1</strong></th>
<th>No – I didn’t know it had a facility to do that. I thought it was your own homepage, it wasn't anything like Facebook.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Student 3</strong></td>
<td>People are using so many other different forms of communication over the Internet that they are not using Moodle, the more popular ones are – facebook, bebo, msn, gmail.</td>
</tr>
</tbody>
</table>
Appendix 11

Semi-structured Interview & Focus Group Questions - Teachers

Question 1 What are your general impressions of your use of the Virtual Learning Environment (VLE)?

Question 2 Does the current use of the VLE within the college facilitate the personal learning styles and technological expertise of your students? Discuss

Question 3 What teaching opportunities and constraints have you found through your use of the VLE?

Question 4 In your opinion could the use of the VLE facilitate enhanced teaching and communication opportunities? Discuss.

Question 5 From your experience what teaching methods are directly applicable through the use of the VLE in a PLC college?

Question 6 What course administration opportunities and constraints do you see through using a VLE?

Question 7 As a pedagogical and communications tool, what potential does the VLE offer?

Question 8 In your opinion how can the constructive use of a VLE address FETAC module requirements
Transcript of Semi-structured Interview - Teacher

<table>
<thead>
<tr>
<th>Question 1</th>
<th>What are your general impressions of your use of the Virtual Learning Environment?</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>I teach a variety of subjects including Database, Spreadsheets, Word Processing, Communications and Work Experience. I have taught others from time to time, e.g. DTP. I have had a few sessions in it, and found that I have maybe forgotten how to use it. I have used it more this year and I have found it better this year than last, but am still learning. I am not sure that I appreciate its fullest advantages. So far it is good, pretty user friendly, I have found one or two areas difficult. It's easy to access, but it took a few training sessions to get used to. There are still some areas I have difficulty with Design wise it could be better. One area I have difficulty with is when you are off screen and linking to a file, that force download business, you have to go through it a few times.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Question 2</th>
<th>Does the current use of the virtual learning environment within the college facilitate the personal learning styles and technological expertise of your students?</th>
</tr>
</thead>
</table>
| A          | The younger age group has been brought up with computers and so they take to them pretty easily. If you give them the same thing on paper and then tell them it is on the Moodle, even if it is exactly the same thing, they will go for Moodle. They are all familiar with Facebook and Twitter. I think they find it a bit easier to use than myself, so for them it doesn’t take any greater level of expertise. So I think that with all the gadgetry they use, including computer games, this is up their street. Also it has the great advantage that they can use it at home and are probably more likely to if it is Internet based and they have instant access. I have some reservations about Moodle as a stand alone learning/teaching system. I have always regarded it as a tool. I really think that – maybe I am from an older generation of teachers – face to face is more important, or a combination, I don’t think the VLE will ever replace that and students need an immediate feedback on what they are doing. Using a VLE makes it easier to distribute information to students and, occasionally, promotes better interaction among students and faculty. However it really doesn’t
enhance the teaching-learning experience, but in time it is hoped that the learning styles of students would be enhanced through prolonged use of the VLE.”

<table>
<thead>
<tr>
<th>Question 3</th>
<th>From your experience what teaching opportunities and constraints have you found through your use of the VLE?</th>
</tr>
</thead>
</table>
| A          | I think the opportunities to give the students basic information very fast. I like that once you do it once, you do it for every student. Up to now my basis has been the network for giving information to students, i.e. the folder on the server which the students have direct access to. I would put their folders on there at the beginning of each session. In that system, you have to make a folder for each student and individually upload into each folder. Moodle has a very definite advantage there in that once you do it once you have done it for every student. As well as that, the students can access it ad lib at home, and are probably on the Internet anyway, so the chances are that they will. I am not sure I have a full overview of what Moodle can do. You can monitor it, see who is using it and who’s not using it very easily, give reports quite easily - although I haven’t plumbed the depths of that either - and give individual progress reports quite easily there. So it would offer those areas of teaching and administration and would be very helpful there.

I am familiar enough with computers and learning new programs. The VLE is user-friendly; I think once you have started you have to stick with it. If you leave it a month or two you have to relearn. Maybe over a period of time that would become fairly automatic, but teachers have to be prepared to have a large learning input in the beginning. I have had three 2 hour expert sessions. It was enough to enable me to work it. The constraint for me is spending the time getting to grips with everything, but I do feel it is an excellent program. I don’t have a complete overview of it so I don’t feel I am even nearly up to speed with the facilities on offer yet, and have been using it on and off for a year. As well I feel that integrating the VLE into all the other things we have to do is challenging.

Another constraint is that teachers are voluntarily using it at the moment and some teachers use it and some don’t and there is a bit of pressure on the teachers from students to use it.

A constraint is that all students expect all teachers to use it, and yet some teachers perhaps do not have the time to learn the expertise and also some teachers are not computer literate and yet they are expected by the students to use it. I think I am fortunate that I have been able to pick it up. It has needed a time commitment in the beginning. Also,
when you are using Moodle, what I would regard as a disadvantage is that you have to upload for one class it took me an hour to upload 8 documents.

**Question 4**  
From your experience what teaching methods are directly applicable through the use of the VLE in a PLC college?

**A**  
If used properly assignments could be on the VLE from week to week, and I think you could do a lot of things that are paper based at the moment - even the simple example of linking to a FETAC module facilitates the students a lot. I think there are many teaching methods that could or are being used, like integrative and group work methods particularly in computer subjects where you can integrate your modules. As a PLC college we have always been student centred. We also operate somewhat from a didactic point of view and use chalk and talk a lot. I think particularly in computer subjects there are opportunities to introduce constructive learning methods. One to one interaction between the teacher and student is another opportunity as for example e-learning. I think Moodle is constructive for the student, from its very nature, in that they can participate in their studies using technology that they understand. If they want to access their studies, they can use the VLE anywhere. It builds a certain routine and creates independence in the student. The work can then be sent on to the teacher and the teacher will then interact with them through the VLE as well as reinforce it through class contact. With the VLE being organized on a week to week basis, you are building up the lessons in a very constructive fashion as well as integrating tests and giving feedback and reports. I think that is very much in the future.

**Question 5**  
What course administration opportunities and constraints do you see through your use of the VLE?

**Q5.1**  
Do you feel that teachers are communicating with each other through the email facility in Moodle? Do you receive any contact from teachers through Moodle?

**A**  
No. That would be a great resource for me, but that may be my fault. Just recently I have come across the teachers list which was compiled at the beginning of this term. I use email quite a bit and socially at home. I feel that the College never really had a complete email list, its only “post holders” who were on the list initially. I feel that would be a real advantage and a great feature and we should be taught and encouraged to use Moodle to communicate with colleagues. Sometimes you leave a note in a teacher’s mail
box but email would be instantaneous and immediate. One of the great advantages for me is that you upload once to every student. If we could in a group sense form different email groups it be a great advantage and would give everybody a fully rounded picture of what is happening. We are inclined to use this at the moment for attendance on a one to one basis, whereas before this we put notes in letter boxes, it certainly has great advantages for the attendance officer.

A I think it would be terrific if the Quality Assurance system could be put on the VLE. We have gone a certain distance on this from a paper based system in that through the network folders we can access the original material and that is very helpful but we still have to print out all the QA worksheets for return to the coordinator. There are so many different aspects to Quality Assurance which are so time consuming, and if that could be put on a vehicle such as Moodle using its full resources, it would be advantageous for every individual teacher, the College and enable a whole overview of the system as well, and especially for the Quality Assurance co-ordinator.

Question 6
As a pedagogical and communications tool, what potential does the VLE offer?

A Well, I think it won’t replace the classroom or the contact a teacher has in the classroom. I think that direct contact is necessary. But I think it is very useful tool in that it makes the teacher’s job much easier as you can put so much information in front of the students. I know that I don’t fully realize its full potential, but as I get to know the VLE more perhaps a lot of things that are now being done in the classroom like testing at least some of it could be done in the student’s home time doing the test at home. Some feedback could be given there. I do find as I have said before that Moodle is time consuming to upload information. But Moodle then has the advantage that you only need to do it once. If you have to do that at certain times during the year it can become quite time consuming. For distance learning a VLE would have great advantages. I think maybe there is a danger in Moodle if you give too much information. For some students, if they are getting all or most of what they need on Moodle, there is less of an onus on them to attend classes. Having said that, there is a great advantage in that this year there are many students who have contracted various illnesses such as swine flu and a student does not have to be in contact with other students and can still to a large amount of college work, depending on the teacher’s use of Moodle, to keep up with their courses.
**Question 7**

In your opinion how can the constructive use of a VLE address FETAC module requirements?

| A | Examination systems and assignments at the moment come as paper based media and while the work is done on the electronic medium they all have to be reproduced in hardcopy for marking purposes at the moment. We need Examining bodies to agree to go to an Internet based system like the ECDL are doing at the moment. The VLE would then be an even bigger benefit to the students, because the student would be interacting through the Internet in Moodle. I could indeed see the potential for FETAC modules being delivered on the VLE. I feel I am using it for delivery at the moment. I have put many things on Moodle in different subjects this year. This includes assignments, samples and links with modules. In the past I have used the Network server-based system which has limitations from the students’ point of view as they can only access it in the College. Not all classrooms have computers so the VLE has the advantage that you are providing the actual link which the students can access at home. I have put lots of teaching materials on Moodle for them. One of the things that is very useful for them in Spreadsheets and Database is that there is a project which is worth 50% of the total marks and as well as the students being able to access the module descriptor, I have put a step by step on how to do the project on the VLE. In previous years I would have handed them paper copies of it. If they are on the computer at home, they have instant access to it and they can't go wrong. I think this is very useful. A constraint here is that neither Communications nor Work Experience is scheduled in a computer suite. |

**Question 8**

You have made a very good point there that I would like you to enhance upon. You teach communications and this is a mandatory FETAC module, and yet you are saying you don’t have a computer room to teach that subject. So that then is a very valuable opportunity to enable students to work from home on computer on their Communications module through the VLE.

| A | Absolutely. I have been using the VLE for those subjects. For instance, I have put some samples up there. One of the things the students have to do is a CV and a covering letter. I have given them some samples and assignments on those. Moodle also lends itself to integration of learning particularly with the Work Experience and Communications modules in which the students cover similar ground. They have to do that initial thing of submitting their CV and a letter for work experience. It has been helpful in that I have the one class for both and the
VLE lessens duplication as well. This is an important area where Communications and Work experience are covering similar ground where I have been able to integrate both in the initial stages.

<table>
<thead>
<tr>
<th>Question 8.1</th>
<th>Do you carry out any assessment of student work on the VLE?</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>No, I am not at that stage yet. For FETAC Quality Assurance that is one of the tasks we have to do. I am just not sure of the capability of the VLE to do that. It would be very advantageous to do that. It would save a lot of class time, it wouldn’t replace one to one class contact with the student but it certainly might shorten it up if a student could get the marks and feedback over Moodle and then the teacher would be in a position to get to the next stage of discussing it with them back in the class. It would be a more valuable use of time.</td>
</tr>
</tbody>
</table>
# Transcript of Focus Group Session - Teachers

This focus group comprised 7 teachers - 3 male and 4 female.

Identification will be by Teacher 1, Teacher 2 etc

<table>
<thead>
<tr>
<th>Question 1</th>
<th>What are your general impressions of your use of the Virtual Learning Environment (VLE)?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher 1</td>
<td>I very rarely use Moodle because “I prefer to be more hands on with my classes.”</td>
</tr>
<tr>
<td>Teacher 2</td>
<td>“I like using it and find that the students expect teachers to be nearly as good on computers as they are. I regularly put on project briefs and notices but I don’t think that I am using it to the full.”</td>
</tr>
<tr>
<td>Teacher 7</td>
<td>“I think Moodle is more related to e-learning and that we are not seeing the full potential because of the attendance policy in the college which penalizes students who do not show up for class.”</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Question 2</th>
<th>Does the current use of the VLE within the college facilitate the personal learning styles and technological expertise of your students? Discuss.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher 1</td>
<td>“It (the VLE) probably does offer opportunities because the students like anything to do with computers but I like to use the overhead projector and the acetates that I have made over the years.”</td>
</tr>
<tr>
<td>Teacher 3</td>
<td>yes it does help your credibility with the students and this helps to motivate them.</td>
</tr>
<tr>
<td>Teacher 2</td>
<td>some students like to take ownership of their learning and for these students the ability to access their class materials remotely, helps in their development and prepares them for future learning.</td>
</tr>
<tr>
<td>Teacher 4</td>
<td>with some students having to work during their course it is important that they can access course work. Maybe a student gets ill – this is another reason why the VLE is important.</td>
</tr>
<tr>
<td>Teacher 5</td>
<td>we must not forget that some students do not even have a computer never mind access to the Internet. I would not like to see any student being disadvantaged.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Question 3</th>
<th>What teaching opportunities and constraints have you found</th>
</tr>
</thead>
</table>
through your use of the VLE?

**Teacher 1**

how do I know that the students have got the brief when using the VLE? At least when you hand it to them you know that they have it and can’t come back with excuses.

**Teacher 2**

It’s a good opportunity to cut down on the amount of paper used and also to try to instill independence in the student. If we had some time in our timetable to prepare work for Moodle that would help.

All other participants agreed that a time allowance was important.

**Teacher 4**

said that maybe it was time consuming at the start but that maybe it would be possible to carry work from year to year like Teacher 1 does.

**Question 4**

In your opinion could the use of the VLE facilitate enhanced teaching and communication opportunities?

**Teacher 7**

thought it might be a good idea to try to team up with teachers in other colleges who are offering the same courses in order to share resources

**Teacher 1**

expressed concern that this could lead to digital plagiarism among those teachers who put a lot of time and effort into their preparation.

Generally it was felt that no real progress was being made in terms of “enhanced teaching and communication opportunities because there was no initial discussion before setting it up.”

**Teacher 4**

that the small amount of training focused on how to use it rather than the potential or even what other colleges are doing on the VLE.

**Question 6**

From your experience what teaching methods are directly applicable through the use of the VLE in a PLC college?

**Teacher 1**

the VLE like the internet would be good for research.

**Teacher 2**

agreed that Moodle would help with research and that he/she puts links to web sites on Moodle for students to access.

**Teacher 3**

I would like to see more group work going on using Moodle but I am not sure how to pull this off.

**Teacher 5**

that depended on the type of work and that project work would be suitable for group work but that assignments need to be done on an individual basis.

**Teacher 6**

talked about the potential to integrate modules at FETAC Level 6 but said that again this would need planning and cooperation from the teachers concerned and felt that in his/her particular department only 2 out of 6 teachers were using Moodle on a regular basis. It was generally agreed that not many teachers
were using Moodle and that an improved in service course was needed to teach the teachers, but to point out the possibilities.

**Teacher 7**  
I have put a resource folder on Moodle that all of my classes have access to. This gives my students access to a large number of links to sites that are valuable for their learning. Admin. Data from the VLE co-ordinator shows that this facility is very well used by the students. I would consider that this is constructive to learning and also allows integration of my FETAC modules.

**Question 7**  
In your opinion how can the constructive use of a VLE address FETAC module requirements?

**Teachers 6 & 7**  
Moodle is great for the Work Experience module and that they are using it for that and the students find it helpful to be able to use the worksheets at home.

**Teacher 3**  
That’s because the work Experience module was formatted into worksheets a few years ago by one of the teachers and that made it easier for all teachers.

**Teacher 4**  
said that for FETAC modules that are mandatory and haven’t been updated over the years like for example Work Experience and Communications it would certainly be feasible to set these up on Moodle.

**Teacher 1**  
worried if other teachers would be prepared to work to put standard courses in a similar format like for example Communications and Word Processing.

**Teachers 3&4**  
the registering of results with FETAC was done online and that the driving theory test was on line so maybe some of the FETAC exams could be actually done using Moodle.

**Teachers 1&5**  
What about the security of exams online and of intellectual copyright?

**Question 8**  
What course administration opportunities and constraints do you see through using a VLE?

It was generally felt that it would be helpful if all the quality assurance sheets were put on Moodle.  
It was observed by the majority of teachers in the group that it is good that class lists (the names and details of students) are on Moodle but that it was defeating the purpose because these files are “well locked up” PDFs and unusable for cutting and pasting into the many documents that a teacher needs to create for each student. OK they can be printed but that’s it.

**Teacher 7**  
saw the resource folder as being important to administration of courses.

Most teachers agreed that it was great that assignment briefs could be posted on the VLE and that the facility to email students was
working well.

**Question 9**
As a pedagogical and communications tool what potential does the VLE offer?

Most teachers use the VLE to post assignment briefs and deadlines. It was generally felt that teacher to teacher communication through the VLE was very poor even though all teacher email addresses are on file. Teachers present wondered how many teachers were actually using Moodle and maybe time constraints were a big issue for teachers

**Teacher 7** again saw the resource folder as being important to communications with students and said that other teachers on the course use and add to this resource even though they would not be very active in their use of Moodle.

**Question 10**
In your opinion how can the constructive use of a VLE address FETAC module requirements?

**Teachers 6 & 7** said that Moodle is great for the Work Experience module and that they are using it for that and the students find it helpful to be able to use the worksheets at home.

**Teacher 3** That’s because the work Experience module was formatted into worksheets a few years ago by one of the teachers and that made it easier for all teachers.

**Teacher 4** said that for FETAC modules that are mandatory and haven’t been updated over the years like for example Work Experience and Communications it would certainly be feasible to set these up on Moodle.

**Teacher 1** wondered if other teachers would be prepared to work to put standard courses in a similar format like for example Communications and Word Processing.

**Teachers 3&4** pointed out that the registering of results with FETAC was done online and that the driving theory test was on line so maybe some of the FETAC exams could be actually done using Moodle.

In conclusion all teachers felt that using a VLE was forward thinking on behalf of the college and realised that there were mixed reactions on a pedagogical level.
Appendix 14

Administration Data in relation to Use of the VLE

<table>
<thead>
<tr>
<th>Department</th>
<th>Admin. Data – no. of subjects where VLE is used</th>
<th>Questionnaire responses from teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design and Construction</td>
<td>36%</td>
<td>29%</td>
</tr>
<tr>
<td>Business and Administration</td>
<td>12%</td>
<td>29%</td>
</tr>
<tr>
<td>Computing and Technology</td>
<td>16%</td>
<td>29%</td>
</tr>
<tr>
<td>Media and Sound</td>
<td>2%</td>
<td>35%</td>
</tr>
<tr>
<td>Health and Sport</td>
<td>0%</td>
<td>12%</td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td>6%</td>
<td>18%</td>
</tr>
<tr>
<td>Adult Program</td>
<td>Unable to assess</td>
<td>0%</td>
</tr>
<tr>
<td>Apprenticeship</td>
<td>0%</td>
<td>12%</td>
</tr>
</tbody>
</table>

NOTE: TV resources for the Media and Sound Department serve a wide range of subjects within the courses and have proven to be the most accessed facility within the VLE.

Administration data showing student usage of the VLE by department in relation to total number of subjects being taught during the research period.