The Introduction of a VLE into a Further Education Centre in Rural Ireland

A Case Study

Master of Arts (Digital Media Development for Education)

By: Seán Scully

Supervisor: Kenneth Rea

Submitted to the University of Limerick

October 2011
The Introduction of a VLE into a Further Education Centre
Setting in Rural Ireland

A Case Study

by

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A thesis in conformity with the requirements for the degree of Master of Arts (Digital Media Development for Education)

Submitted to the University of Limerick, Ireland

October 2011

Supervisor: Kenneth Rea
Declaration:

I hereby declare that this project is entirely my own work, and that it has not been submitted for any other academic award, or part thereof, at this or any other educational establishment.

Signed: __________________________

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Student ID: 0828866

Date  ________________
An abstract of the thesis of Seán Scully (Student ID 0828866) submitted for the award of Masters of Arts in Digital Media Development in Education, October 2011.

**Abstract**

*The Introduction of a VLE into a Further Education Centre in Rural Ireland*

**A Case Study Approach**

It has long been the vision of educators to deliver effective learning through the internet. This is particularly true for the further education sector, where daily class attendance can prove difficult for the adult learner who has many responsibilities and commitments that exist outside the classroom environment. The emergence of technologies such as the Virtual Learning Environment (VLE) offers an option for educators to deliver learning resources and communication with students over the medium of the internet. The introduction of a VLE into adult education can open up many possibilities and offer flexibility to teachers and their learners as regards time and space.

This study explores the extent to which the introduction of a VLE will impact on learning delivery and contribute to classroom teaching and learning of adult students in a rural Further Education Centre (FEC) context. The option of pure online instruction will be considered for future learners, together with the current perceived role of VLEs with its contribution to a blended approach to learning delivery. The exploration of potential barriers to change that effect the many stakeholders within the FEC and elsewhere which will untimely come from such a major introduction into the educational setting. These barriers can range from technological to pedagogical and the introducers and implementers of the VLE will need to consider many issues if the delivery of educational courses is to be successful through the VLE and where both teacher and student learning expectations are realised.

Key findings were determined from a mixture of quantitative and qualitative data and include the opinion that technologies such as a VLE can be of benefit to the success of a blended learning approach in a further education setting. However, great care must be taken at the introduction and implementation stage to prepare for the change processes and adequate training and support must be made available to the teachers that are involved. Affordable and fast broadband must always be available to both learners and their teacher if the benefits of the VLE introduction are to be fully realised.
Acknowledgements

I would like to express my gratitude and appreciation to a number of individuals who have helped and supported me in the completion of this study.

I want to thank my supervisor, Mr Kenneth Rea, for his help, advice, support and understanding throughout the preparation of this study.

Secondly, I would like to thanks all the teachers, staff and adult learners within the Further Education Centre who took part in the research through completion of questionnaires, classroom observation and interviews. I would in particular like to thank Sandie Flynn for her help with proof reading and advice in compiling this research. I am eternally indebted to all the above for the help and support provided.

Last but by no means least, I would like to thank my partner Pauline for her support and encouragement and my children Jack, Tara, and Jeff for their caring patience and support throughout each phase of this Master’s Degree.
Dedication

I wish to dedicate this thesis to my mother for all the love and inspiration she instilled in me over the years.
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<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>BETCA</td>
<td>British Educational Communications and Technology Agency</td>
</tr>
<tr>
<td>CMS</td>
<td>Content Management System</td>
</tr>
<tr>
<td>DCENR</td>
<td>Department of Communications, Energy and Natural Resource</td>
</tr>
<tr>
<td>DES</td>
<td>Depart of Education and Skills</td>
</tr>
<tr>
<td>F2F</td>
<td>Face to Face</td>
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<tr>
<td>FEC</td>
<td>Further Education Centre</td>
</tr>
<tr>
<td>FETAC</td>
<td>Further Education and Training Awards Council</td>
</tr>
<tr>
<td>HTML</td>
<td>Hypertext Mark-up Language</td>
</tr>
<tr>
<td>ICT</td>
<td>Information and Communications Technology</td>
</tr>
<tr>
<td>LAMS</td>
<td>Learning Activity Management System</td>
</tr>
<tr>
<td>LMS</td>
<td>Learning Management System</td>
</tr>
<tr>
<td>Moodle</td>
<td>Modular Object Orientated Dynamic Learning Environment</td>
</tr>
<tr>
<td>OECD</td>
<td>Organisation for Economic Co-operation and Development</td>
</tr>
<tr>
<td>PDF</td>
<td>Portable Document Format</td>
</tr>
<tr>
<td>PLC</td>
<td>Post Leaving Certificate</td>
</tr>
<tr>
<td>VLE</td>
<td>Virtual Learning Environment</td>
</tr>
<tr>
<td>VTOS</td>
<td>Vocational Training and Opportunities Scheme</td>
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<tr>
<td>ZPD</td>
<td>Zone of Proximal Development</td>
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Chapter 1

Introduction

1.1 Introduction

The Internet is here to stay. Not one person would have envisioned the impact and capabilities that this medium would have on our everyday lives with instant access to information and an ability to communicate in ways unimagined as little as 25 years ago are now common everyday experiences. The world is without doubt a much smaller place as we can now watch live video coverage of events that impact and reshape our world and communicate interactively with our fellow human beings over the same medium that has no physical or time boundaries.

Education is not being left behind as educators attempt to embrace the technologies offered and adapt their pedagogical approach to teaching and learning. This journey is at a much slower pace than that which business experienced over the same period. Initially the focus was on the introduction of ICT into education closely followed by the advent of the Internet which has made it possible for access to information and communication capabilities that were used by teachers and learners to enhance the learning experience. The Internet and the opportunities that it provides to enrich learning are unrelenting and without doubt the move whether entirely or in part to online instruction is currently the fastest growing sector in education Allen and Seaman (2005). At present the best way for educators to explore this transition to online learning is through the adaption and use of Virtual Learning Environments (VLEs).

Today’s educators are strongly aware that in order for them to reap these educational benefits within the context of adult education, then there must be a conscious effort to support and embrace the introduction of a VLE system into their own educational setting. For this to occur, teachers must positively harness the potential of a VLE and embed it within their teaching to ensure the full support of learners and other stakeholders. Research on the benefits attainable for introducing a VLE in a Further Education Centre (FEC) or adult education setting are at best limited (Leney et al. 2007). In practice the whole structure of course programmes and the way that these courses are delivered would need changing, unless a realistic implementation plan of change is carefully constructed and specific pedagogic and technical goals are focused on, only then can change happen. Also there would have to be a conscious change as regards the current mentality in adult
education that would involve all stakeholders in the further educational landscape for the transition to be effective.

This chapter will act as an introduction and give a brief description of the significance of the research, followed by an account of the structure of the investigation.

1.2 Statement of the topic

The purpose of this research seeks is to explore the potential benefits to the adult learner and their teachers in a Further Education Centre (FEC) in Ireland through the introduction of a Virtual Learning Environment (VLE) into the educational setting. Additionally the focus will concentrate on the technological, pedagogical and organisational change that would be required should such an introduction take place. The interaction and adaptation by all stakeholders in supporting this revolution in teaching and learning also deserves consideration and evaluation.

1.3 Objectives

The objectives of this study are to consider the impact that a VLE would impact on adult learners in a Further Education Centre setting. The study will endeavour to access the benefits and any limitations that the introduction of a VLE in the FEC to provide a more engaging environment for adult learners and their teachers.

The introduction of a VLE into adult education can offer possibilities and offer flexibility to learners as regards time and space. It can help identify learning styles in learners and develop and nurture skills in the areas of learning, offer the learner way to communicate and collaborate in way not seen before. In fact it may become a vehicle of empowerment, increasing confidence and assisting the achievement of real and essential tasks. The VLE may have the potential to grow and develop and bean embedded resource in the adult education landscape that will allow it to ‘to create individual and organisational habits and structures that make continuous learning a valued and endemic part of the culture of the school and teaching’ (Craft, 2000).

1.4 Are you ready to Moodle?

A VLE is a learning management system that is designed to help teachers create an online classroom with opportunities for teachers to interact and collaborate with learners in a virtual environment
over the Internet. The option exists on developing a hybrid classroom using a VLE which could allow a blending learning experience or to supplement traditional courses. Also the VLE has the capabilities to host a completely online course which is often termed e-learning. The VLE is sometimes called a Learning Management System (LMS) or Content Management System (CMS).

Moodle is currently the most popular and easy to use VLE available. Moodle is an open source VLE that can provide educators with a powerful set of tools to create and manage courses, course content, course materials, track student attendance and performance through tests, quizzes, assignments, and surveys. It also provides a platform to create a forum for communication and interaction between students and teachers and between fellow students also. Moodle is designed so that universities, community colleges, schools, and even individual instructors can utilise the benefits of web technology as an enhancement to traditional classrooms environments.

1.5 Pedagogical background of collaborative learning

The inclusion of a VLE into an adult learning environment invokes many considerations as regards learning delivery by teachers. For example in the conventional face-to-face teaching-learning process communications and interactions are spontaneous and intuitive and this is often delivered with a “body language” aspect that can add sub-conscious additions to the subject matter being taught. Inherently in the web-based teaching and learning systems this beneficial element is conspicuously absent.

Teachers obviously have a role to play here to analyse, access and evaluate the many tools used to create and manage course content. These tools that are built in the VLE systems like Moodle is powerful and have the ability to enhance the learners experience by providing teachers with the ability to track the learners logon attributes, distribute class content documents, construct quizzes, surveys, wiki’s and encourage learners to communicate between their fellow learners and also with their teachers.

Teachers will need to consider their teaching skill and review many of the learning theories applicable to on-line teaching and learning. For example collaborative learning has a particular meaning in the context of a Virtual Learning Environment (VLE). It refers to a collection of equipment which learners can use to assist, or be assisted by others, these tools include virtual classrooms, chat, discussion board (forum), wiki, workshop, document (e.g., slide, video, text, etc.) and sharing, along with many other features (Anderson, C., 2006).
From a pedagogical perspective on-line communication (also known as on-line dialogue) which becomes easily available through the VLE system, can create dialogue between the tutor and learner that is seen as central to learning (Laurillard, D., 2009). This model of learning may seem innovative, but in fact these conversational models of learning are based on earlier theories constructed by Vygotsky. Laurillard (2009) highlights the fact that, for higher level learning to occur, on-line dialogue must take place at both theoretical as well as practical levels. The way the learner and the teacher communicate is a major advantageous feature of this model.

1.6 Significance of the study

The research undertaken as part of this study is applicable and useful to educators, course coordinators, FEC management staff and other stakeholders within the FEC or adult education sector. This research study would provide them with the necessary information that would be useful when considering the implementation of a VLE into their own educational environment. The findings of this research study would also provide these decision makers with answers regarding the benefits and limitations of the VLE system.

Questions such as the following may provide these answers:

- Have teachers the technological knowledge and skill available to provide a better learning experience through the use of the VLE?
- Do teachers and other staff in FEC require professional training in the use of the VLE?
- What are the pedagogical changes that teachers need to consider to enhance their teaching delivery through the VLE?
- What are the needs of the learner regarding VLE use?
- What are the benefits and limitations for the use of a VLE for both teachers and learners?
- Does the use of a VLE offer the possibility to offer some or entire course content on-line reducing or eliminating class contact time?

The answers to these questions may provide teachers and other stakeholders with information regarding implementation of the VLE and provide them with the information to assist them as regards the technological, pedagogical and organisational change that would be required should such a VLE system be introduced. The obvious end goal of any implementation would be to benefit learning delivery within the FEC environment and to assist learners by providing them with the
modern tool and teaching methods that would make their educational journey more efficient, effective and rewarding.

1.7 Structure of the Thesis

Chapter 1 Introduction

This introductory chapter of the thesis examines the background, context and significance of the study. It also outlines the author’s aim for the study and reasons for choosing his research topic.

Chapter 2 Literature Review

The literature review identifies and examines a number of areas relevant to the study. This chapter will begin with an exploration of the advent of the VLE in education. The studies will then comment and access the available literature on the selection of an appropriate VLE system and the implementation of such a system into an FEC or adult learning environment. Also an investigation into learning theories relevant to the study will be conducted to gain an insight into previous research within this field. Lastly consideration will be given to the benefits and limitations of adapting a VLE system for successful teaching and learning delivery.

Chapter 3 Research Methodology

As the title suggests, this chapter focuses on the reasons for the choice of methodology chosen the effectiveness of the research tools used to gather the data are analysed and the methods of data analysis is discussed. Lastly the limitations of this research are included.

Chapter 4 Research Findings

In this chapter there is an analysis of the data and findings collected throughout the research process. Both quantitative and qualitative results will be presented. Questionnaires will be presented in appropriate chart type formats and structured interview and learner observation data will be presented in a suitable narrative format.
Chapter 5 Discussion

This chapter discusses the findings of the research undertaken by examining the research question and how it relates to the context of earlier peer reviewed research. Triangulation of data was assimilated into this chapter in order to corroborate or refute findings at all levels.

Chapter 6 Conclusion

This concluding chapter of the study combining the findings of this investigation with the research outlined in the literature review and this enables the author to present the significances of such findings and also consideration of the limitations of the research. Conclusions will be formed and recommendations for further study in this area advocated.
Chapter 2

Literature Review

“The next big killer application for the Internet is going to be education. Education over the Internet is going to be so big it is going to make email usage look like a rounding error.” (John Chambers, President and CEO of Cisco Systems, 1999)

2.1 Introduction

Few would have envisaged that the World Wide Web (WWW) would have and the revolution it would create on the computer and communications world especially so over the last two decades? What we take for granted today was only a vague idea fifty years ago. Some commentators have gone as far as to say that the Internet is one of the most important technological innovations of the 20th century (Castells, 1996).

Even the credited inventor of the World Wide Web, Tim Berners-Lee, would find it hard to recognize the multimedia based interactive environment when compared to that of the static HTML compiled web pages that he envisaged. Lee’s work in 1989 proposed a global hypertext project to be known as the World Wide Web and after an initial trial it was launched on the Internet at in July 1991.

Over the following two years, Lee continued to work on refining the design of the Web, collecting feedback from users across the Internet and performing general improvement to the design. Many worked on developments that enhanced and improved the medium and today we have technologies such as Web 2.0, that change our perception on the way we interact with information and allow us to communicate with others in a way we never envisaged before. The planet which we inhabit has few geographical boundaries and distances in time and space seem miniscule, all thanks to these advances in ICT technologies. Howard Rheingold aptly named this world we live in as a “virtual community” and published an excellent book on the same subject (Rheingold, 1993).

2.1.1 The Internet as an Instructional Tool

The biggest growth in the Internet, and the area that will prove to be one of the biggest agents of change, will be in e-Learning ... Education over the internet is so big it’s going to make e-mail look like a rounding error (John T. Chambers, CEO, Cisco Systems, 1999)
Peter Drucker referred to a society in which there are a relatively high proportion of knowledge workers, where people have risen in importance and leadership, and where education is the cornerstone of society, a society which he named the “Knowledge Society” (Drucker, 1959). In recent years this term “Knowledge Society” appears to have being replaced with the term “Information Society”, which suggests a conceptual shift from an emphasis on the value of content to a stronger emphasis on developing lifelong learning skills (European Commission, 2002). To embrace and partake in this “Information Society” educators will need to assess the availability and accessibility of ICT hardware and software resources to include broadband access before programmes can be wholly or partly created in digital format that can be made available to the learner over the internet to form part of the learning process.

This is especially important to ensure Ireland’s economic development over the next decade if the country is to recover from the current recession. Educators are the enablers of such activities and the education and training system must adapt to produce skills for our learners to drive successful enterprise. To foster the continual acquisition of knowledge, a conscious approach to Lifelong Learning must be introduced and corresponding delivery structures put in place through the deployment of technology to enhance learning and teaching. In Ireland Lifelong Learning is understood and defined as:

“...All purposeful learning activity, whether formal or informal, undertaken on an on-going basis with the aim of improving knowledge, skills and competence.”(NESC,1999, p270)

In Ireland Lifelong learning is seen as key to personal development and social inclusion as ‘...education empowers individuals to participate fully and creatively in their communities’. (Department of Education and Science, 1995).

An Expert Group on Future Skills Needs (EGFSN) published a strategy document in 2007 that was entitled ‘Tomorrow’s Skills: Towards a National Skills Strategy,’ which identifies Ireland’s current skills profile and provides a strategic overview and specific objectives for Ireland’s future skills requirements and access to education and training to achieve the appropriate skills. In the document the Irish Government’s commitment to Lifelong Learning is summarised thus: ‘...drive the lifelong learning agenda by enhancing access to training, the development of new skills, the acquisition of recognised qualifications and progression to higher-level qualifications...’(p31).
Educators have many options available to them for providing access to these appropriate skills that will help embrace and enrich the training and development of these so-called Lifelong Learners. One option would be to develop a good VLE programme that could be delivered as on-line or part on-line course programme that can be delivered in the classroom and a portion delivered on-line which still supporting conventional face-to-face (F2F) interaction in the class room between teacher and learners (Mitchell, 2007). The National Report on Lifelong Learning compiled by Dublin City University DCU cited the need for educators to understand the nature of the adult learner and to interact with these learners in a possibly less formal way and construct relationships that are often ‘warmer’ than is the case in the secondary school system (Fingleton 2004; Downes, Maunsell & Ivers, 2006).

Although the 2000 White Paper on Adult Education did mention distance learning and the role of ICT in learning by accepting that there was a “robust demand” for these forms educational participation but there has been little expansion in the area as regard future proposals in this document (DES, 2000). With this in mind the same report did nevertheless suggest that it is imperative that the scope for distance learning provision be used to full advantage.

2.2 Broadband availability

There is no doubt that in today’s world we need information as a basic resource just to ensure human survival (Verges 1992). The capabilities of the World Wide Web have opened up a new vista in which this information is easily available. This information we receive through modern communication technologies has massive social implications for us all. This can have a major impact on almost every aspect of our life especially in areas such as education. So much so that according to (Haque, 1991) people particularly in developed countries like to perceive themselves as information societies, linking information with the very fabric of quality of life.

As we now enter the second decade of the 21st century one could still question the availability of digital based information to all citizens in our country. Marshall McLuhan, a great scholar and author coined the phrase in 1964 “the medium is the message”. This statement could be applied to ICT technology and the medium that we use to transfer information. Without doubt broadband access is still a contentious issue in many areas particularly in rural areas around Ireland. In County Laois, for example where the FEC in which this research study is being conducted, data compiled by the Central Statistics Office (CSO) in 2006 found broadband penetration levels of only 22.2% for the whole county (CSO, 2008, p.40).
Since then the Department of Communications, Energy and Natural Resources announced in May 2011 through the Communications Minister Pat Rabbitte a new Rural Broadband Scheme that was established to enable a basic broadband service to be provided to rural dwellers that are not capable of obtaining a broadband service from existing internet service providers. This Scheme will be carried out in cooperation with the Department of Agriculture, Fisheries and Food under the Rural Development Programme co-funded by the European Agriculture Fund for Rural Development.

The Scheme aims to ensure that universal broadband access is provided in Ireland by the end of 2012. If this Scheme is successful it will solve many of the current issues relating to broadband access in rural areas, such as those in County Laois. Fig 2.1 below shows a map outlining the area identified where access problems exist and the Rural Broadband Scheme will concentrate its effort in improving broadband access there.

![Proposed Rural Broadband Scheme for County Laois](image)

Figure 2.1  Proposed Rural Broadband Scheme for County Laois

Also in The National Development Plan 2007 – 2013 a commitment is given to improve Broadband connectivity and acknowledged how achieving this as being increasingly central to Ireland’s continuing transformation towards a knowledge-based and value-added based economy. The report proposes that by 2013, all the Metropolitan Area Networks (MANS) in Gateways and Hubs should be completed and an enhanced backhaul connectivity that will deliver much improved and more cost-
effective broadband accessibility in many of the Gateways and their wider regions. This programme is estimated to cost €435 million.

Currently Web 2.0 technologies as a platform to enhance education impact the broadband infrastructure in relation to access speed. Several examples of Web 2.0 technologies exist such as YouTube, Skype and Voice over IP, Google Documents and cloud based computing. Although Web 2.0 applications have proven beneficial for educators, a significant drawback is that these visually-appealing, interactive, and innovative websites all have in common - most of them require a large amount of bandwidth to function properly. In 2007 data released suggested that YouTube.com comprised of approximately 10% of all traffic on the Internet. Furthermore video streaming in general has increased considerably in recent years, whereas before it accounted for a very small proportion of Internet traffic (Gruman and Kaneshige, 2008). As Web 2.0 applications continue to grow and develop, their effect on current broadband speeds will require solutions to keep up with this increasing bandwidth usage, the investment and innovations necessary to move to higher speed broadband will then become paramount.

Technologies such as Web 2.0 have the ability to empowering students to learn in many different ways (Lemke and Coughlin, 2009). Embracing these technologies in the adult education sector is crucial to foster a self-directed constructivist learning environment. Poon et al. (2004) cited technological factors that affect learning through ICT to include the very important internet accessibility and also mentioned computer literacy as another important feature.

2.3 The educational context

Many would consider that the whole idea of online education was a new phenomenon that began with the creation of the World Wide Web in 1992, but it has a history that extends back over thirty years (Harasim, 2000). Since the Internet itself was born in academic research, it seems logical that it should be used for teaching and learning (Howe, 2004, Sangster (1995) remarked on the ability of web based technologies in their capacity as educational tools are without precedent in the educational history of mankind. A claim like this is easy to make but a closer inspection of the research conducted in this area would portray a different image of the extent that technology has revolutionised teaching and learning. (Schank and Cleary, 1995) concluded that up to very recently our educational systems have not been actively developing these essential skills to incorporate web based learning into education and the technology skills required have been left mostly to post-secondary educational institutions and "learning on the job" scenarios. This can be particularly true
for adult education as it aims to pursue the knowledge economy” that is constantly being discussed by the Irish government and interested bodies as Ireland seeks to move forward and develop strategies to deal with the future workforce’s education in post “Celtic Tiger” Ireland.

A National Strategy on Higher Education document published in 2010 and commonly referred to as The Hunt Report, observed the critical role that education will play in the coming decades as we seek to build an innovative knowledge-based economy that will provide sustainable employment opportunities and good standards of living for all citizens. In the same Report inspiration was drawn from the words of Harvard President Drew Faust, ‘In a digital age, ideas and aspirations respect few boundaries. The new knowledge economy is necessarily global in context and the reach of universities must be so as well’. The report also suggested that while large group teaching, supplemented by tutorials and laboratory sessions, will continue to be the bedrock of instruction in higher education, it will increasingly be complemented by e-learning (including podcasting and online discussion groups), self-directed learning, problem-based learning, and collaborative projects.

Essentially technology use in education has been positively heralded by providing educators with an arsenal of resource tools for longer than one would imagine; (Cuban, 1986) stated that before computers a number of other forms of technology such as film, radio, and television have been introduced into schools with a certain degree of success. Teachers have being encouraged to introduce and embrace the new technologies that are available to learners and use them to help create a positive culture for learning (Papert, 1996), one in which the learner enjoys enhanced interactivity and connections with others.

There is no doubt that today’s ICT systems are very flexible in nature and systems like VLEs can make education less dependent on time and place. Change is now possible as regards conventional face to face instruction (F2F) in the classroom which has being the cornerstone of educational delivery since time immemorial, but because of the afore mentioned revolution in information and communication availability, education delivery has no option but to embrace change and adapt to new ways of instruction and channels of learner communication. For this to be successful all stakeholders from learners to teachers, government initiatives to education management will need to collaborate and work together towards a common goal. In order for this change process to be effective, the change process itself will need careful strategic planning and all involved stakeholders must clearly understand the objectives of the change (Fullan and Miles, 1992). Furthermore educators will be required to examine concepts such as school culture, and factors that affect educational change and
be aware that success in change implementation is not guaranteed, to quote the words of the prominent sociologist Michael Fullan “Educational change fails more times than it succeeds” (Fullan, 1992, p7).

2.4 The Constructivist Approach to Adult Education

Most modern educational sociologists perceive the constructivist approach to learning as being the most widespread and effective available. The main initiator of this belief is attributed to (Jean Piaget, 1975), who suggested that learners generate knowledge and meaning, from an interaction between their experiences and their ideas.

Vygotsky’s theory is one of the foundations of constructivism. This theory asserts three main themes: Vygotsky’s first main theme denotes the fundamental role that social interaction plays in the process of cognitive development in the learner. This is a clearly a contrasting view to that of the aforementioned Jean Piaget whose understanding of learner development proposed that development necessarily precedes learning. Vygotsky opposing belief proposes that social learning precedes development (Vygotsky, 1978).

The second theme of Vygotsky’s socio-cultural theory is the zone of proximal development (ZPD). Vygotsky described this as essentially the distance between a learner’s ability to perform a task under guidance and the learner’s ability to solve the problem using the learner’s own initiative; Vygotsky claimed that true learning occurs in this zone.

Teachers adapting social constructivism within their teaching attempt to convey meaning with their learners, (Wood et al., 1995). These learners are actively engaged in meaning through their learning and by adapting this constructivist view, enables the teacher to look at what the same learners investigate, analyse, create and share all this is based on what the individual learners already understand rather than what facts, skills and processes that they are expected to learn (Dougiamas, 1998).

(Jonassen et al., 1995) and (Moller, 1998) suggested that constructivism occurs when learners discuss ideas that would benefit their learning with their fellow students and with the teacher in this scenario only acting as a facilitator in the overall learning process. This allows learners to construct narratives that help to make sense out of their own educational experiences. In the case of adult learners while adapting to an on-line learning environment, the learners themselves can actively take part in their own learning process and collaborate and cooperate with peers and the teacher to
construct their own knowledge individually from their online learning and social interaction experience (Siat, 2003).

2.5 The Adult Learner

"The illiterate of the 21st century will not be those who cannot read and write, but those who cannot learn, unlearn and relearn." (Alvin Toffler, 1970)

Publicly-funded further education and training is predominately related to providing educational opportunities for young people and adults who have either left school early or who need further vocational education and training to enhance their employment prospects and to enable them to progress their educational attainments. There appears to be no comprehensive national database for adult participation in lifelong learning available, however available data suggests that Ireland is currently reporting a participation rate of 6.3 per cent against an EU average of 9.3 per cent (Labour Force Survey, 2009).

The National Adult Learning Organisation, AONTAS has estimated that approximately 300,000 adults participate across the whole spectrum of formal and non-formal education activities each year in Ireland. This figure, which represents approximately seven per cent of the adult population, has been compiled from a variety of sources (AONTAS, 2009).

The publication of the White Paper on Adult Education in 2000 (DES, 2000) and the Report of the Task Force on Lifelong Learning (Department of Enterprise, Trade and Employment, 2002) provided a platform for a range of initiatives designed to increase participation of adult learners, with a specific focus on widening access for marginalised groups.

Many education bodies are still primarily designed and structured to serve the needs of full-time students, despite the introduction of a range of part-time learning opportunities (see below). There are also significant challenges to be addressed in upgrading the ICT skills of the adult population.

A large number of the FECs in Ireland are operated under the auspices of the VECs. Programmes run in these Centres for adult learners include schemes such as The Vocational Training Opportunities Scheme (VTOS) and also Post Leaving Certificate (PLC). All courses are usually accredited by the Further Education and Awards Council (FETAC). In a typical FEC the learners can vary greatly in age. Their age profile could extend from seventeen years to seventy-seven. However a high proportion of these learners usually are in the range of twenty to forty years of age. Many of these learners are
unemployed, early school leavers, retirees, some suffering for an illness or altered life circumstances. Also for many the day to day responsibilities such as childcare have prevented them from participating in full-time education in the past and so can only now avail of educational opportunities. This can cause many to view their enrolment in further education as a ‘second chance’ to re-enter education. These learners often bring with them a vast variety of life and work experiences and prior learning which can makes them unique in the learning context and without doubt they do bring their own unique characteristics to the learning environment. Unfortunately some of these returning learners would have had a negative experience of past learning and also their previous educational experiences would have been delivered using traditional learning models. Tutors should endeavour to recognise these individual characteristics and past experiences in order to be effective and to support the overall learning outcome (Collins et. al., 2000).

Prior to the 1970s adult educators depended on psychologists to understanding learning in general and to appraise their practices (Merriam & Caffarella, 1999). Since then there has being much research conducted on pedagogical theory over the last couple of decades. “Pedagogy is derived from the Greek words ‘paid’, meaning ‘child’. Thus, pedagogy literally means the science of teaching children (Owens, 2002, p. 61). Pedagogy in essence concentrates on teacher-focused education which prompted Knowles et al (2005) to comment that this teacher centred approach of pedagogy was for a long time the only model available from which to take comparisons. Knowles accordingly added that “As a result, until fairly recently, adults have by and large been taught as if they were children” (Knowles et al., 2005, p. 61).

This led to the formation of Andragogy which is the art and science of assisting adults to learn. This can be defined more broadly as learner-focused education for people of all ages (Connors, 2004). These andragogical theories on adult learners were initially developed in 1968 by Malcolm Knowles (Knowles, 1970). Knowles described his theories as a set of five different assumptions. The first of these five assumptions states, that as an adult matures, his or her self-concept moves from that of a dependent toward one of a self-directing human being (Knowles, 1980). The five assumptions of adult learners can be summarised as follows:

- they are independent and self-directed
- they use their experiences as resource for their learning
- their learning is connected to their work and social lives;
- their learning is oriented more towards performance than subject
• their motivation is more internal than external (Baumgartner et al., 2003; Cyr, 1999)

There are some critics of the concept of andragogy. Baumgartner (Baumgartner, Lee, Birden, & Flowers, 2003, p. 13) observes that the application characteristics of andragogy related to how the concept applies and if “it is a theory or a set of assumptions” then these assumptions are also criticised. Never-the-less many use Knowles’ andragogy theories as the foundation for an understanding of adult learning. Another researcher on adult education, (Candy, 1991), draws strong links between self-directed learning and informal and incidental learning.

The inclusion of a VLE into education can be related to self-directed concepts because the process in itself requires a self-directed adult learner. The movement from pedagogy to andragogy by its very nature produces the self-directed learner and invokes a distinct movement from behaviourist to constructivist instructional approach. The acknowledgment, acceptance, and understanding of this movement from pedagogy to andragogy can be used to help restructure the way educational institutions plan, manage and organise current and future courses.

2.6 Learning Technologies in Further or Adult Education

We need to bring learning to people instead of people to learning. (Elliott Masie, Masie Centre 2011) In 1964 Marshall McLuhan the great scholar and author coined the phrase “the medium is the message”. This declaration could well apply to technology and the medium that we use to transfer todays information. Broadband as mentioned earlier in this study allows digital educational options to be available to our learners and enhanced their learning. If a FEC - Further Education College was considering introducing a VLE in the educational equation; fast dependable broadband access will need to be available not only in the FEC but also outside the education setting and in the learners’ homes.

It may seem incredible but broadband was only launched in Ireland as recently as 2002. Adequate broadband is recognised as having an important positive impact on national economies. Adequate broadband access is especially significant for rural areas, both in terms of living and working conditions. Qiang and Rossotto (quoted in OECD, 2009) compiled data that shows broadband penetration of 10 subscribers per 100 inhabitants corresponds to a 1.2% increase in per capita GDP growth in developed countries (OECD, 2009). Data released by the Commission for the Communication Regulator (Comreg, 2009) claims that there are 1.3 million broadband subscriptions
in Ireland (including mobile broadband). This data, based on EU calculations, gives Ireland a broadband penetration rate of 20.2%, which is slightly below the EU-27 average of 22.9%.

**Figure 2.2:** Broadband subscriptions by contracted download speeds

Trials aimed at closing the digital divide in disadvantaged areas suggest these perceptions do change once internet technology is introduced into lives (Wyatt et al., 2003). Despite the increase in regular broadband use in the EU, an EC report highlights that: “large gaps still remain, across countries and socio-economic groups, and a second digital divide, based on quality of use, is emerging. Empirical evidence shows that digital inclusion is largely driven by age and education levels” (EC, 2009c, p.21). The Irish government has made some effort to close the digital divide. The Department of Communications, Energy and Natural Resources initiated a National Broadband Scheme in May 2007. The communications Minister, Noel Dempsey, stated that the scheme would meet “every reasonable request” for broadband in rural Ireland, and would ensure minimum technical criteria and maximum prices (DCENR, 2007).

The potential role of broadband in our country’s performance and recovery is being recognised more than ever in light of the current global recession. (Kelly et al., 2009) note that broadband investment has recently featured in fiscal stimulus plans around the world and is seen as an important component of economic recovery. Access to fast online information undoubtedly modifies the way it is exchanged, analysed and incorporated into our knowledge base (Stavrianeas, Stewart, & Harmer, 2008).
2.7 Embracing the Change

For some time now educators have recognised that the role that web learning has in its capacity as a teaching resource is without precedent in the educational history of mankind (Sangster, 1995). Nevertheless, (Harper and Hedberg, 1997) concluded that up to very recently our educational systems have not been activity developing these essential skills. The learning of important technology skills have been left mostly to post-secondary educational institutions and "learning on the job". This lack of technology education would impact on learner ability to use ICT effectively and efficiently and a VLE system to assist and enhance the learning experience. Also proficiency in ICT use is essential in today world particularly for adult education in Ireland as we seek to pursue the “knowledge economy” that has being constantly referred to in the Irish media in recent years. This idea of a “knowledge economy” was introduced in 2006 by the Irish Government through the Minister for Enterprise, Trade and Employment, Micheál Martin TD who outlined the details of its new Strategy for Science, Technology and Innovation for the period 2006-13 to key stakeholders from both enterprise and academia, the vision was that of an Ireland internationally renowned for the excellence of its research (Forfás & Expert Group on Future Skills Needs, 2010).

The National Strategy on Higher Education document published in 2010 and commonly known as The Hunt Report, observed the critical role that education will play in the coming decades as we seek to build an innovative knowledge-based economy to provide sustainable employment opportunities and good standards of living for all our citizens. In the words of Harvard President Drew Faust: ‘In a digital age, ideas and aspirations respect few boundaries. The new knowledge economy is necessary to compete in a global marketplace and be within the reach of universities as well’.

The same report suggested that while large group teaching, supplemented by tutorials and laboratory sessions, will continue to be the bedrock of instruction in higher education, it will increasingly be complemented by e-learning (including podcasting and online discussion groups), self-directed learning, problem-based learning, and collaborative projects.

This line of recommendation to education institutions is nothing new. The White Paper on adult education titled “Learning for Life” published in 2000 by the Department of Education and Science cited the opportunity for adult learners that modern ICT has and the potential to provides a whole new mechanism for overcoming distance; for accessing information from one’s home or workplace; for pursuing accredited learning programmes as more and more institutions adapt these paradigms to electronic delivery and interaction with other learners in a virtual classroom environment.
Unfortunately little research exists in relation to an examination of how the further education sector could adapt their courses for delivery via an e-learning format (Leney et al., 2007). Educators often find it difficult to devise and implement an effective programme that incorporates a flexible e-learning approach to course delivery unless a realistic plan is constructed with focus directed on specific pedagogic and technical goals pre implementation (Collis and Moonen, 2002). To effectively devise a successful hybrid learning model that brings the best of conventional F2F instruction and integrates an e-learning element, a blended approach to teaching and learning can be achieved. This could lead to a very modern and innovative form of blended learning that would enhance the learning experience for all and that “would be seen as a new genus, not a new species: it would be seen as the result of evolution, not revolution” (Nichols 2003, p.3).

While recognising the limitations of ICT in educational applications and conceding that it is better to look to the VLE to supplement learning rather than replace the actual one, it is none the less contended that the application of ICT in adult education practice in Ireland is as yet only in its infancy and its vast potential remains to be tapped. If this potential is to be exploited, and indeed if Ireland as a society is to maintain its position vis-à-vis other countries in the information revolution, it is imperative that learning impediments in relation to ICT are removed.

One important impediment affecting acceptance of new innovation into learning is the issue of change acceptance by all involved stakeholders, (Fullan, 1993) indicates that in order for a change to be effective, both the individuals involved and the institution must undergo a transformation. Furthermore he supports the notion that each single educator must endeavour to be an effective agent of change, and have an appreciation of the nature of that change. Teachers in particular have an important role in relation to the acceptance of the vast changes that the introduction of the VLE in a FEC would undeniably entail; “teachers’ attitudes, opinions, values, and views with respect to the teaching profession must fundamentally change for large scale innovations to succeed” (Cuban, 1990; Fullan and Miles, 1992).

An important implication for the successful implementation of the VLE into the educational setting is the ICT skillset of the teachers who will be delivering the learning. (Mulkeen, 2001) cited this skillset in relation to ICT is as a major potential barrier to change “Teacher skills remain the greatest reported barrier to usage of ICT in the classroom” (Mulkeen, 2001). Additionally he suggested that a training programme is necessary that would address any problems in relation to teachers who have not the required skills and to broaden the skills of those who have. Many researchers have similarly
commented on the need for effective training to equip teachers with the skills and pedagogical relevance to confidently to embed ICT into their educational delivery (Albirini, 2006; Balanskat et al., 2006; Beggs, 2000; 2007; Schoepp, 2005; Sicilia, 2005).

Also for the VLE to be embraced by teachers and blended with traditional instruction to deliver a superior learning experience would require that “mechanisms need to be put in place to ensure that teachers have adequate access to technical support and advice and to ensure that teachers do not feel that they have to become technical experts themselves” (Williams et al., 2000).

2.7.1 Pioneering Teachers

“Who dares to teach must never cease to learn.” (John C. Dana, 1912)

During the 1980s, the potential of ICT in education was being realised by teachers and many of these teachers attempted to introduce ICT and in particular the Internet into their instruction. But despite this initial optimism, there was not a vast change in the way education was delivered. Subsequent to these early years of adventures into ICT to assist learning (Amundsen, 1993) and (Mason & Kaye, 1989), noted that it was becoming clear that pedagogical use of the Internet should be informed and appraised by clear theoretical perspectives.

(Papert, 1998) noted: "The system, the administration, the ministries now began to take charge, so the computers were no longer in the hands of the visionary teacher but were in the hands of the administration. And, in principle, the bureaucratic administration has a deep, vested interest in maintaining the culture that exist with the educational setting and an appreciation of the possibility of a resistance to change”.

By their very nature learning establishments are hierarchical in nature with often little flexibility offered (Hargreaves, 1995). This hierarchical structure often means that decisions taken in schools or Centres are made in a “top-down” manner with no meaningful consultation with teachers or other staff (Corwin, 1988).

Moving through the 1990s a vast improvement in the availability of ICT resources in the classroom can be seen with government and other stakeholders becoming involved. In Ireland The National Centre for Technology in Education (NCTE), was established in 1998 under the aegis of the Department of Education and Science to have a wide remit in the area of information and
communications technologies (ICTs) and education, extending beyond the use of ICTs in schools to cover all educational ICT issues. Its main initial tasks are to manage the implementation of the Government's Schools IT 2000 initiative, to develop ICT policy proposals and to provide policy advice to the Department of Education and Science.

The Schools Integration Project (SIP) has been one of the NCTE's key initiatives. This project will promote whole school development and the integration of computers into learning and teaching in schools. Over 300 proposals for SIP have been received involving more than 600 primary and secondary school around the country. An initial list of 48 projects, involving 228 schools and 58 project partners from the public and private sectors, was announced by the Minister for Education and Science, Mr. Micheál Martin, TD, on Tuesday 30th March, 1999. Since then approximately 90 pilot projects have been established in a number of 'lead' schools working in partnership with education centres, businesses, industry, third-level institutions and the community (SIP.ie).

With many of the SIP projects concluding in 2001 and 2002, it is important that the results and outcomes are disseminated to the wider educational community so that 'best practice' with regard to the use and integration of ICT can be assimilated and implemented in Irish schools. This website is a vehicle for such dissemination and we hope that the efforts of all the educators, teachers and students who took part in SIP projects provide inspiration to others seeking to use ICT innovatively in education.

During this period it was becoming increasingly apparent that a successful implementation of any web-based medium into the classroom environment would depend to a large extent on the readiness of the implementers i.e. the teachers who are pivotal in attitude and involvement through the whole implementation process regarding new pedagogical innovations within the educational enterprise (Mnoja, 1992). There is evidence from past examples across the world that when a vast change in expectations for teacher instructional delivery is expected, this may be met with some resistance by educators in many different forms. For example, (Perraton, 1981) suggested at that time that the use of television in the classroom in El Salvador as a resource led to a national strike by teachers.

Many early adopters attempted to embrace ICT and to use these technologies to improve their teaching by creating an online course site using general-purpose tools such as WUSIWUG web page editors, discussion groups but the use of commercial education software can be a complex and
expensive task. Also the learning curve in becoming proficient in the use of these tools is difficult for most teachers, who have limited time and resources. The result of these stumbling blocks to date is that, attempts at VLE use are very simplistic consisting of static material such as “hand-out notes” and at best also offering a basic discussion as opposed to collaborative spaces that offer true e-learning. Fryer however advocated the use of new technologies like the VLE which have the ability to post hand-out notes and other resources and cited the benefits to learners in particular where students can focus on comprehension and processing of data as opposed to “text-capture” (Fryer, 2002).

There are many attributes that educators should possess to successfully adapt and embrace technologies to improve learning delivery, one of which is the ability to collaborate on both a small- and large-scale project such as the implementation of ICT into learning and this ability is now becoming one of the core requisites of being a successful participant in modern educational delivery. There is a ceiling effect to how much we can learn if we keep to ourselves and don’t consult and partake in group collaboration and learn from each other in the learning organizations (Fullan and Hargreaves, 1991). This is especially true for innovative developments like a VLE implementation when knowledge needs to be pooled and shared to best effect and the actions of individuals and groups working on new conceptions intersect to produce useful breakthroughs that will embrace change that will benefit all concerned (Fullan, 1993).

2.8 The Role of VLC in the Classroom

“New tools alone do not create educational change. The power is not in the tool but in the community that can be brought together and the collective vision that they share for redefining classroom learning”. (Riel, 1990)

Virtual Learning Environments have developed significantly over the last fifteen years. These systems have improved greatly and developed sophisticated user interfaces. These improvements have led to a large number of mainly third-level intuitions adapting the VLE to deliver blended learning and distance education courses. The term “virtual learning environment” that is in use throughout this study is “a single piece of software, accessed via a standard web browser, which provides an integrated online learning environment” (Kurilovas, 2006). (Bricheno et al., 2004) witnessed that institutions adapting technologies such as the VLE to enhance learning appears to be
favouring a blended learning approach, using the VLE to support centre-based students, where a mix of traditional learning is supplemented by offering some of the learning to occur on-line.

In the UK, the British Educational Communications and Technology Agency (BECTA), claim that some confusion revolves around the term VLE; they conclude that in reality the term VLE is usually a combination of all or some of the following:

- Tools to create online course content.
- Controlled access to class resources.
- Tools for online assessment and marking.
- Student access to content and communications outside class contact time.
- Communication tools such as email, bulletin boards and chat rooms.
- Collaboration tools such as online forums, intranets, electronic diaries and calendars.
- Integration with school management information systems (BECTA, 2006).

Early adopters of online learning were attracted by the simplicity of use and functionality of VLE systems like Blackboard and WebCT (who have recently merged), and over a short period these two systems became the standard. Blackboard and WebCT without doubt are rich in features, they were expensive to procure and because of this many smaller colleges did not have the funding to justify the expenditure required to provide the VLEs that would assist learning. This is where open source systems were developed such as Moodle, which was open-source, free to obtain and has many features.

These open source systems vary in functionality and educational acceptability but a number have taken on the might of the commercially marketed systems and performed successfully against them. Examples of products on the open source market include: Moodle, ATutor, CourseWork, Dokeos and Sakai. The current and most popular VLE leader Moodle has over 54 000 registered sites, with over 44,000,000 users distributed in 212 countries (Moodle.org, 2011).

2.8.1 Get Ready to Moodle

Moodle is an acronym that stands for Modular Object-Oriented Dynamic Learning Environment. In a nutshell Moodle is essentially a course management system for online learning. Moodle was the brainchild of the Australian Martin Dougiamas, a computer science graduate, who had begun
working life at WebCT as an administrator. Dougiamas, creation offered teachers a way to connect remotely with their learners through an environment that is both supportive and collaborative. The geographical vastness of his native country Australia and the dispersion of learners inspired his creation. The completed system was officially launched in August 2002.

The aims and design of Moodle are to be compatible, flexible and easy to modify. Moodle is constructed using a highly modular approach and allows the use of common technologies such as shared libraries, abstraction, and cascading style sheets to define the interfaces while still supported by older browsers. The attractiveness of Moodle is that it is open source and this permits programmers and novices alike to change the environment and tailor the interface to suit a particular location or need.

2.8.2 Pedagogical Implications of VLE use

Differences in opinion regarding the impact of instructional guidance during teaching have been ongoing over the last fifty years (Craig, 1956; Shulman & Keisler; 1966; Mayer, 2004). Many have advocated the minimal guided approach to learning which manifests itself under various names including discovery learning (Bruner, 1961; Anthony, 1973); inquiry learning (Papert, 1980; Rutherford, 1964), experiential learning (Boud, Keogh, & Walker, 1985; Kolb & Fry, 1975) and constructivist learning (Jonassen, 1991; Steffe & Gale, 1995).

It is suggested that instructional programmes adapting the minimal guidance approach appear to have two main underlying assumptions. Firstly they can encourage the learner to solve ‘authentic’ problems or allow learners to attain complex knowledge in information-rich environments, by letting learners construct their own knowledge which can leads to a very effective learning experience (Kirschner, 2004). Secondly, adapting these approaches to learning suggests that knowledge can best be acquired through the actual experiences encountered by the learner.

Those who praise these methods of teaching suggest that it can offer and embed learning strategies through natural processes through which the learners extract from their individual past experiences and learning styles thus allowing them construct new knowledge that will help them achieve their learning goals (Winn, 2003).
Moodle is one of the VLEs that can provide the teacher and learner with a set of tools that support a minimal guidance method such as the discovery-based learning approach to learning; this can occur through a fully-fledged e-learning system or be used in addition to traditional F2F classroom instruction. Discovery-based learning is an inquiry-based learning method, where knowledge acquisition is done without getting on-going assistance from a teacher. According to (Borthick & Jones, 2000, p 181): “In discovery learning, participants learn to recognise a problem, characterize what a solution would look like, search for relevant information, develop a solution strategy, and execute the chosen strategy. In collaborative discovery learning participants, immersed in a community of practice, solve problems together.”

Through this method of learning, the learner uses their own past experiences and prior knowledge to discover the actualities of the topic that is being learnt. In effect the learner then constructs their own knowledge by experimenting with a domain, and inferring rules from the results of these experiments. In addition to the above in most cases the learners will require and benefit from the support of a teacher in choosing and interpreting the information on which to build their own knowledge base.

Moodle also has the power to create an environment that allows for collaborative interaction among learners. Many researchers suggest that for e-learning systems to duplicate the experiences of well-presented face to face learning, major changes still need to occur for this to be successful. (Shaik, & Palma-Rivas, 2000). Also worthy of consideration are the many learners who, through choice or because of life circumstances, would require the opportunity to participate in a blended type of learning delivery and thus will not need the full e-learning package. A VLE system like Moodle would offer many opportunities for these learners.

2.9 Role of the teacher

You can't teach people everything they need to know. The best you can do is position them where they can find what they need to know when they need to know it” (Seymour Papert, 1993)

The introduction of a VLE like Moodle has many features and tools that have the ability to provide a motivational effect on the learner if properly used by teachers. Most teachers are in agreement that a move to on-line learning should create a paradigm shift away from traditional teaching models, but in practice this can be very difficult to accomplish.
Educators need to look at ways to allow the best use of the VLE to achieve a desirable outcome for the benefit of both teachers and learners. In relation to this it seem logical that when teachers and learners are properly prepared and supported within a FEC then their teaching will be more enjoyable and their students learn more efficiently and with higher motivation and resultant enhanced academic achievement.

It could also be argued, that much of today’s use of ICT by teachers may be motivated by technological advances rather than educational needs. By consulting on the large volume of research on the subject that is currently available, we can conclude that VLE usage at present is still concentrated in the higher and further education sectors, where is has being embraced with vigour (Inglis et al., 2002).

Furthermore educators need to; “ensure that students’ learning experiences are improved rather than simply replaced or confused” (Williams 2002, p264), and are not just presentations slides, hand-out notes and exercises online (Esienstadt and Vincent 2000; Darby 2002; Oliver & Herrington, 2003). The role of the teacher can, by adapting a collaborative approach by students and positively using the tools and features available in the VLE, empower and motivate their students to achieve a much better learning experience. Spector argues that for most teachers this is not an easy feat;

“The role of teaching in technology intensive settings is more difficult and more crucial than ever before. Only a rare few master the skills required to effectively integrate technology into learning and instruction, and teachers themselves admit this.” (Spector, 2002).

Thus it would seem that many issues require consideration before the introduction and implementation of new learning platforms such as VLE. Educators need to be very conscious in relation to the existing teaching and learning practices, community dynamics and structures that already exist within their own educational setting and that “the implementation of new technology methods cannot take place without the system around it adjusting to the intrusions of this new organism” Laurillard (2002)

No doubt for the VLE to be successful then changes in teaching styles in teachers are paramount. Learners will need to be encouraged to learn for themselves and the teacher’s role changing from “sage on the stage to guide on the side” (Minshull 2004, p5, qv Taylor & Maor 2000).
One teaching strategy in which teachers can provide support and assistance to learners is scaffolding. This is particularly the case when using an online system of learning like a VLE, in this situation that learners will require some degree of assistance and help in the early learning process as they endeavour to make and construct meaning and build their own knowledge base. In keeping with the core principle of the scaffolding theory, this assistance and help is slowly reduced as the learner is finally has the ability to act independently and complete the learning without assistance from the teacher. In a typical VLE setting the software has the capability to offer open communication lines between the learners themselves; here many opportunities exist for learning to be scaffolded through the purposeful design of activities involving peer cooperation and collaboration. In instances like this, coaching and scaffolding of learning by the teacher and other students can occur (Greenfield, 1984).

Teachers should endeavour to create a positive online social identity and the power of the internet should not be under or overvalued. Many will be aware, as with any educational activity, successful learning outcomes are directly associated to the learners attitude towards the object of study, as well as the teaching method employed (Abraham et al., 2008). Dougiamas, the founder of the Moodle, did recognise that teacher involvement in creating a positive online identity is of paramount importance, declaring that where educators are creating or contributing content for their learners to view, then ‘personal stakes’ will definitely be higher (Dougiamas, 2006). Teachers have a major role to ensure that course content is relevant and consistent with special emphases on making the VLE environment as welcoming as possible and endeavouring to create a student friendly accessible space that will encourage and motivate students to use the VLE and learn (Salmon, 2002). Donnelly and O’Rourke (2007), argue that one the best ways to become an good online teacher is to undertake an online course themselves and experience first-hand the online learning from the viewpoint of the learner.

Smith (2005) has cited many different capabilities that are necessary in the delivery of an efficient VLE. The significant capabilities are as follows; appropriate amount of student interaction with the teacher via email/telephone; teachers must have the abilities to use the technology; ability of the teacher to set up a well-structured course site; teachers should develop or encourage the creation of a community though collaborative learning and finally teachers should help students to apply online learning techniques to their personal learning style.
Teachers new to using VLE encounter many obstacles themselves and often initially have an expectation of what the resource has to offer to themselves and their learners. Many teachers have to go through a sharp learning curve in order to use the VLE in innovative ways and also some have commented that the; “VLEs in its current form does not have the ability to support novel teaching delivery” (Vuorikari, 2003).

2.9.1 Teacher level barriers

“If you can't explain it simply, you don't understand it well enough.” (Albert Einstein 1952)

For successful introduction of a VLE into an adult education centre an important consideration is to consider teacher acceptance of the inevitable change brought about its introduction. Some teachers have in the past identified some barriers to the introduction of a VLE into the educational setting. (Alexander, 1999) also points to the importance of teachers ICT development:

“How successfully ICT is used in education and how much it does break the mould depends so much on the teacher. Overcoming teacher resistance is critical, especially as we know that this is an ageing profession in many of our (OECD) countries. This is about more than skills possessed by individual teachers. It is about creating attitudes and learning environments where the open, imaginative use of ICT is both possible and encouraged” (Alexander, 1999, p.27).

The time factor for both formal training and self-directed exploration is always identified as a barrier to acceptance (Ghua, 2000). No doubts for today’s teacher, time or workload are still major factors: “Academic staff have competing demands on their time including teaching, research, administration, and income generation” (Newland et al., 2006)

There is information available that investigated why teachers often show resistance to using technology in their education delivery, (Rosen and Weil, 1995; Winnans and Brown, 1992) observe that much of this research available indicated that a teacher’s level of use of computers related to issues that are outlined below, this will be followed by a discussion on some the most pertinent issues:

(a) Teaching experience
(b) Age and gender
(c) Availability and quality of hardware and software
(d) Not enough time in the day to incorporate computers into their professional life
(e) No ICT specialist teacher to teach students computer skills or to support staff
A lack of in-service training and onsite support

Inadequate financial support

2.9.1.1 Teaching Experience

Teachers who have positive experiences in using ICT in past learning situations are best positioned at using the resources to full potential. Williams et al. (2000) said that teachers who embrace ICT without fear can “identify with the positive benefits of ICT to themselves and their students”. (Chou, 1997) found that previous computer experience influenced the teacher’s attitude toward computers in general as it impacted on the level of their use in his/her teaching.

2.9.1.2 Age and Gender

The level of ICT use may reflect the societal-based gender differences in which women are less likely to use and enjoy computers than men (Shashaani, 1994; Teague, 2002) and middle-aged adults appear to demonstrate less positive computer attitudes than young individuals (Dyck & Smither, 1994; Necessary & Parish, 1996). However some commenters suggest that gender has no influence on the level of computer use in education (Marshall and Bannon, 1996; Woodrow, 1991).

2.9.1.3 A lack of In-service Training and On-site Support

ICT training can be helpful for teachers in overcoming their anxieties about using computers in the classroom (Reed and Overbaugh, 1993). Professional in-service training can help improve teachers’ confidence in their ability to use or learn about ICT and their liking or enjoyment of ICT. Data collected in this area found that eighty per cent of teachers in both primary and secondary schools rely on colleagues to help them keep “up to date” with technological developments (Williams et al., 2000).

2.9.1.4 No ICT specialist teacher to teach and Support Staff

Technical support and administration of ICT hardware and software can cause problems for teachers. (Healy, 1998) mentions numerous cases of learning with ICT being severely handicapped by technical support issues resulting in wasted time and effort at best and negative learning experiences at worst.
For many, managing a network of PCs is a specialist task that requires a sophisticated level of expertise. Williams et al. (2000) in a study on ICT administration suggested that “mechanisms need to be put in place to ensure that teachers have adequate access to technical support and advice and to ensure that teachers do not feel that they have to become technical experts themselves”.

2.4.3.4 **Not enough time in the day to incorporate ICT into teaching**

The time factor has been cited in literature as a major barrier for ICT use and integrated curricular instruction. A Becta’s study (2004) found that teachers take much more time to design projects that include the use of new ICT than to prepare traditional lessons.

Reasons appear to including lack of school and administrative support and also teacher anxiety about computers (Bradley & Russell, 1997). As far back as 1986, Cuban suggested that resistance to ICT stemmed from “the organizational realities of school and classroom life and the teacher’s holistic perspective on what’s important to young people” (Cuban, 2006 p. 90). He further asserted that a general lack of consensus existed on how students should learn and how teachers should teach.

(Gunn and Brussino, 1997) also note the extra workload that a teacher would endure as “teachers with full workloads and satisfactory outcomes from existing methods of course delivery are not necessarily motivated to venture into the uncharted waters of technology-based developments”. This also applies to the extra burden many teachers would see in using a new system such as the VLE on a daily basis.

2.4.3.4 **Resistance to the VLE**

Also recent research conducted in the UK on third level institutions using a VLE have cited barriers that include pedagogic uncertainty, lack of the necessary support and also a lack of recognition and encouragement from within the college for input into making the VLE a success (Morón-Garcia, 2006). Also the same research examined the value of VLEs with some teachers questioning the relevance of and actual effectiveness of a VLE to adult education and/or at least struggling to identify purposeful uses for the resource (Morón-Garcia, 2006).

From the above research it does appear that teachers do need professional training and support in using the VLE effectively within the learning environment. Currently many teachers attend ICT
training course in a voluntary capacity and this is usually at their own expense. The current National Development Plan 2007 – 2013 has ear-marked €252 million to spend on the ICT in schools’ programmes and a large part of this is to be spent developing an e-learning culture in schools and colleges that will ensure that ICT usage is embedded in teaching and learning across the curriculum and teacher professional development. This is good news for all involved in education and the training will undoubtedly include training on the use of VLEs. If real benefit is to be extracted from the investment, schools and colleges will individually have to formulate and implement their own e-learning strategy as a fundamental part of the whole educational planning and development. Also the Department of Education and Science has devised an ICT Strategy Group who have identified the urgent need for training courses on current ICT issues and have outline recommendations on training for schools and colleges to assist teachers “to more effectively and consistently embed technologies in their practice” (DES, 2008).

Teachers who intend to use VLEs within their educational setting will need technological and organisational competences and endeavour to develop new strategies for teaching delivery. Also (Cox et al., 1999) argues that if teachers are to be convinced of the value of using ICT resources like the VLE in their teaching, their training should also focus on important areas such as pedagogical issues to enhance their teaching delivery. So before the introduction, implementation and development of VLE at different levels it is necessary for educators to recognise new educational roles for all those who are going to be involved (Barajas et al., 2002).

2.10 Enhancing the Learning Experience

The introduction of a VLE into a FEC setting equips the educator with tools and features to support diverse learners because by its very nature it can allow instructional events to be accompanied through many different processing channels. Using the VLE can support visual, kinaesthetic, and auditory learners (Howard Gardner, 1993). It also provides the learners with opportunities engage in a collaborative and communicative way. Also because the VLE offers a variety of multimedia resources for example video and audio files these can support different personalities of learners, and can provide the learner with different ways to engage with the resources offered. A pedagogical strength of multimedia is that it uses the natural information-processing abilities that we already possess as humans. Our eyes and ears, in conjunction with our brain form a formidable system for transforming meaningless data in to information (Fenrich, 1997). However one piece of research suggested that some students choose to substitute these multimedia presentation in place of class attendance (Simpson, 2006) and it is often the weaker students who choose to skip classes, even
though they usually are the ones who would benefit the most from attendance (Van Walbeek, 2004).

Research has shown that course delivery through the use of multimedia files such as video found that learners are inclined to react very positively to such technology use (Copley, 2007; Simpson, 2006), however there is some evidence to suggest that some students choose to substitute these multimedia presentation in place of class attendance, rather than use it as a complementary tool for revision (Simpson, 2006).

This introduction of the VLE could succeed meeting the learner’s needs which has long been the goal of education and if a good learning experience is provided by the FEC then the learners are more likely to be successful in their educational endeavours. Research has proved that satisfied students are linked to motivation, and motivation is a predicting factor of student success (Bollinger & Martindale, 2004).

(Cyr, 1999) summarised the research on adult learning theory that was conducted by many researchers over a number of decades and concluded that: adult learners are usually more self-directed; they use their past learning experiences as a resource for future learning and overall are more suited to problem-based learning and motivation for these learners is more internal than external in nature. Her research suggested activities such as simulation, problem solving, and real world scenarios and suggested that these approaches would ultimately benefit learning outcomes. A VLE like Moodle has built-in tools and features that would certainly accommodate all of the above elements and provide a very suitable platform to enhance learning (Tolley and Vanhegan, 2008).

Moodle has many tools and features that a teacher can incorporate in their curriculum and these functions are continuously changed and being modified by the Moodle community. Among the different methods of teaching offered by Moodle is the ability to organise quizzes, learning journals, discussion forums and Lemke A very popular tool available is the quiz tool and offers many different quiz types to enhance learning, the multiple-choice item is by far the most commonly-used item format (Bennett & Nuthi, 2008) and carefully crafted question that provide effective feedback to learners (Gibbs & Simpson, 2004) offers great potential to teachers. The inclusion of self-check quizzes linked to content sections is an important tool and offer real benefits to learners. Research has shown that online quizzes can significantly enhance student learning and retention by mitigating the effects of student stress, allowing students to “practice” before graded tests and quizzes, and
motivating students to acquire the expected skills (Woit and Mason, 2001). The forum tool is also an important feature that allows students to engage and communicate with one another within the VLE system. This communication through the VLE is of paramount importance especially in an environment that includes both face to face learning and online communication (Bennett 2004 and Bull et al., 2004). Teachers need to encourage and foster communication through the VLE especially amongst younger learners who are familiar with communication tools such as social networking websites like Facebook and this familiarity could be used by educators to encourage these learners to use the VLE for all course related communication (Mazer, Murphy, and Simonds 2007).

Studies carried out in the UK by BECTA cite the communications tool of the VLE as offering major benefits to learners and also view the collaboration tools such as online form as being very beneficial to the overall learning experience (BECTA, 2008). Another wordy collaboration tool is LAMS (Learning Activity Management System) which is a revolutionary tool for designing, managing and delivering online collaborative learning activities. It provides teachers with a environment for creating sequences of learning activities. These activities can include a range of individual tasks, small group work and whole class activities based on both content and collaboration which can be integrated in the VLE system (Lengyeletal, 2007). LAMS can increase efficiency for the educator and when integrated with the VLE can prove to be a very satisfactory platform to support on-line education (Gaceu et al.,2006).

Moodle has several features and functionality which assist the learner and offer flexibility and control while using the resource, this allows the VLE should be implemented as part of a holistic learning environment which should be driven by learning need, and importantly not by the VLE itself (Siemens, 2004; Wyles, 2004).

On a cautionary note however (Chickering & Ehrmann, 1996) warn us that this technology is not the Holy Grail for educational delivery that some individuals have claimed, and suggest that technophiles on their own will not bring about the great changes needed in education. For the necessary changes to take place the FEC, ICT personnel, students, administration staff and finally government will have to work together in an organised collaborative way with a common goal before the proper educational benefits of the VLE are reaped.
2.11 Conclusion

This chapter presented research extracted from available literature that seemed pertinent for consideration before the introduction and deployment of a VLE into a rural FEC in County Laois. Early in the chapter there was an insight offered into the historical evolution of the VLE and available literature was reviewed to gain awareness of issues of a technological and infrastructural nature and the barriers that exist which could impact negatively on the VLE implementation and deployment programme.

Likewise existing literature was reviewed in relation to the teaching strategies and styles that would require consideration before the potential of the VLE could be realised. Also reviewed was literature relating to the barriers and concerns of both teachers and other educational stakeholders that impact on the establishment of a consistent and structured on-line learning delivery system through a VLE. An important barrier in this regard is the change factor that the VLE would bring to the learning setting. It is paramount therefore that immediate collaboration between all stakeholders is essential to address these issues and only then with the benefits of the VLE be realised by educators and learners alike.

“Online learning is not the next big thing, it is the now the big thing.”

(Donna J. Abernathy, Training and Development Editor, 1999)
Chapter Three

Research Methodology

3.1 Introduction

Having reviewed the literature on the role of a VLE within teaching and learning in the previous chapter, it is now appropriate to explain the character of this research project and how became defined and conceptualised. This chapter contains a detailed explanation of the methods used to examine the potential available to both learner and teacher when a VLE is introduced in the learning environment in an Adult Education Centre setting. The options of research methodologies are considered and reviewed against the statement and objectives.

For this research to be effective the adoption of an appropriate methodology that is pertinent to reaching an acceptable conclusion to the study is very important. Also when the research methodology is selected, then the sampling strategy and methods of data gathering for the study will also need examination. At every stage of the research, the ability to confirm validity is important as it allows for “the researcher is to be able to have confidence in the elements of the research plan, data acquisition, data processing, analysis, interpretation and its ensuing judgement” (Cohen, Manion and Morrison, 2000, page 115). Along with validity, issues such as reliability, triangulation and ethical issues are also giving consideration within this chapter.

3.2 Research Questions

For this study the topic of research was selected in order to discover the potential benefits that a VLE would bring to educators and learners in a Further Education setting. The intention of this inquiry is to focus on the opportunities and constraints that may exist when such an introduction would be undertaken. The research findings are relevant and useful to teachers, course coordinators, centre directors and educational decision makers that function within an FEC or adult education setting as it has the potential to provide them with beneficial information that could be of value when complimenting a VLE introduction into their own educational environment. Questions such as the following will need to be addressed:

- What level of ICT proficiency of use would both teachers and learners need to have to use the VLE to enhance teaching and learning?
• What are the benefits and constraints that determine the introduction of a VLE into a FEC setting?
• Could the use of a VLE have the potential to reduce class contact time for adult learners?
• Does the introduction of a VLE have the potential to provide learners with an enhanced multimedia based learning environment?

3.3 Research Methodology

The selection of the most appropriate research methodology for use in any study is of significant importance. There are many different research methods which are available to the researcher, all with specific advantages and disadvantages. Which one the researcher uses, depends to a large extent on the aim of the study and the nature of the phenomenon under investigation. There are many advocates of the case study approach to educational research and in this instance of research this option appears to have all the attributes necessary to be worth of selection.

3.3.1 The Advantages of the Case Study Research Method

Merriam (1998) advocated the case study research method as the most useful and pertinent especially when reviewing educational innovations. This method also appears to be the best approach when assessing the findings of individual researchers for the simple reason that it allows a single aspect of a problem to be studied in some depth, especially when the time frame for research is restrictive. Using the case study method of research could also allow the researcher to summarise findings as “What is it like” to experience first-hand the close up lived experience of thought and feelings experienced by participants during the research process (Geertz 1973). This obviously could impact greatly on the final research findings.

Others such as Yin offer virtuous praise through a simple definition of the case study method for the purpose of educational research: “Case studies aim to describe, illustrate, explore or explain settings and allow significant opportunities for extensive analysis” (Yin, 2003, p.46). Yin also commented on the power of the case study as a pragmatic enquiry that thoroughly investigates an existing phenomenon within its real-life context, especially when the borders between context and phenomenon are not initially evident (Yin 1994, p. 13).
Furthermore it is often cited that social research simplifies the phenomena investigated. The actual experiences of the individual learner or group being examined through a case study can by default help to achieve this. Additionally the case study method in comparison to other research methods is said to retain an extra element that is often referred to as “noise”. This element is a very natural element and can convey very personal findings to the researcher. Other methods of research that exclude this noise element may miss out on a very significant part of the topic under investigation. In fact it can be said that this facet of case study research brings a closer connection to the real experiences of teachers than any other type of research available.

Merriam endorses the case study method of research be undertaken when: “…description and explanation (rather than prediction based on cause and effect) are sought, when it is not possible or feasible to manipulate the potential causes of behaviour, and when variables are not easily identified or are too embedded in the phenomenon to be extracted for study” (Merriam, 1988, p. 7).

3.3.2 The Limitations of the Case Study Research Method

In order to balance this analysis, it is worth noting that there can be some limitations with case study research. The most cited limitation of the case study method is that the researcher can often be swamped with data for analysis. In this instance much of the research data may to be omitted and thus by effect distort data findings (Colley and Diment, 2001).

The researchers Hodkinson and Sparkes, (1994) who studied the above problem of data omission concluded that the decision is often taken not to express whole individual stories, but rather an analysis of issues right across all the stories being researched. This approach does not in any way solve the problem and, by effect, can omit certain data findings from being published. This action does prompt the obvious question, that if the original complete data was to be reinvestigated and reanalysed then would a very different research conclusion be found. However, in the context of the research to be conducted in this study, the sampling population will be small owing to cohort of learners enrolled in the Further Education Centre under investigation and thus to some extent will alleviate the above problem.

Furthermore it can be difficult to ascertain by this method of research empirically and to what degree our Further Education Centre environment is similar to or different from that of other FECs that are located in different counties throughout Ireland. Also because the chosen FEC is small in
enrolment size, the sample size will be restrictive and as some of the sampling is non-numerical in form, there is no way of knowing if this data is illustrative of potential findings for the country at large, i.e. it would be very easy for the researcher to generalise the data to fit their context or purpose.

In conclusion regarding some of the strengths and weaknesses of the case study research approach, there could be a strong argument for the beneficial use of same. If the data researcher exercises careful tests for objectivity, an appropriate selection of the sample size, generalisability is appropriated, and the worth of case study research given careful understanding and rational thought then the objectives of the research will be achieved.

3.4 Fundamentals of Quantitate and Qualitative Research

With the case study method of research now selected, attention now turns to the choices available to the researcher as regards data collection and sampling methods. Firstly the consideration that a case study research will often yield both qualitative and quantitative data will merit some discussion.

It is not easy to say how many types of research methods are available because different researchers or educators may use different criteria to classify research types. Generally speaking, research can be classified into three main groups based on the application of the research study, its objectives in undertaking the research and how the information is sought. Each group can be subdivided into different types as follows: (Kumar, 1996).

Research can be categorised with relation to the time that the data was collected for investigation. Consequently research can often be divided into three focal groups which are: historical research, present research and futuristic research. Of course each group can be subdivided again in many subtypes. The primary focus of this study will concentrate on the quantitative and qualitative methods of research.

This approach to data collection and sampling seems appropriate for use in this inquiry as the practice of both these research methods has being proven to return a more thorough understanding of research phenomena (Johnson & Onwuegbuzie, 2004; Newman & Benz, 2004).
3.4.1 What is quantitative research?

It may seem that quantitative investigative research has been around for centuries or at least ever since people first began to record events that had occurred or can be counted, however the modern idea of the quantitative approach stems originally from the pioneering work of August Comte (1798-1857) in his work titled The Course of Positive Philosophy (Comte, 1875).

This quantitative approach, consistent with the quantitative paradigm, is an inquiry into a social or human problem, based on testing a theory composed of variables, numerical measurement, and these are analysed using standard statistical methods in order to define that does the predictive generalisations of a theory under investigation hold true.

Creswell (1994) defines quantitative research as a type of research that is: “…explaining phenomena by collecting numerical data that is analysed using mathematically based methods (in particular statistics)” (Creswell, 1994).

3.4.2 What is qualitative research?

The aim in qualitative research is to conduct a social inquiry that concentrates on the way humans deduce and make sense of their experiences and the very world that they inhabit. Rather than focus on the ‘how’ of a topic qualitative research focuses on the ‘why’ and the aim is to achieve this by using the analysis of unstructured information through the use of channels such as interview transcripts, open ended survey replies, feedback forms, etc. The results of qualitative research are often said to be descriptive rather than predictive. Qualitative research is an ‘umbrella’ term as many different approaches can exist within the wider framework when considering this type of research (Atkinson et al, 2001:7).

A very good definition of quantitative research as a type of research is: "A qualitative study is defined as an inquiry process of understanding a social or human problem, based on building a complex, holistic picture, formed with words, reporting detailed views of informants, and conducted in a natural setting” (Creswell, 1994).

Furthermore Denzin and Lincoln appraise the benefits of qualitative research by referring to the naturalistic and revelatory properties that can assist the inquiry and the subsequent findings: “This
means that qualitative researchers study things in their natural settings, attempting to make sense of, or to interpret, phenomena in terms of the meanings people bring to them” (Denzin and Lincoln 2000, p.3).

Sieber (1973) argues that the combined use of both quantitate and qualitative research methods yields very beneficial results, and recommends researchers exploit the strengths of both methods in order to understand better social phenomena. In fact Brannen (1992, p. 5) goes one step further by declaring that the two methods of research work together in perfect harmony and states that there are huge similarities between the two methods.

3.5 Data Collection Procedures

Yin (1994) and Stake (1995) proposed the selection of at least three sources of evidence to properly triangulate the research study and suggested a list of possible sources to choose from:

- Documents
- Archival records
- Interviews
- Direct observation
- Participant-observation
- Physical artefacts

Also Glesne (1999) and Creswell (1998) list interviews, observation and document collection, and open-ended surveys as important sources of evidence.

3.5.1 Triangulation

A significant feature to a varied methodological approach of data collection was the concept of triangulation. Cohen, et al, (2000) defines triangulation as: “The use of two or more methods of data collection in the study of some aspect of human behaviour” (Cohen, et al, 2000, p.12). There is much support from research authors in favour of triangulation in educational research; Patton (2001) supports the use of triangulation by stating that “triangulation strengthens a study by combining methods. Using triangulation can offer many advantages to the research including an increase in confidence for research data, creating innovative ways of understanding a phenomenon and providing a clearer understanding of the question that is being examined (Jick, 1979).
Furthermore the used of triangulation and mixed methods in research has also been reported to increase the validity and reliability of research (Cohen et al 2005, Creswell 2003).

A triangulated research strategy that incorporates both qualitative and quantitative data collection methods has the best potential to yield credible results and is a necessary component in the whole process because of the ethical need to confirm the validity of the procedures involved (Yin 2003, p.6).
This study will employ the use of three research instruments: questionnaires, direct observation and semi-structured interviews that will be conducted with both teachers and learners.

3.5.2 Validity

The value of research is partially dependent on the ability of individual researchers to demonstrate the credibility of their findings. In all fields that engage in research inquiry, validity of findings is obviously very important. Many researchers have often directed criticism in regard to qualitative investigation, in that it fails to adhere to principles of reliability and validity (e.g., Magoon, 1977; Reichardi & Cook, 1979)

Validity is concerned with the accuracy of scientific findings. Validity entails the question, “Does your measurement process actually measure what you intend it to measure?” Solving this problem is considered to be a fundamental requirement for any research design (Campbell & Stanley, 1963; Cook & Campbell, 1979).

In this research study all efforts were engaged to maximise validity where possible. A mixed method methodology was carefully selected with the intention that through this variety of data gathering, the end result would yield an accurate representation on the potential and limitations offered when introducing the VLE in the FEC setting. In addition the multi approach to data collection would also provide triangulation and thus by its very nature aid reliability and validity

3.5.3 Questionnaires

The student questionnaire was used to establish the students opinions and attitudes with regard to the introduction and use of the VLE in the FEC and also to comment on the potential it offered to learning when students were outside the learning environment or at home. The researcher was
aware of possible disadvantages with a questionnaire such as low response rate, and identified a number of ways in which to increase response rates including the careful design of the questionnaire in terms of length, presentation and assured anonymity (Oppenheim, 1992). The questionnaire consisted of twenty five questions and a total of forty students participated in the questionnaire. A copy of the student questionnaire can be found in Appendix E. This questionnaire was distributed to the students via a hyperlink on Moodle. A pilot version of the questionnaires was issued to a select number of teachers and students one week before the actual data collection process began. The purpose of this pilot questionnaire revealed a couple of areas of ambiguity; these were corrected by altering the wording, format or sequence of the identified questions to increase clarity (Punch 2003).

In addition to the above, a teacher questionnaire was constructed to establish the issues, fears and expectations that an introduction of a VLE into the FEC would entail. The teachers were also questioned as to the potential and limitations they felt that the VLE offered to the delivery of student learning. The questionnaire consisted of twenty five questions and five teachers participated in the questionnaire. The questionnaire was distributed to the teachers via an email that contained a hyperlink directly to the questionnaire. A copy of the teacher questionnaire can be found in Appendix D.

3.5.4 Semi Structured Interviews

“There is no such thing as a worthless conversation, provided you know what to listen for. And questions are the breath of life for a conversation (James Nathan Miller, 1965).”

Along with the questionnaires, semi structured interviews were used to gather more detailed information in relation to the VLE introduction and use within the FEC. While the questionnaires did provide valuable results, they had the disadvantage of asking many direct questions that either prompted a “Yes” or “No” answer.

In research the interview is a widely used tool to access participants experiences and inner perceptions, attitudes, and feelings of reality. Based on the degree of structuring, these interviews can be divided into three categories: structured interviews, semi-structured interviews, and unstructured interviews (Fontana & Frey, 2005). Structured interviews are similar to surveys, except that they are administered orally rather than in writing. Semi-structured interviews are more flexible. An interview guide-sheet is compiled that usually included both closed-ended and open-
ended questions, but in the course of the interview, the interviewer has a certain amount of room to adjust the sequence of the questions to be asked and to add questions based on the context of the participants’ responses. The unstructured interview technique was developed in the disciplines of anthropology and sociology as a method to elicit people’s social realities. Minichiello et al. (1990) described unstructured interviews as a situation where neither the question nor the answer categories are predetermined.

The intention of the interviews was used to collect that was more detailed and qualitative in nature that offered the interviewer a certain level of flexibility at interview thus the semi-structured interview method of data collection was selected. Questions were asked by the interviewer and the interviewee was allowed a certain freedom to answer and talk about other related topics that came into the interviewee’s mind. This allowed for the possibilities of unexpected responses or interesting issues to arise throughout the interview process.

Cohen, et al, (2000) advises that serious thought be given to minimising the stress for the interviewee. With this in mind the interviews were conducted in a quiet and comfortable room in the Centre. The interviewer was conscious that his role was one of facilitator, listener and to encourage full responses.

Five students were selected for interview and each student was interviewed for approximately thirty minutes. A digital recording of each interview enabled transcription. Participating students were required to give consent to be interviewed in keeping with ethics requirements and a copy of this consent form is available in Appendix C. Also a transcript of each interview can be found in Appendix G.

In addition to the student interviews, three teachers volunteered to be interviewed and a copy of the teacher consent form is available in Appendix B and a copy of the interviews is available in Appendix F.

3.5.5 Observation Checklist

Also in an attempt to triangulate the research study, it was decided that an observation of students whilst using the VLE be carried out. This would further help to ascertain the suitability of the VLE as a learning tool for the adult students. Cohen, et al, (2000) offered great praise for the observational

The researcher carefully devised and planned the observation processes, which according to Bell (2004) are essential elements for mastering an observation study. The observation was designed in checklist format which could be used when the students were actively involved in using the VLE. The checklist provided the observer with the facility of ticking boxes on a sheet of paper quickly, while the particular classes were in session. The checklist was simply designed to allow the observer to concentrate on the activity being carried out by the student. An important function of this observational checklist was to establish the type of learning that students engaged in during class time and the impact that the VLE had on this learning.

The checklist was distributed to the five teachers that were involved in the research process and encouraged to carefully observe the learners while using the VLE and complete the checklist to the best of their ability. The observations were carried out over a one week period. A copy of this observation checklist is included in Appendix H.

3.6 Timescale of Study

The study was completed over a four month period from the beginning of March to the end of June 2011.

3.7 The Setting of the Research

The Research was carried out at Abbyleix Further Education Centre, which is operated under the auspices of County Laois V.E.C. The Centre was established in 1991 and has an enrolment of some 200 full-time students and employs 20 teachers, some part time. There are three computer rooms in the Centre consisting of twenty computers in each room that are equipped with the latest hardware and software technologies available. Most of the other classrooms in the Centre are equipped with a single computer and projector/Interactive Whiteboard. All computers in the Centre are connected to the LAN with user logon to a central server. The Centre also employs Wi-Fi access which allows teachers and learners access to the Internet on personal laptops and Wi-Fi enabled devices. Management invite staff to make submissions each year for any additional ICT equipment that they require and this has resulted in the acquisition of numerous digital devices such as digital cameras, camcorders, digital dictaphones and webcams.
Junior Certificate and Leaving Certificate courses are run in the Centre along with a number of courses that are available under the FETAC Major Award Certification programme. These courses are as follows:

- Business Administration Level 5
- Business Secretarial Level 5
- Business Management Level 6
- Art Craft and Design Level 5
- Art and Business Level 6
- Nursing Studies Level 5
- Community Care Level 5
- Skills’ Level 4

There are also a number of BTEI courses run in the Centre offering FETAC minor awards or the option of individual FETAC module completion. Most of the courses in the Centre have an Information Technology module option in the certification programme, but the business courses have a large computing element contained within the course. Thus it was decided to select only students in the Centre that were studying on business courses as participants for the research process. The logic behind this decision was that to achieve credible research findings in the inquiry, it was desirable to select learners that had similar quantities of ICT related modules within their learning. This would allow a cohort of over 40 learners and 6 tutors to participate in the research process.

3.8 Ethics

The research initially approached the FEC Director via a letter (see Appendix A) and subsequently via a meeting in January 2011 with an outline of the study proposal. Permission was granted on the condition that the Centre Director would be kept informed of all decisions during the research process.

3.8.1 Obtaining Participant Consent

In this study the three main ethical areas for consideration are: informed consent, confidentiality and risk of consequences (Cohen et al 2000). All research participants were clearly informed of the
purpose and methods proposed for the case study and were invited to participate voluntarily. Complete confidentiality was guaranteed at all stages of the research.

All potential research participants were notified by email in January 2011 with an outline of the research the data collection methods, data protection issues, etc. Participants were assured that their involvement in the research was voluntary and that non participation would not impact on a teacher/learner negatively in any way. Consent would be conditional and a participant could withdraw from the research at any time. Informed consent is a vital element of the research process and a guarantee that the research participant is protected from risk at all times is of the utmost importance (Wiersma, 2000).

A consent form was signed by each participant at the beginning of each questionnaire and interview, at which time the above issues of consent were re-iterated. Copies of the consent forms are included in Appendix B and Appendix C respectively. Participants were reassured that all data would be destroyed following final submission and marking of the thesis.

3.9 Potential Weaknesses and Limitations of the Study

The study was limited by the fact that only three course programmes were included from the FEC and thus limited the number of participants involved in the research process. It could also be argued that the findings may be limited by the very nature of the data collection tools used. Observation can be intrusive in nature, and may thus affect the behaviour and ultimate responses of the research participants. Also when interviews are conducted there is the possibility of interviewees being embarrassed and uncomfortable by the data recording process and responses may be different than the ones that would be given in a non-interview situation.

Also it is worth mentioning that the author of this study is the ICT and VLE administrator for the Further Education Centre where the study is being conducted. This could, in effect, impact on the final findings of the research caused by an unintentional biased interpretation of events throughout the investigative process.

Ultimately the research relies on the maturity and integrity of the respondents as participants in the inquiry process. The integrity and objectivity of the researcher is also important and influential to reliable research conclusions (Merriam, 1988).
Chapter Four

Research Finding

4.1 Introduction

This case study investigated a variety of different variables to gain an insight into the factors affecting teachers and adult learners by the introduction of a VLE in a Further Education Centre. The research objectives set out to establish the levels of change needed by both teachers and learners for this introduction to be successful.

This chapter summarises the data collected throughout the research process. The research instruments used through the process of triangulation were a student questionnaire Appendix E, a teacher questionnaire Appendix D, semi-structured interviews Appendix F and Appendix G that were conducted with both teachers and learners, and findings in relation to classroom observation Appendix H.

A total of forty students participated in the study. Surveymonkey.com was used to create the questionnaires and these were distributed to the students via a web hyperlink posted on the VLE’s home page. Three semi-structured student interviews were conducted to evaluate their perceptions regarding the VLE and their opinions on what were the advantages and limitations the platform has in relation to their learning and motivation.

A total of five teachers also assisted the researcher in this study. As with the students, a teacher questionnaire was distributed to them via Moodle and the findings recorded. Data was also collected using Surveymonkey.com in relation to the effect of a VLE introduction to assist teaching delivery. Furthermore three of the teachers were interviewed to assess their views in relation to the possibilities offered by the VLE to teaching and learning within the FEC. Sample pilot questionnaires were emailed to selected teachers and students two weeks prior to the commencement of the research to ascertain that all questions very clearly understood by intended participants and suggestions that emerged from these pilot questions were included in the real research instruments.

The questionnaires formed the basis of the quantitative research analysis for this study and qualitative research analysis methods were used to assess the interview responses for observed patterns of behaviour, beliefs, values and practices associated with the introduction of the VLE into
the educational setting. Lastly an observation checklist was compiled by the author to determine aspects of the research question that could not be adequately assessed through either the questionnaires or interview process. The students were unaware of any observation process as it was perceived that if they were forewarned of any observation then their behaviour and subsequent findings might be very different. A copy of a sample observation sheet is contained in Appendix H.

4.2 Findings by Research Question

It was decided that the student and teacher questionnaires were the first area to analyse in this chapter followed by a summarisation of the student and teacher interviews. Screenshots from the full student and teacher questionnaires are contained in Appendix D and Appendix E of this study. Also full transcripts of the semi-structured interviews are to be found in Appendix F and Appendix G of this study. Lastly a copy of the observation checklist is to be found in Appendix H and findings from all three of the data collections instruments will be discussed in the Chapter 5.

4.2.1 The Profile of the Respondents

Data in relation to the gender and age of the respondent students was gathered through the student questionnaire to ascertain the most likely potential users of the VLE. Also data was collected by the same means to establish which course these students were enrolled on and lastly data was collected from respondent teachers in relation to the courses that they taught on.

4.2.1.1 The Demographics of the Students

The gender of the majority of students who participated in the survey was predominantly female (62.5%) with male respondents at 37.5%; these figures provided a good representation of the gender breakdown overall within the Further Education Centre in Abbeyleix and would seem a normal gender balance amongst business learning cohorts in the Centre over the last decade. The age of these students varied greatly in this study, see Chart 4.1 below. The responses indicated that the age profiles of the students were as follows: 12.5% (5) of them were under 20 years of age. 30% (12) were between 20 and 30. 22.5% (9) were between 31 and 40, 17.5% (7) were between 41 and 50, 15% (6) were between 51 and 60 and finally 2.5% (1) were over the age of 60 years. These data results suggest that the majority of students are somewhere between 20 to 40 years of age.
4.2.1.2  
**FEC Course Enrolment for Respondents**

As mentioned previously, only students that were enrolled on business courses were selected as respondents in this study. The forty students were enrolled on FETAC Level 5 and Level 6 business courses. The list of business courses and their core subject modules are outlined in Appendix I of this study. Question 9 of the student questionnaire asks respondents what course they are enrolled on in the FEC. Chart 4.2 below graphically represents the course enrolment of the respondents in this survey.

![Chart 4.2](chart.png)
4.2.1.3 Teachers and their Students

When this study is complete it is hoped to introduce the VLE to all the students within Abbeyleix FEC. In order for this to seamlessly happen, Question 1 in the teacher questionnaire asked respondents what group of students they currently teach in the FEC. All of the teachers involved in this study taught on additional courses other than the business courses within Abbeyleix FEC. At least two of the teachers were involved in teaching on the majority of courses in the FEC. For a graphical representation of data finding in relation to this question, see Chart 4.3 below.

Chart 4.3 - Courses and their Teachers

The teachers were also asked at what level these courses were that they taught on in relation to the National Framework of Qualifications. Most teachers taught on FETAC Level 5, followed by FETAC Level 6. Chart 4.4 below presents the finding from the data collected.

Chart 4.4 - Course Subject Level in Relation to National Framework of Qualifications
Of the courses that the respondent teachers taught on, the further question arose as to how many had subjects that are computer related or have a large computer element in them. Data collected shows that 80% of teachers taught on courses that were computer related or had a large computing element within the course.

4.2.2 ICT Access and Skill Level for both Teachers and Students

In this section the data gathered in relation to computer and broadband access will be presented, also data outlining the ICT skillset of both teachers and students will be presented.

4.2.2.1 Level of Access to ICT for Teachers and Students

The results of the questionnaires showed that 100% of teachers and students had access to a computer either in their own home or outside the FEC. In today’s environment this finding did not appear surprising and is possibly due the downward cost of technology over the last decade or so.

4.2.2.2 Level of Access to Computers for both Teachers and Students

Question 5 and Question 6 set out to determine the level of broadband access that teachers and students had in their own home or could access outside the FEC setting. 80% (4) of respondent teachers have broadband access outside the learning environment. Of the respondents that answered Question 5, 100% had Wireless broadband available in their homes. The 20% (1) teacher who had no broadband access further commented that no broadband services were available in the area where they lived.

Data collected in relation to students’ broadband access found that 90% (36) of respondents did have access to broadband at home or outside of the learning environment. Of these respondents that answered Question 5, 14.4% had fixed wire broadband access, while the majority 48.6% (17) had wireless and a surprising high percentage of 31% relied on USB Dongle type broadband access. Some teachers added the further comment as to the speed of their connection:

“The speed I receive is 3 Gigs”

These findings would indicate that broadband access problems still exist for the population at large in rural Ireland and concern has to be expressed for the many learners dependant on USB Dongle
type devices for internet access. These devices have low unreliable bandwidth speeds and thus ask serious questions about their suitability to deliver the option of on-line learning.

See Chart 4.6 below for a full graphical representation of the data collected.

![Chart 4.6 – Type of Broadband Access available to Students]

**4.2.2.3 Level of ICT Ability for Teachers**

In relation to the level of ICT skills that teachers possessed, findings revealed that 20% of teachers surveyed have good ability when it comes to using ICT. 60% claimed to have very good skills and 20% of the respondent teachers would rate their skill as very basic. Chart 4.3.6 below indicated that most teachers found Moodle very easy to navigate and use. Chart 4.7 below graphically shows the data collected in relation to this question.

![Chart 4.7 –Teachers ICT Skillset]
4.2.2.4 Level of ICT Skills for students enrolling on Courses in the FEC

It is usually a requirement to have completed the ECDL prior to enrolment on business courses at level 6 in Abbeyleix FEC but on many occasions this is not enforced. The question revealed that 62% (25) of the students have completed the ECDL certification.

While a large number of students had completed the basic ECDL Certification, Question 8 of the student questionnaire asked respondents to rate their perceived competence in using computer technology. The result indicated that 5% of learners rated themselves as having beginner level skills, 35% (14) had improver level skills, 32.5% (13) had advanced skill level, 25% (10) proficient level and lastly 2.5% (1) rated their skill level as expert level. This data is graphically represented below in Chart - 4.8.

![Student Level of ICT Competency](Image)

4.2.3 The introduction of the VLE in the Further Education Centre

In this section data compiled in relation to the introduction VLE use in the FEC setting will be presented. Data collected in areas such as ease of use of the VLE along with issues such as potential advantages and limitations with regard to such an introduction is presented.

4.2.3.1 The VLE and Ease of Use

50% (20) of the students surveyed found Moodle easy to use, 30% (12) found it very easy to use, and 20% (8) found it difficult to use. These results indicated that most learners found Moodle easy to
navigate and use. This finding was expected because findings in relation to a previous question presented found that the students had in general good computer skills either before enrolment on the course or had acquired good skills from partaking on FETAC course modules in the FEC over the duration of the previous academic year.

Likewise the question was asked as to whether the teachers surveyed found the VLE either difficult or easy to navigate and use. Chart 4.9 below indicated that the majority teachers found the VLE very easy to navigate and use.

![Chart 4.9 – Moodle and Ease of Use](image)

Also teachers added comments to this Question indicating that additional learning was necessary to extract the most benefits from the VLE for example:

“There are many tools within the VLE that I am afraid to use as I don’t have the technical knowledge to set them up”

“But still learning how to use the system and a long way to go”

The data collect from teachers indicates that teachers use the VLE first and foremost to present class hand-out notes and assignments to their students, these files are usually in .pdf (portable document format) which are essentially are easy to create and upload to the VLE. Furthermore teachers commented that they did not find it too difficult to assign students to their course or perform other
basic administration duties within the VLE. Also at interview teachers mentioned that they found tools like the quiz feature a great tool to assist learning and did not mention problems in creating and using the tool. However most teachers did mention the need for professional training in the proper use of the VLE system which indicates that teachers to a certain extent are not overly confident in using the system to its full potential.

4.2.3.2 The Need for Teacher Training

All of the teachers questioned said that they would benefit from professional training on how to use the VLE to enhance their teaching delivery. Some also added the additional comments to this question for example:

“Most definitely, we really need help on how to use it and also what to use it for”

4.2.3.3 The Benefits and Limitations of the VLE

Question 19 and Question 20 of the teachers questionnaire asked respondents to name three advantages/disadvantages to using the VLE in the learning environment. These questions were asked in a direct manner which was in contrast to other questions in the questionnaire where a tick box response was requested.

Sample advantages that were forwarded were as follows:

“Allow for a greater diversity of learning techniques. Great for communicating with students and great for tracking student logon and activities while they’re on Moodle”

“New novel way to teach Learners that are absent (sickness) can access hand-outs, assignments etc. Everything digital rather than paper based”

“A new medium that allows a novel way to communicate with students and good place to put up class resources, like the quiz feature”

Sample disadvantages that were forwarded by teachers were as follows:

“Takes a lot of time and effort to create suitable resources. Could cause attendance problems and some areas complicated and technical in Moodle”

“Interface a bit boring. Lack of support from all stakeholders in education”
“Definitely need in service training on the proper use of Moodle. Would need good broadband connection to upload files to the VLE.”

Likewise Question 12 and Question 13 of the student questionnaire asked the respondents to name three advantages/disadvantages to using the VLE in the learning environment. Sample advantages that were forwarded were as follows:

“Good to see video files which help me learn”
“Fast route to notes etc. Emails and links quizzes great for my learning”
“Good means of keeping up to date with hand-out notes, work files etc., especially when away from the Centre”
On days when I was absent from Centre I was able to catch up on my work at home”

Sample disadvantages that were forwarded were as follows:

“Teachers need to teach us students how to use it properly”
“Need good broadband to Moodle”
“Files are taken off Moodle after we finished that section of learning and I would like to often relook at these file but they’re gone”
“Often no one or teacher to ask questions, bit lonely”

The data collected from this Question and all the questions contained within the Student Questionnaire will be analysed and discussed in Chapter 5. Also as previously mentioned a full Student Questionnaire is presented in Appendix E.

4.2.3.4 The Reasons why Students Access the VLE

The students were questioned on the reasons why they access Moodle. It can be seen from the data collected that 93% of students accessed the VLE to access hand-out notes, with 29% used the VLE to access multimedia learning. See Chart 4.10 which is located on the next page for a graphical representation of the full replies of respondents.
4.2.3.5 The VLE and Enhanced Teaching

In response to Question 10 the data collected indicates that 76% teachers perceived that the VLE provided a valuable facility to enable them to post hand-out notes. 24% of teachers used the facility in order to exercise or arrange assignments for their students. The chart below also shows the extent that teachers use the other main resources with the VLE to enhance the learning experience for their students.

4.2.3.6 The Tools and Features available to Moodle users

A Likert scale was selected for Question 19 of the student questionnaire to determine how respondents rated Moodle in relation to a number of tool and features that the platform provides. The Likert Scale showed that the majority of students rated the Quiz feature as being the best tool
available followed by the provision Work-Through Exercises and Hand-out notes. It is interesting to note that the Wiki/Glossaries feature was rated the lowest in relation to other tools and features. For full graphical presentations of the findings of this question, see ‘Chart 4.12– Student Rating for Moodle’s Tools and Features’ below’

![Chart 4.11 – Student Rating for Moodle’s Tools and Features](chart)

### 4.2.3.7 Quiz feature in Moodle

In the Centre where the study was conducted, most teachers used the quiz tool that was available within Moodle as it had the ability to enhance learning by providing positive features for learners to allow them to partake in interactive exam-like learning scenarios which also had the benefit for teachers to provide scoring and feedback to learners.

90% (36) of the students liked the quiz feature and felt that it assisted in their learning outcome. However 2% did not like the quizzes and felt that they made no contribution to the learning process. None of the students surveyed felt that paper based quizzes are a better way to help them learn. Furthermore a number of students added comments to this question for example:

> “I liked the quizzes because i got instant feedback from them”
See Chart 4.12 below for a graphical representation of this survey question.

![Chart 4.12 – The Quiz tool in Moodle](chart)

4.2.3.8 Multimedia and the VLE

80% of teachers surveyed used the VLE to deliver Multimedia presentations such as video and audio to enhance the learning experience.

Of the teachers who used this feature, half experienced problems either uploading or viewing these multimedia files. These teachers further commented that the large file size of video was viewed as a deterrent to using video as a learning resource. Also comments posted in the questionnaire mentioned that file compatibility and requiring additional plug-in software downloaded on users’ PC was a possible deterrent to using multimedia files.

Regardless of any problems with uploading or viewing multimedia files, all teachers surveyed felt that providing students with multimedia files did appeal to many of their senses which helped greatly in achieving a beneficial learning outcome and also impacted positively by creating an atmosphere that fostered and aided self-directed learning.

62.5% of students did not have any problems accessing multimedia files that were used as resources within Moodle. The remaining students did encounter problems and from the comments submitted in the questionnaire, they all seemed to stem from the same problem which related to video player plugins that were not installed on their own computers. This was usually solved when students installed additional software plugins, which allowed access to these multimedia files.

Regardless of any multimedia file problems, a very convincing 70% of respondent students felt the addition of multimedia based files did in fact positively contribute to their overall learning.
experience. 30% (12) of respondents stated that they never watched these video files and the researcher feels there is a possible link here to a previous question where a small number of students indicated that they had little or no access to broadband and this limitation is bound to impact on access to multimedia files. See Chart 4.13 below.

Some students did however add an additional comment to this question for example:

“Video files need to be short before I bother watching them and also they want to be made well and relevant”

These comments all outlined that learners expected these multimedia to be of good quality, relatively short in duration and had to be relevant to the topic that was being learnt and only then would the benefits be realised.

![Chart 4.13 – Potential Benefits of Multimedia Resources to Learning](image)

4.2.4 The VLE and the move to E-learning

In this section data will be presented in relation to issues such as the potential of the VLE to replace conventional F2F instruction and data collected in relation to the possibility offered to both teachers and learners to incorporate the VLE with conventional learning to create a blended learning environment.
4.2.4.1 The Potential of On-line Learning via the VLE

Question 15 of the teacher questionnaire asked respondents if they believed that students found it difficult to attend full-time education because of other commitments. A resounding 100% felt that only sometimes do students have difficulty attending class because of other commitments.

On the other hand when asked the question, whether the use of Moodle could cause attendance problems in the FEC, 60% felt that using the VLE had potential to cause attendance problems. See chart 4.14 below. Some teachers further commented that some students would try and use the resources provided through the VLE to keep abreast of their studies. Some of the comments that were added were:

“Could be open to abuse”
“Not if used appropriately to prevent attendance problems”

Regardless of any worries on the effect of the VLE facilities introduced within the FEC in relation to attendance, all of the teachers surveyed felt that the VLE encouraged students to do course work at home and outside class time.

In relation to the above question, all teachers acknowledged their use of the built in feature within Moodle to track student logon and activities. Teachers further commented that most students’
logon took place from outside the FEC and outside of class time which was logged in the site administration area located within Moodle.

### 4.2.4 Use of the VLE outside Class Time

Since a primary objective of introducing Moodle into the learning environment was that it offered learners access to learning resources without physically attending the course classes, the objective of Question 11 of the student questionnaire was an attempt to ascertain how often students accessed the VLE when they were at home or outside the classroom environment. Remarkably the majority of students did access the VLE with 50% (20) visiting the VLE every other day while 32.5% (13) say they visit the VLE every day. A full breakdown of student replies is graphically presented below in Chart 4.15.

![Chart 4.15 – Moodle Access outside Class Time](image)

### 4.2.4.3 Blended Learning and the VLE

An important part of the questionnaire examined the possibility of students being offered the option to partake in a blended learning environment and not having to attend all F2F classes in the Centre while still achieving the same level of learning required to successfully complete their course.
Respondents were asked if they felt that access to the VLE allowed them the option not to attend all classes in the FEC. A little over half of the respondents (55%) felt that access to the VLE did offer them the option of not attending all classes in the Centre, suggesting that a blending type learning environment could be an option to get students through their course. It would be interesting to track this data over time as the VLE evolved adding improvements as necessary and subsequently a reevaluation of the possibilities offered by blended learning could become clearer or one course could be offered to students that incorporated blended learning and monitor its outcomes when compared to a class taught through traditional instruction. The data recorded is presented on the next page in *Chart 4.16 – Options not to attend all F2F Classes*

![Chart 4.16 – Option for Students not to attend F2F Classes](image)

On the same topic the students were asked if a VLE like Moodle had a contribution to make to student learning in the future for centres like Abbleyleix FEC or will traditional F2F learning prevail. As outlined below in Chart 4.17 below, 70% (38) of respondents were unilateral in agreement that blended type learning would be the most likely solution. This blended learning would be available partly on-line but supplemented by some F2F instruction.
Also on a related Question, a large percentage of students (87%) answered ‘Yes’ when asked did they think that the VLE did encourage them to do course work when they were at home or outside the Centre. See ‘Chart 4.18 – The Classroom of the Future’ below.
4.2.5 Communication through the VLE

Moodle includes good communication features that have the capabilities to offer teachers and students alike by offering a medium to enhance communication with colleagues and students and student to student communications.

4.2.5.1 Teacher Communication

Data collected from the teacher questionnaire indicate that 20% of teachers surveyed were not using the VLE as a method of communicating with their students and some further commented that they still used email and text to communicate with students.

60% of teachers did not communicate with their colleagues through the VLE and 53% of teachers would be unwilling to communicate with students from home.

![Communication with Students outside Class Time through Moodle](chart.png)

4.2.5.2 Teacher Communication

When students were asked if they used the VLE to keep in contact with fellow course learners, a surprising 62.5% (25) said no. This would indicate that the students use other methods of communication to keep in contact with other learners. Students further commented in relation to
this question that they regularly use social networking websites as the primary means of communicating with their peers. A typical comment that was presented was:

“I usually contact other students on Facebook as that where I communicate with all my friends”

![Chart 4.15– Do Students use Moodle to Keep in Contact with each other](image)

4.5 Classroom Observation

In order to triangulate the data three research tools were employed to ensure the research was valid but not necessarily generalisable to all situations.

Throughout the observation a checklist was used and the results analysed. The observation checklist is included as Appendix H and the completed sheets are available on request.

In order to assess the extent that the introduction of the VLE had influenced the teacher’s pedagogy, many lessons were observed and recorded which can be referenced in Appendix H. Since only five teachers were involved in the study and because of the limited timescale of the research, it was decided that only one class lesson per teacher was observed. The findings of this observation process will be discussed in Chapter 5.
4.6 Teacher and Student Interviews

Semi-structured interviews were conducted with both a select number of students and teachers in the Centre to gain a better understanding of the potential role of the VLE if introduced into an FEC setting. Many of the questions asked at interview were very different from the questions asked in both the teacher and student questionnaires; the reason was simply to gain a better analysis into the many issues worthy of consideration before contemplating the introduction of the VLE in a FEC setting.

4.6.1 Teacher Semi-structured Interviews

Below is a summation of selected interview responses from teachers that were interviewed as part of the data collection process. Full transcripts of all the interviews that were conducted with teachers are available in Appendix F of this study.

**Question 1: What is your understanding of the term Virtual Learning Environment?**

“When I think of a Virtual Learning Environment, I think of Moodle. I completed my degree with the IPA a couple of years ago and they put up lecture notes on Moodle and if I remember correctly this comprised of things like class announcement and lecture notes. To be honest I did not think much of it at the time, and thought that these things could be just as effectively be emailed to me? It was only when it was introduced into the Centre a couple of months ago that I really started to think about it”. I suppose it allows students access to resources when they are at home. To me allows a form of “distance education” over the net but think that it wouldn’t suit all the students.”

**Question 2: In your opinion does the use of the VLE enhanced teaching and communication opportunities within the FEC?**

“Well in my opinion student’s love getting stuff from the web, they are probably on it anyway when they are outside the class. The VLE does allow the giving information fast which must be good thing for us teachers. For the business students up until now I always used the shared drive on the server to distribute material and that was often messy as I used an
individual folder for each student and each topic. This way I now can concentrate my time on providing a good teaching experience for the students.

Tools like the Wiki and the quizzes feature are brilliant but a lot of work preparing material, but I expect that over time I will amass a good quantity of resources.

The fact that I can monitor students from the VLE and see who is logged on and generate reports is a great feature and I bet there are many more useful tools there just waiting for me to discover. Sure maybe when I get a little more confident I’ll explore the system further.

As regards the question on communication, well it’s still a long way short of F2F communication that we are used to in the classroom. But I do love the instant message feature and some of the students have personalised their profile which looks cool. I did find in the past that is before Moodle that I often just sent emails to students and sometimes they would claim that they forgot to check their mail account, but with Moodle their no excuse, so this feature has will address that.”

**Question 3: What do you believe could be the potential barriers for teachers and learners that the changes brought about by the introduction of the VLE into the classroom?**

“For older teachers this may be a problem I guess, especially the teachers with little skills with computing. Don’t know maybe more in-service training on Moodle would solve this. Teachers are a bit worried at the moment about being giving extra work and getting no thanks from management. I feel that there is a lot of work in preparing resources before they are put on the VLE and uploading big files does take a long time.

As well as that, I don’t know how to add students to courses or some of the other technical issues required to get Moodle up and running. If I hadn’t you to ask for help I don’t know how I would cope, so maybe schools and centres would have problems if they don’t have someone technical to administrate the system.
But back to your original question, I would say the time as regards preparation and uploading course content would be potential disincentives for teachers accepting the changes that the introduction of Moodle would bring to the Centre."

**Question 4: As a pedagogical and communications tool, what potential does the VLE offer to enhance learning?**

“I don’t think it will replace the traditional classroom setting with the teacher at the top of the class for a long time to come. The VLE is a good tool though and as I said in the last question I have not extracted its full potential yet. There are many tools within the VLE that I am afraid to use as I don’t have the technical knowledge to set them up. From what I used of the resources, I feel definitely the teacher’s role is more of a facilitator to learning rather than having a traditional one. Maybe we as teachers need to sit down and adapt our teaching methods so that the technology can be used in better ways going forward. For starters I don’t believe the “chalk and talk” method of teaching delivery is the way to go.”

**Question 5: What do you feel are main advantages to introducing a VLE in the learning environment?**

“Well I do agree that the VLE is a good pedagogic tool for teachers and greatly assists the learning process for the students. The tools like the quizzes and forum offer great potential for learning. The group email facilities are great for communication between students and fellow teachers. Also the administration feature is good to track students’ logons.

**Question 6: What do you feel are main disadvantages to introducing a VLE in the learning environment?**

“A big disadvantage would be who would administer the system; I know that even adding students and enrolling them on courses takes know-how and time. Would each individual teacher have to do these tasks for each of their groups or classes?

Time would be a factor when adding resources to Moodle each day and that is when you have created suitable resources. Also I am getting some problems with file sizes and file types when I try to put some multimedia
files up on the system and have to try and solve the problems myself. I am beginning to think that the system is creating a bigger workload than assisting my teaching.

And what about the students that haven’t broadband at home, hard to answer that one.”

**Question 7: What do you feel are main disadvantages to introducing a VLE in the learning environment?**

“I think it is very suitable for computer type courses and business groups. Some of the other courses that I teach on are not in a computer room and have not as big an element of computing in them, so might not suit them as much. Some of the students in these classes have very poor IT skills and this may cause problems. Probably need to tailor the VLE to each particular course and it would be OK.”

**Question 8: Do you think that the VLE will allow FEC courses to be delivered purely through e-Learning?**

“No not as purely e-learning, but I think it does have a place in learning delivery in the Centre, maybe as part of a blend between on-line and conventional classroom face to face delivery. The type of adult learners in this Centre like the physical presence and interaction with teachers and I believe that many lack self-confidence and thus like having a teacher that they can ask questions and constantly look to for advice, inspiration and encouragement.”

### 4.6.2 Student Semi-structured Interviews

Below is a summation of selected interview responses from students that were interviewed as part of the data collection process. Full transcripts of all the interviews that were conducted with students are available in Appendix G of this study.
Question 1: What is your understanding of the term Virtual Learning Environment?

“My understanding of the term Virtual Learning Environment is a system like Moodle, which enables the teacher to share all notes and files over the internet with all their students.”

Question 2: In what way do you feel the VLE assisted your learning experience?

“I felt the VLE assisted my learning experience as my teacher was able to upload all notes and files necessary for the course. It was very convenient for anyone who missed a class as they don’t have to go looking for what they missed as the notes would be there on Moodle and you can just log-on 24/7.”

Question 3: There are many tools and features within the VLE, please talk about how you used these to assist your learning?

“While completing my course we were provided with audio and video files which I found very useful and informative, it was really enjoyable and convenient to be able to access them anytime. We also had a quiz feature which I enjoyed, we were given a multiple choice quiz with four possible answers and the score would be calculated as each question was answered. And then we could go to complete the quiz a second time and the answers would be mixed up, making it really useful and a great way to learn. Let’s see, another feature which I used on the VLE was being able to send messages to other members of the class to discuss the coursework.”

Question 4: In your opinion what are the advantages of learning through the VLE?

“In my opinion, the advantage of learning through the VLE was that it could be accessed anytime from any computer. If you miss a class you don’t have to go looking for what you missed, all the notes are uploaded and can be viewed instantly. It’s also good for the environment, and for the school budget, as it saves the tutor having to photocopy many pages of notes, as they can upload them electronically. I liked this, as it saved me having to store many pages of notes and take them to class every day; instead they can be viewed online at any time. And lastly I liked the videos that were
available on Moodle and feel I learn a lot from watching and listening to them, like it’s different than just books which just get boring after a while.”

**Question 5: In your opinion what are the disadvantages of learning through the VLE?**

“I didn’t feel there were any disadvantages for me of learning through the VLE. However, I feel some students may possibly take advantage of having the VLE system by not coming to class, as they would know they could access the notes etc. that they missed during class time.”

**Question 6: How often do you access the VLE from home or when you are not at the Centre?**

“While completing the course, I accessed the VLE almost every day from home. I would be on the net anyway and would end up on Moodle at some stage.”

**Question 7: Did the combination of face-to-face teaching and online learning that the VLE provides assist you in your learning?**

“Yeah the combination of face-to-face teaching and online learning I suppose does help me a lot in my learning and I believe each type of teaching complements the other very well. I do think a combination of the classroom and Moodle work OK but no, I don’t think Moodle will ever replace what we are doing in class at the moment.”

**Question 8: Do you believe that you could have completed the course by using just the VLE and not attending any of the classes?**

“I don’t think it would have been possible to complete the course by only using the VLE. Even though the course content provided on the VLE was excellent and very informative, there were several modules that we studied while using the VLE which was totally new to me, such as Excel and PowerPoint. I really enjoyed being taught these modules in class, and if any of the students wasn’t sure how to do something, the tutors were very helpful and explained the topics very well to us. Therefore, if I was only using the VLE to complete these modules I would have found it quite difficult, and a lot less enjoyable as I enjoy being shown how to do something in class and then successfully doing it myself.”
4.7 Additional Research

The prime focus of this chapter has presented the data collected through the principle instruments of the case study research, emphasising the key themes that were revealed. All of the above areas are thoroughly considered in the next chapter which discusses the research findings in conjunction with information from the literature review chapter. The researcher hopes that by providing clear and open accounts of the research process this will enable readers to assess the applicability of the study’s findings to the questions that originally prompted this investigation in the first place. Additionally a copy of the observation checklist is included in Appendix H of this study together with some supplementary findings in Appendix J.
Chapter 5

Discussion of Findings

5.1 Introduction

The purpose of this chapter is to discuss the significance of the data collected which was presented in Chapter 4 and to examine the findings to my research questions. As previous mentioned the principal aim of the research was to study the potential benefits from the introduction of a VLE for teachers and learners in a Further Education Centre (FEC) in Ireland. A conscious effort will be presented to compare and contrast this research with the empirical evidence within the literature review in a rational fashion, thus endorsing a better understanding of the potential that exists from such an introduction into the educational setting.

5.2 Discussion of Findings by Research Question

In the interest of clarity and to facilitate ease of reading it was decided to designate sub-headings that relate specifically to each research question as was outlined in the previous chapter. Also where it is deemed beneficial to add creditability and validity to the research study, additional sub-headings will be added for discussion as deemed necessary.

5.2.1 The Profile of the Respondents

The research data collected from both students and teachers in relation to the age and gender profile of the respondents in the FEC indicates that a vast range of participant demographics were involved in this study. Findings in relation to the gender divide on the business course in the FEC found that 65.5% of students were female. However this would appear to be the norm for the type of courses involved in this study, as it is predominately females who traditionally enrol on such courses in the Centre e.g. Business Secretarial. However the results of both the interviews and questionnaires found no significant differences in responses based on gender. The findings in relation to this study can be similarly compared to those reported by Chen (1985) and Shapka and Ferrari (2003) whose findings concluded that gender had no effect on the level of ICT adaption or use.
This study represented a wide range of student ages form under 20 years of age all the way up to one student who was in their sixties. The researcher found that this diverse spread in student demographics is representative of the student profiles within the case study school and from all results collected through the various research instruments is appears that age was not a significant barrier to the introduction and use of the VLE in the FEC. However during the teacher interview process it was commented that the VLE is likely to be embraced by younger teachers who are more confident using computers than is the case with the older generation of teachers. This finding was consistent with a recent suggestion that younger teachers perceive themselves to have higher levels of expertise in a wide range of ICT skills than their older counterparts and thus more likely to use ICT in their teaching (Ireland, Department of Education and Science, 2008).

The vast age variances of students in the FEC would also reflect the “lifelong learners” profile of the modern student in the adult FEC sector as referred to in The White Paper on Adult Education (2000), which suggest that the providers of adult education should be ever responsive to the ‘needs’ of individuals. Furthermore it was suggested that teachers should always endeavour to recognise these individual characteristics in order to be effective and to support the overall learning outcomes for these students (Collins et. al., 2000).

As mentioned in previous chapters only students that were enrolled on business courses were selected as respondents in this study. These forty students were enrolled on FETAC Level 5 and Level 6 business courses in the FEC. In addition five teachers were selected to partake in the research study to gain an insight from the instructor’s perspective on issues relating to the VLE. The sample selection of student and teacher respondents from a population size of 200 students’ and fewer than 20 teachers within the FEC, would seem an acceptable number to carry out statistical analyses (Gay, 1996).

The researcher decided to use a case study methodology as it is suggested that the approach is relevant and useful, specifically when studying educational innovations (Merriam, 1998). Triangulation was used to collect multiple sources of data in an effort to confirm the findings during the research process (Denzin and Lincoln, 2000). The logic behind adapting this methodology was that if the researcher could reads about the phenomenon in the questionnaires, hears about the phenomenon during the interview process and sees it taking place during the observation process, then he could be confident that the reality of the situation, as perceived by those in it is being conveyed as truthfully as possible (Merriam, 1998; Patton, 1991).
5.2.2 ICT Access and Skill Level for both Teachers and Students

Access to ICT is of paramount importance for both teachers and students before initial consideration can be given to the introduction and implementation of an e-learning programme into the educational setting. This is especially true in relation to the ICT skillset of teachers, who will be the initial initiators of the e-learning programmes and providers of inspirational and motivational direction to learners with a focus on extracting the maximum educational benefits that the technology can provide. (Schank and Cleary, 1995) commented that on the need for educators to become active in developing and fostering these essential skills that are required by all stakeholders to prepare for a future when an e-learning component will be considered part and parcel of education delivery.

Data collected throughout the study found that 45% of students surveyed were enrolled on a FETAC level 6 course which would indicate a good ICT skillset which was not overly surprising as it’s a prerequisite for students enrolling on the level 6 course to have completed a FETAC level 5 Major Award certificate or at the very least completed the ECDL (European Computer Driving Licence) certification programme. At least two of the teachers taught on the majority of courses offered at Abbeyleix FEC and all teachers involved in the study predominantly taught on FETAC Level 5 programmes.

These findings would have positive implications if the VLE was to be introduced and made available to all learners in the FEC in the future. Correspondingly all teachers involved in the study do teach courses that are computer related or have a computer component located within their courses, thus a consistent level of ability in ICT usage skill is assured for this study as a very uneven ICT skillset amongst teachers would have led to a questionable data results and possibility distorted subsequent findings.

5.2.2.1 Computers and Broadband Access

Research data collected from both teachers and students suggested that access to computers was not in any way an issue either within the centre or outside, however both groups had different responses to questions regarding broadband access. Many internet users complained of limited access availability through devices such as USB “Dongles” (Wireless Mobile Broadband) because of
access issues and broadband availability in the relatively rural areas in which lived. This finding is consistent with data compiled in relation to broadband access in many areas particularly in rural parts of Ireland. In County Laois, for example data compiled by the Central Statistics Office (CSO) in 2006 found broadband penetration levels of only 22.2% (CSO, 2008, p.40). Similarly data released by the Commission for the Communication Regulator (Comreg) in 2009 claims that there are 1.3 million broadband subscriptions in Ireland including mobile broadband (USB dongle type access). This data based on EU calculations, gives Ireland a broadband penetration rate of 20.2%, which is slightly below the EU-27 average of 22.9%.

In response to addressing this issue, the Irish government has issued a commitment both through The National Development Plan 2007 – 2013 and The Rural Broadband Scheme to improve broadband connectivity and access speed that would provide reliable and affordable broadband to throughout Ireland in an equitable manner. This is consistent with similar views at European level in relation to the urgency for the provision of adequate broadband access especially in rural areas, to benefit all citizens both in terms of living and working conditions (OECD, 2009).

Kelly et al (2009) reiterates on the need for broadband investment which he sees as extremely important in returning our country to financial health by enabling our learners to embrace the “Information Society”, which suggests a stronger emphasis on developing lifelong learning skills and technology availability will be an important factor in embracing this vision (European Commission, 2002). In Ireland the National Economic and Social Council (NESC) report defined this lifelong learning as:

“...All purposeful learning activity, whether formal or informal, undertaken on an on-going basis with the aim of improving knowledge, skills and competence.”(NESC,1999, p270).

The same report also stresses the importance of lifelong learning for improving not just employability but considers it to be essential for personal fulfilment outside the labour market as well’ (NESC, 1999, p270).

Furthermore an Expert Group on Future Skills Needs (EGFSN) have published this strategy document which identifies Ireland’s current skills profile and provides a strategic overview and specific objectives for Ireland’s future skills requirements. The key objective of the strategy is cited as being ‘to identify the skills required for Ireland to make the transition to a competitive,

5.2.2.2 ICT Skills

Findings in relation to the level of ICT skills that teachers possessed revealed that 60% rated their skill level as very good. If the VLE is to be effective in the FEC sector of education teacher skillset in using and embracing technologies will be of paramount importance. Mulkeen(2001) cited this skillset in relation to ICT is as a major potential barrier to change “Teacher skills remain the greatest reported barrier to usage of ICT usage in the classroom” (Mulkeen, 2001).

On the student side 62% of students surveyed had ECDL certification and the level of skill in relation to ICT throughout the cohort of students surveyed was very encouraging with over 50% claiming to possess an advanced level of ICT skill or higher. This would signify that no major problems exist in relation to the ability to learn through a system like a VLE within the case study VLE.

At interview students demonstrated that they understood the purpose and function of a VLE and a typical comment that was submitted:

“My understanding of the term Virtual Learning Environment is a system like Moodle, which enables the teacher to share all notes and files over the internet” Interview with Student A

Over 80% of students questioned experienced no problem either navigating or using the VLE. Similar results were also recorded by teacher through the observation checklist, however it was noted through the observation process that only half of students used the VLE often during class time and the remainder only accessed the VLE when told to by the teacher.

The findings indicate that the most teachers within the FEC are comfortable with basic navigation and use of the VLE. But many did comment on the high learning curve that they had endured early in the process and admitted that they were still learning with regard to some of more complex tools and features that the VLE offered. This limitation and possible barrier to VLE acceptance with the FEC will be discussed further in the next section in this chapter.
5.2.3 The introduction of the VLE in the Further Education Centre

In this section of the chapter focus will turn to the many issues that warrant consideration before the VLE can be successfully introduced and implemented into the FEC. The first important issue that will be discussed is teacher acceptance to the proposed introduction and the solutions where available to possible problems in relation to barriers to acceptance as they occur. Also the benefits and limitations of the VLE from both the teacher and student viewpoint will be deliberated, especially so in relation to the many tools and features available within the system to enhance learning. And finally we will discuss the merits of the VLE and the future role it offers as an e-learning tool in Abbyleix FEC.

5.2.3.1 The Teachers and the VLE

All educators appreciate the fact that they need help and training to properly embrace technology and integrate it in their teaching delivery (Smith et al. 2008). Thus it would seem plausible that teachers need continuous professional training (CPD) in relation to the proper and efficient use of the VLE and this obviously would need carefully consideration in order to successfully implement and deploy the VLE within the FEC. Furthermore teachers require a framework plan to be put in place to support and foster the integration of the VLE not just in relation to the VLE as a teaching tool but rather a collective appreciation by all stakeholder involved in the providing and administration of education at the Centre. For example the time and effort taking to create recourses by teachers for the VLE is an important issue that come up again and again in this study and teachers feel that some form of recognition of this issue is necessary. Management play an important role here and by the introduction of a CPD programmes to support teachers to embrace the VLE together with open dialog between all teachers and stakeholders to implement a plan to address any pertinent or evolving issues that act as barriers of acceptance to the VLE in the VEC.

In this study many barriers to acceptance of the VLE were identified. These barriers were very similar to finding found in relation to research conducted recently in the UK with regard to college use of VLE systems and they listed the most pertinent barriers to include pedagogic uncertainty, lack of the necessary support and also a lack of recognition and encouragement from within the college that impacted greatly in the successful embracement of the system (Morón-Garcia, 2006).
All of the teachers questioned and interviewed felt they would benefit for professional training on how to use the VLE to enhance their teaching delivery. Some also added additional comments to this question for example:

“Most definitely, we really need help on how to use it and also what to use it for”

This supports the findings highlighted in the literature review where lack of effective training is often cited as a potential barrier for embracement and integration of ICT into teaching and learning (Albirini, 2006; Balanskat et al., 2006; Beggs, 2000; Schoepp, 2005; Sicilia, 2005; Toprakci, 2006). Most notably, Beggs (2000) argues that one of the top three barriers to teachers’ use of ICT in teaching students was the lack of training. Also teachers need more than just training in the use of the tools and features that are contained in resources like the VLE, but rather training programmes need to provide pedagogical training for the proper application of the resource into their teaching (Becta, 2004). Similarly Cox et al. (1999a) maintain that if teachers are to be persuaded that ICT resources like the VLE have immense value to offer learner through their teaching, then the training programme’s offered should focus on the pedagogical issues. If possible some of the training offered to teachers in VLE use could be done on-line through the VLE itself as this would put the teachers in the learners’ ‘shoes’ and experience the benefits and limitation from trying to learn from the learners perspective. This line of thought would be in clear agreement with the finding of (Donnelly and O’Rourke, 2007), who argue that one the best ways to become an good online teacher is to undertake an online course themselves and experience first-hand the online learning from the viewpoint of the learner.

Furthermore at interview it was mentioned that technical support was need in relation to some of the technical and administrative elements that are required for both the initially implementation and use the system. Especially during the deployment phase of the VLE introduction process, teachers would benefit from basic administrative training with regard, VLE configuration, account/course set-up and report generation and basic VLE troubleshooting. In this regard “mechanisms need to be put in place to ensure that teachers have adequate access to technical support and advice and to ensure that teachers do not feel that they have to become technical experts themselves” (Williams et al. 2000).

Management have a role to play in all of the above issues and especially at the outset of the introduction stage of the VLE implementation plan would requires decisions concerning the role of
staff members in relation to the VLE and the level of on-going technical support needed together with general professional in-service training on the proper use of the VLE to best effect to enhance teaching and learning in the educational setting. This finding also concurred with research findings by (Williams et al., 2000), (Healy, 1998), (Gunn and Brussino, 1997) and (Collis and Moonen, 2002).

Government have an important role to play in the promotion and support of teachers to embrace and implement the technology in their teaching, this is especially so in the FE sector. It is only recently that DES recognised this urgent need and they devised an ICT Strategy Group who has outlined recommendations on training to assist teachers “to more effectively and consistently embed technologies in their practice” (DES, 2008).

But teacher training is not only issues that requires acceptance to the change brought about from the introduction of the VLE into the FEC. For this to be successful all stakeholders as well as the teachers to include student, government initiatives and education management will need to collaborate and work together towards a common goal. To insure the change process is successful and effective, the change process itself will need careful strategic planning and all involved stakeholders must clearly understand the objectives of the change (Fullan and Miles, 1992).

Educators need to expend great effort on insuring that the barriers to change have minimal effect on the introduction of the new innovation into teaching and learning and must carefully examine concepts such as school culture, and factors that affect educational change and be aware that their efforts may not always be fruitful “Educational change fails more times than it succeeds” (Fullan, 1992, p7).

It is especially the teachers that play the most important role in relation to acceptance of the vast changes brought about by the introduction; “teachers’ attitudes, opinions, values, and views with respect to the teaching profession must fundamentally change for large scale innovations to succeed” (Cuban, 1990; Fullan and Miles, 1992).

Both the ICT skillset of teachers and their ability to use and integrate the VLE in teaching delivery is of paramount importance. Mulkeen (2001) cited this skillset in relation to ICT embracement is a major potential barrier to change. Additionally he suggested that a training programme is necessary that would address any problems in relation to teachers who have not the required skills or need to enhance the skills that they currently possess. Many researchers have similarly commented on the need for effective training to equip teachers with the skills and pedagogical relevance to confidently
to embed ICT into their educational delivery (Albirini, 2006; Balanskat et al., 2006; Beggs, 2000; 2007; Schoepf, 2005; Sicilia, 2005)

Also for the VLE to be embraced by teachers and blended with traditional instruction to deliver a enhanced learning experience will require that “mechanisms need to be put in place to ensure that teachers have adequate access to technical support and advice and to ensure that teachers do not feel that they have to become technical experts themselves” (Williams et al., 2000).

5.2.3.2 The Benefits and Limitations of the VLE

This section highlights data findings in relation to questions that were asked during the questionnaires and interviews data gathering process. Most of the teacher and student responses are also referred and expanded on in other sections of this chapter.

Data collected from teachers and students in relation to questions on the many benefits and limitation to their experience of the VLE use in the FEC expressed many interesting results. Teachers for example presented many comments in relation to the benefits such as:

“Allow for a greater diversity of learning techniques. Great for communicating with students and great for tracking student logon and activities while they’re on Moodle”

Both of the surveyed groups expressed their concerns for possible limitations to VLE in rural areas where broadband access was restricted or non-existent. Which was concurrent with viewed expressed by Poon et al. (2004) who cited technological factors that affect the learning effectiveness of a VLE and suggest internet accessibility and computer literacy as the most important factors.

In May 2011 the Minister of Communications, Energy and Natural Recourses Pat Rabbitte announced the creation of a new Rural Broadband Scheme. This Scheme was established with the aim of providing a broadband service to rural dwellers that are not capable of obtaining access from existing internet service providers. This Scheme will be carried out in cooperation with the Department of Agriculture, Fisheries and Food under the Rural Development Programme co-funded by the European Agriculture Fund for Rural Development. The Scheme aims to ensure that universal broadband access is provided in Ireland by the end of 2012. It is hoped that in some way this Scheme
will alleviated the problems with broadband access for rural dwellers in areas such as County Laois which as seen was adversely hampered by poor broadband access as outlined in this study.

5.2.3.3  The Reasons why Students Access the VLE

Data findings suggest that almost all students use the VLE with the primary purpose to access class handout notes. This finding is very motivating from the teacher’s perspective because all teachers cited this as a primary advantage to use the VLE. Fryer advocated the use of the VLE as reported to post hand-out note and other resources and cited the benefits where students can focus on comprehension and processing as opposed to “text-capture” (Fryer, 2002).

5.2.3.4  Quiz feature in Moodle

A tool available in Moodle that received great acclaim from both teachers and students was the quiz tool. This tool has the ability to enhance learning by providing positive features for learning to allow students to partake in interactive exam-like learning scenarios which also had the benefits that allow teachers to provide scoring and feedback to their quiz takers. This quiz tool offering the chance to retake the quiz and learn from mistakes is very important to learning outcome because it is suggested that within a constructivist environment, it is OK to make mistakes, because it is through making mistakes that the correct answer emerges (Dougiamas, 1998)

Almost all students mentioned the quiz tool and felt that it assisted in their learning outcome. Positive comments received include;

“I liked the quizzes because i got instant feedback from them”

Likewise during the observation process, teachers all cited the multiple choice and close exercise type of quiz feature as the tool commonly used during the class time. In this regard some comments suggested that the students seemed to like the interactive nature that this tool offered.

The benefits of the quiz feature were espoused by many in literature including (Woit and Mason, D. 2001) who wrote extensively on the possibilities offered through self-assessment quizzes and the major benefit they have to enhance student learning. The researchers also suggested that tool had potential in relation to knowledge retention by allowing students to “practice” mock tests and quizzes, and also motivating students to acquire the essential skills. The multi-choice item type of
quiz format was the quiz type most favoured by learners (Bennett & Nuthi, 2008) and the provision of feedback was cited as imperative quality in this (Gibbs & Simpson, 2004).

5.2.3.5 Multimedia and the VLE

80% of teachers surveyed used the VLE to deliver multimedia presentations such as video and audio to enhance the learning experience. Also during the observation process teachers noted the popularity of multimedia especially on specific course subjects where step by step tasks could be view and review to compel learning. Three quarters of students surveyed believed that their learning was enhanced by these multimedia resources.

However a potential problem that was noted by both teachers and learners in relation to multimedia files was that the computer use to view audio or video files needed to have installed additional (plug-in) software which was necessary to run relevant multimedia file formats from within the VLE. These plugins players that the VLE requested include RealPlayer, Flash and QuickTime which needed to be installed on the machine before the video, flash or audio file could run.

Over time this became less of an issue as teachers and students became more familiar with the system and they found solutions to the problems encountered. Eventually all machines in the FEC has necessary software installed by the IT officer and a generic multi player-plugin from (videolan.org) called VLC (VideoLANClient) was also installed on the machines and a hyperlink to the download location was posted on the home page of the VLE to provide easy download access for students. This software when installed plays almost all available audio/video file formats and allows them to run on the destination machine without any errors.

However the situation above highlights the fact that most teachers will not be equipped with the technical skill to solve issues that can be very complex in nature. It would appear that all stakeholders in the educational community will need to develop a clear collegial framework to put “mechanisms in place to ensure that teachers have adequate access to technical support, advice and training which ensures teachers that they do not feel that they have to become technical experts themselves” in order to improve their teaching by embracing technology (Williams et al., 2000).

Perhaps a recommendation is that “early adopters” of a VLE in a FEC can aid or facilitate other educational institutions in their endeavours in achieving the goal of successful implementation of the VLE in their own educational setting. This could be achieved by creating a network of teachers at
a local or national level where information and ideas are exchanged in relation to the benefits and limitations of the VLE introduction process are exchanged. This network could be overseen by and promoted by an organisation The National Centre for Technology in Education (NCTE).

The findings in this study were similar to those presented by other researchers, which suggest that course delivery through the use of multimedia is positively embraced by students and teachers alike (Copley, 2007; Simpson, 2006). However it was noted by one researcher that evidence existed to suggest that some students choose to substitute these multimedia presentation in place of class attendance (Simpson, 2006) and an even more worrying finding was that it is often the weaker students who choose to skip classes, even though they usually are the ones who would benefit the most from attendance (Van Walbeek, 2004).

A pedagogical strength of multimedia is that it uses the natural information-processing abilities that we already possess as humans. Our eyes and ears, in conjunction with our brain form a formidable system for transforming meaningless data in to information (Fenrich, 1997). Also using audio and visual file through the VLE can support visual, kinaesthetic, and auditory learners (Howard Gardner, 1993). This approach can empower the learners with opportunities to engage in their learning experience in a collaborative and communicative way.

This highlighting of the potential benefits that are possible from using the tools and feature contained within the VLE which can provide for effective and enhanced learning outcomes. This again corroborated and concurred with findings that a virtual learning environment can be used to supplement traditional instruction which will improve student achievement. VLE’s are being used “to supplement in-classroom learning” When hand-out notes or other resources are posted on the VLE, students can focus on comprehension and processing as opposed to “text-capture” (Fryer, 2002). Also further research suggest that not just multimedia presentation are beneficial to the learning process, but also current and emerging technologies such as Web 2.0 have the ability to empowering students to learn in a many new and novel ways (Lemke and Coughlin, 2009).

5.2.4 The VLE and the move to E-learning

It is only very recently that our educational system has been activity developing essential skills in relation to education delivery via the web (Harper and Hedberg, 1997). Benefits considered by educators included the belief that online teaching can be done more cost effectively than classroom teaching, yet at the same time these educators admit that quality education, whether online or face-
to-face, requires interaction and so must be resourced appropriately with qualified teachers (Gunn and Brussino, 1997). Over a decade later relatively little has changed especially in educational setting like the FEC that this study is being conducted. Furthermore there is not a lot of research that exists in relation to an examination of how the further education sector could adapt their courses for delivery via an e-learning format (Leney et al., 2007).

The National Development Plan 2007 – 2013, the Irish Government has ring-fenced a considerable amount of funding to be spend on the ICT in schools’ programmes and has recommended that a large portion of funding be spent developing an e-learning culture in educational setting that will ensure that ICT usage is embedded in teaching and learning (DES, 2008). However the level of funding available is €254 million which when divided between all the schools, colleges and learning centres throughout Ireland over this timeframe, it effectively is just a drop in the ocean in terms of required funding.

Clearly the use of VLEs like Moodle will have a role to play if the success of these governmental programmes is to be effective. Unfortunately there is not a lot of research literature available from which to examine how the further education sector could adapt their courses for delivery via an e-learning format (Leney et al., 2007). However research studies were conducted in relation to VLE and e-learning in the third level sector and relevance’s can be extracted from these sources to relate to aspects under analysis in this study. The transition to e-learning in the further education sector is certainly not going to happen overnight and for it to offer a complete or partial duplication of conventional F2F learning, major changes still need to occur within the whole educational landscape involving all stakeholders before any change will be possible (Shaik, and Palma-Rivas, 2000).

Data extracted in this study found that all students in the FEC had sometimes found difficulty with regard the attendance at all classes in the FEC that were relevant to their FECTAC course. Obviously the VLE could offer a role here for these learners who have many other responsibilities and commitments that can impede their attendance at the Centre.

However, perhaps a response worthy of worry that was extracted from the questionaries’ and interviews for both the teacher and student group was the fact that they all mentioned that there was a possibility that VLE system could in fact cause attendance problems when students could access all hand-out notes and other learning resources over the internet. Teachers further suggested that what is uploaded to the VLE would take careful planning to ensure this former doesn’t occur:
This is some research evidence to suggest that posting hand-out-notes and other resources on an e-learning platform did not affect attendance levels (Hove & Corcoran, 2008). But as mentioned in the last section, there is a growing body of researchers that suggest that some students will choose not to attend all classes when they know they can access all resources through the VLE (Simpson, 2006), and additional research on the issue suggests that its often the weaker students that choose the non-attendance option (Van Walbeek, 2004). The role of the VLE is supposed to supplement the course rather than being a substitute method to course attendance. Tutors need to view a VLE as such and develop content to assist learners outside class time but during class time make the learning experience wordy of their attendance.

Regardless of any negative responses in relation to the effects the VLE has on attendance in the FEC, are to a certain extent immaterial and irrelevant. There is a strict attendance policy within the FEC which clearly stipulates that attendance must be at a level of 80% or higher or otherwise course participants will not receive an attendance certificate or it may impact on the submission of assessments portfolios to achieve the FETAC major award certificate. Also general rules and regulations exist within the FEC which includes an attendance and details of this are contained within the student handbook for the FEC which the students sign at the beginning of the academic year and thus accepting all the rules, regulations and policies that are in force within the Centre.

The findings in relation to VLE use and attendance were not all negative. Many questioned cited a major advantage to use of the VLE was that it allowed a student who was absent from class due to sickness or because of another understandable and legitimate reason could access course material via the VLE and thus keep abreast of their studies.

5.2.4.3 Blended Learning and the VLE

Through the data collection instruments used in this study it was established that most learners accessed the VLE every day. These data finding were further collaborated through the reporting and tracking feature which is located in the administration section of Moodle, here teachers can extract reports showing the number of times, the date, the frequency, the IP address of each computer that is accessing the VLE together with details on access to course content for example: discussion
forums, course hand-out notes, assignments or tool or resources that are on offer from within the VLE system.

However the question now arises as what does really define e-learning and is what has being achieved in the FEC true e-learning. Marc Rosenberg (2001) confines e-learning to the internet as:

“The use of internet technologies to deliver a broad array of solutions that enhance knowledge and performance. It is based upon three fundamental criteria:

- networked
- delivered to the end-user using standard internet technology
- focuses on the broadest view of learning”

An analysis of the above would suggest that the use of the VLE in the Abbeyleix FEC is to some extent compatible with the definition offered. A more suitable mode for the FEC to adapt is the concept called blended learning. Blended learning is the combination of different learning methods (Graham, 2006: 4). Most commonly it refers to the blending of face-to-face learning with e-learning. The name became popular in 1998 in the employee training field (Masie, 2006: 22). Other researchers suggest that blended learning is not a single method of learning, nor is it a separate alternative to e-learning or face-to-face learning methods (Hinkelman, 2005).

In response to a question which students were questioned as to whether they believed that all learning would be online in the future, all believed that concepts like e-learning were defiantly going to remain and develop further in the future? Yet during interview almost all students felt that to partake on a pure e-learning course would be a very lonely way to learn, as they mentioned that a certain amount of learning came from class interaction with their peers. Also comments at interview mentioned that students like the F2F interaction with their teacher and like option to ask question. This finding is similar to research conducted by the eminent researcher Charles R Graham who reported that, “many learners want the convenience offered by a distributed environment yet do not want to sacrifice the social interaction and human touch of face-to-face learning” (Graham, 2006).

Many students stated that the primary reason to access the VLE was to access hand-out notes. This suggest that to-date attempts at VLE embracement are very simplistic with the recourse being used a storage medium to present static content such as hand-out notes and at the very best also offering a basic communication medium as opposed to a collaborative spaces that has potential to offer true
e-learning through the many tools and features offered within the VLE system itself. This is supported by many instances of published research for example: (Esienstadt and Vincent 2000; Darby 2002; Oliver & Herrington, 2003).

Tools exist within the VLE or can be integrated with the VLE to assist collaboration for example LAMS which is a revolutionary tool for designing, managing and delivering on-line collaborative learning activities. LAMS range of tools is designed to be used for a variety of pedagogical approaches, by teachers and students with varying levels of technical expertise. Data exist to support claims that collaboration through tools like LAMS can make education more efficient and when integrated with the VLE might prove to be a very satisfactory platform to support on-line education (Gaceu et al., 2006).

On a positive note nevertheless students did as already discussed praise the tools and features available within the VLE such as multimedia and also the interaction offered through the quiz tool. Furthermore many students recognised the benefits that these resources had on their learning experience. During class observations, some teachers did note that many of the students did log-on to the VLE at the start of the class and used the VLE to access much more than just hand-out notes, but rather a vast array of the resources that were available to supplement their F2F instruction during the class time. This engagement by students with the VLE both during and outside class time is the classic definition of blended learning in action. Some research in this area suggests that teachers need to encourage students to actively use the VLE during class time and through the carefully timed posting of resources encourage students to log-on to the VLE outside class time also. This encouragement would also have the effect of inspiring interest and enthusiasm in the students which are important components to the successful implementation and constructive use of the VLE. (Tolley and Vanhegan, 2008)

Clearly the VLE has great potential in relation to a move to offering the possibilities for e-learning and that we are not seeing the full potential because of the attendance policy in the FEC, but at present the VLE is extremely useful as tool to enhance the learning outcomes for learners in a blended learning setting where the best of F2F and e-learning can merge to enhance learning. Graham suggests that in the near future “the trend toward blended learning systems will increase. It may even become so ubiquitous that we will eventually drop the word blended and just call it learning” (Graham, 2006).
5.2.5 Communication through the VLE

This is the element that marks out the VLE from other forms of e-learning and helps the student to feel part of a learning community. Communication through the VLE is of paramount importance especially in an environment that includes both face to face learning and online communication. The communication can consist of email and also the forum tool which is an important feature that allows students to communicate and engage with one another from within the VLE system (Bennett 2004 and Bull et al., 2004). In the UK BECTA sees this as a big function of the VLE in its applicability to offer communication tools such as email and also collaboration tools such as online forms. (BECTA, 2008). Another collaboration tool worthy of mention is LAMS (Learning Activity Management System) which is a revolutionary tool for designing, managing and delivering online collaborative learning activities. It provides teachers with an environment for creating sequences of learning activities. These activities can include a range of individual tasks, small group work and whole class activities based on both content and collaboration which can be integrated in the VLE system (Lengyeletal, 2007).

In this study both teachers and students have used the communication available within the VLE and the results of data collected indicated a mixed usage of the resources. Over half of teacher’s did not communicate with their colleagues through the VLE and in interview revered to the use of standard email as the preferred way of teacher to teacher communication.

A similar response will received from the students, with 62% saying that they did not used communication features to a large extent within the VLE to communicate with their classmates but rather used resources external to the VLE for communication:

“I usually contact other students on Facebook as that where I communicate with all my friends”

During the observation process of the data collection stage of the study it was noted that particularly the younger students were using Facebook as the main communication tool. This finding is in agreement with much of the available research literature that comments on the Facebook network is increasingly being used not only by students but also by teachers and is expected to expediently increase over the coming years (Mazer, Murphy, and Simonds 2007).
Educators should endeavour to encourage their learners to use the VLE as a means of communication as there is evidence to suggest that when the learner is engaged in their own learning, constructing their own knowledge and wherever possible through social contexts in collaboration with their fellow learner, then this will have a positive effect on learning outcomes (Jonassen, Davidson, Collins, Campbell, & Haag, 1995).

Also according to the Vygotskian socio-cultural theory, learning is a social act and construction of meaning which is mediated between social beings, and can also involves membership of a group (Hung & Chen, 2001) such as an online community where student can communicate and collaborate. Clearly in online environments like the VLE, discussion forums and communication channels are fundamental to this.

### 5.2.5 The Future of Learning in the FEC

Teachers who intend to use VLEs within their educational setting will need technological and organisational capabilities and assistance in endeavouring to develop new policies for strategic teaching delivery. So before the introduction, implementation and development of VLE at different levels it is necessary for educators to recognise new educational roles for all those who are going to be involved (Barajas et al. 2002). Teachers need to be ever mindful that they can’t achieve this alone, but rather there should be structures to involve all stakeholders in the educational landscape to assist and encourage participative decision making on issues such as e-learning thus developing a shared commitment to ownership of FEC and authority policies and plans. Effective collegiality will not only enhance and develop teacher professionalism; it will also enhance the learning and teaching environment in the FEC.

Furthermore the introduction and implementation of the VLE into the educational setting if fraught with many barriers to acceptance by teachers and other interested parties and in order for the change process to be effective, the whole process will need careful planning by all involved stakeholders who must clearly understand the objectives of the change (Fullan and Miles, 1992). Additionally educators will be required to examine many concepts within the Centre for example culture, and factors that affect educational change in general and appreciate that success in change acceptance is not fully guaranteed (Fullan, 1992). It is the teachers in particular that will have the most important role to play in relation to the acceptance of the vast changes that the introduction of the VLE in a FEC would undeniably entail; “teachers’ attitudes, opinions, values, and views with respect to the teaching profession must fundamentally change for large scale innovations to
succeed” (Cuban, 1990; Fullan and Miles, 1992). As previously discussed in this chapter teachers resistance to using technology such as the VLE in their education delivery is hampered by issues such level of training in using the system, technical issues, not enough time to create and upload resources for the system and support and encouragement from management and other stakeholders within the educational setting. Rosen and Weil, 1995; Winnans and Brown (1992) cite additional issues that case resistances to ICT adoption which include: teacher experience, age and gender and hardware and software availability.

These barriers have to be balanced with the needs of the modern adult learner and teachers must ensure that it is the learners that must untimely benefit from educational change. Alltree and Quadri (2007) suggest that adult learners have many responsibilities and commitments outside the Centre and many are involved in part-time employment or have family commitments. These students would profit considerably through the development of more convenient and flexible study modes, which would allow them an out-of-class access to teaching resources and contribute to their independent learning. Furthermore educators should realise that technologies like the VLE are still emerging and should endeavour to embrace these technologies such as those offered through Web 2.0 technologies which have the ability to empowering students to learn in a many different ways (Lemke and Coughlin, 2009).

5.3 Chapter Summary

The art of teaching is changing rapidly, no longer is the teacher viewed as the ‘fountain of knowledge’ and some argue that teaching is set to become one of the most challenging professions in our society. Information and knowledge is so easily available through mediums like the internet and unlimited access to this information is available to students as well as teachers (Perraton, Robinson, & Creed, 2001).

The teachers and students in Abbeyleix FEC actively and enthusiastically embraced the VLE as a valuable tool to learning. Unfortunately findings do suggest that not all involved teachers and learners were using the VLE to its full potential. Nonetheless analysis and discussion of these findings when set against earlier research prove positive for the future use of the VLE in the FEC.

As evidenced earlier in this chapter students positively embraced the tools and feature that are available within the VLE. There was particular praise enthusiasm amongst students concerning the use of the quiz feature and all agreed on the value of multimedia presentations and the effect it had
on their learning. In terms of constraints it was evident that teachers all required professional training in the use of the VLE system and also an appreciation of the time and effort that it takes to compile and upload resources to the system by management and other stakeholders.

The focus of educators should be to embrace the future and use the innovative technologies have provided new possibilities to teaching professions and empower learners to make the best use of the tools and resources available to them to enhance their learning. These challenges may require teachers to participate in continuous professional development to acquire new knowledge and skills to integrate the VLE in their teaching delivery (Carlson & Gadio, 2002), but for their time and effort the advantages to be gained both pedagogically and practically will be very rewarding.
Chapter 6

Conclusion

6.1 Introduction

“*The day is coming when the work done by correspondence will be greater in amount than that done in the classrooms of our academies and college*”

*William Rainey Harper, President of the University of Chicago 1885*

The aim of this research project was to carry out an investigation into the factors that warrant consideration before the introduction and implementation of a VLE into a FEC in rural Ireland.

Within this study, many pertinent issues relating to the VLE were analysed and particular emphasis was focused on the beneficial possibilities offered to teachers who wish to integrate the VLE into their teaching practice. The premise of this study found that there are a myriad of factors worthy of consideration when contemplating the introduction of a VLE into an adult learning setting and it is hoped that by identifying these factors educationalists can better understand and provide a framework to address these issues pre-introduction and provide advice and direction to ensure that the intended introduction would seem worthwhile and worthy of the time and effort spent by all stakeholders in overcoming any limitations or barriers that the introduction could cause.

The FEC featured in this study is fairly typical when compared to the majority of FECs located through Ireland. This FEC caters for a relatively rural area of South Laois and some of the students also come from other areas of the county as well as from the adjoining counties of Kilkenny, Kildare and Tipperary. There are approximately two hundred adult students enrolled in the Centre and about 25 staff members of whom about 20 are teachers. The VLE was introduced to the case study Centre over one year ago and could be perceived to be still in its formative development stage and an area of the study highlight the need for continuing discussion, planning and evaluation of the VLE going forward to gain a better insight into how the VLE can be fully integrated into learning delivery.

In this study the author used both quantitative and qualitative research methods and consequently it was possible to achieve a composed and holistic overview of the VLE in the FEC. The following is a summary of the conclusions and outcomes reached having introduced the VLE in the FEC to a
specific cohort of students over a four month period. Finally the chapter will conclude with a section on the limitations of the study and opportunities applicable for further research.

6.2 Principal Findings of the Research

This section will summarise the findings in this case study and compare it with supported literature that was outlined in Chapter two.

6.2.1 Technical Barriers to the Introduction of the VLE

Although the research outlined in the literature review combined with the research findings in this study would indicate that e-learning through a VLE is very beneficial for all stakeholders in the FEC, nevertheless the introduction is hampered by a number of potential issues in relation to broadband access which could act as major barrier to its success. This access issue is of huge importance for educators in contemplating the introduction of a VLE in learning delivery. Teachers and students alike were to a certain extent affected by this broadband access barrier. Some of these issues were outside of the control of teachers and other stakeholders in the Centre. However it is envisaged that some of these issues will be solved by the impending government intervention through the National Development Plan 2007 – 2006 and also through The Rural Broadband Scheme that was announced by the Communications Minister Pat Rabbitte in May of this year which identifies the need for the national infrastructure to create an network that is accessible to all as was discussed in detail in the literature review of this study. The EU, with the Irish government, has set aspirations for Ireland to lead the field as a premier, knowledge-based economy, and for this vision to become a reality each Irish citizen has a right to adequate always-on broadband with adequate bandwidth speeds at an affordable price, only then can Ireland achieve the status of a ‘knowledge economy’, a term coined by Kelly et al (2009).

However, educators are restricted in what they can do in this regard other than lobbying the relevant decision makers to insure that this resource is quickly provided to all citizens at an affordable price. This research clearly shows that some participants are affected by the broadband access issue; this lack of adequate access is currently the key barrier to learning via the VLE.
6.2.2 The Teacher and the VLE

Many issues effecting teachers emerged from the study that require consideration before the introduction and implementation of the VLE in the FEC. These issues included the time and effort it took to create effective recourse to upload to the VLE, also there were mention of lack of commitment by all stakeholders in the FEC and from high up the ranks in the VEC who administer and manage the FEC, here problems mentioned were in relation to lack of training in effective VLE use especially as a tool in educational delivery and help and support with technical issues concerned with the system were seen as all areas that need addressing before the effective introduction and implementation can take place. These areas are discussed in more detail below and it is hoped that the problems encountered and solutions suggested here in this study can be shared with other FECs in the future when embarking on VLE introduction initiatives and hopefully enabling them to prepare better for their on-line learning environment and to allow them to benefit positively from the introduction.

A large percentage of teaching staff surveyed would claim to have good ICT skills and most taught on computer related courses, nevertheless almost all teachers stated that while they were comfortable with basic navigation and use of the VLE, most cited the need for training and CPD in the area of VLE use and in particular identified the need to training on pedagogical issues relating to the beneficial use of the VLE into their learning delivery. The research notes that some teachers have certain lack of awareness at local level of what a VLE actually is, and consequently, what specific benefits it can bring to enhanced delivery of course programmes.

The findings demonstrate the need for VLE training and it is recommended that this should be ongoing and occur at least once a year to help teachers keep abreast of any further developments in the e-learning area. However, it is important that these courses be tailored to teachers’ needs, be relevant to VLE use in the adult education environment and prove to be progressive. Another possible training solution worthy of recommendation is offering an on-line course via the VLE to teachers, this recommendation would be in clear agreement with the finding of Donnelly and O’ Rourke (2007), who argue that one of the best ways to become a good online teacher is to undertake an online course themselves and experience first-hand online learning from the viewpoint of the learner.
Centre management and VECs must devise a well-researched, progressive framework plan which should be put in place for all ICT planning but definitely to include the VLE. It would seem very beneficial if each Centre devises this plan to have both short-term and long-term objectives. Also at a higher level, Centres and their staff should be encouraged to use ICT innovatively, by way of financial incentives or other rewards to compensate for the time and effort creating and uploading resources and also administrating courses through the VLE system. Systems don’t change by themselves. Management has a substantial role to play here to encourage teachers to be actively involved in the introduction of the VLE into the educational setting.

As previously mentioned many teachers cited lack of time as a barrier to engaging in VLE embracement, particularly as often this preparation had to be completed during scheduled teaching time. It could be suggested that those charged with developing content or involved in administration duties for the VLE be relieved of some of their scheduled teaching commitment to do so.

Also the appointment of a dedicated staff member at centre level or at VEC level that would promote, plan and assist the implementation of the VLE into the adult learning centre, would be welcomed by all. This role could also support and develop the training programmes to increase skillset and pedagogical development to enable teachers to develop effective course programmes for delivery through the VLE. This research clearly demonstrates that an interest and willingness exists among the teaching staff and other stakeholders in the Centre to engage collegially in the development of course programmes for the VLE and to review teaching strategies to enhance the learning provided in the Centre but this can only become a reality with the assistance of a planned structured development process put in place prior to any introduction process.

On the benefits to teaching, teachers were unilateral in their praise of the VLE to provide students resources such as hand-out notes and assignment briefs especially if a student was absent from the centre due to illness or due to the many responsibilities or commitments that the modern adult learner has outside their class time. Also teachers felt the features within the VLE that offered great benefits to learning were the quiz feature and the ability to upload multimedia presentation files. Teachers should endeavour to offer more material to students in multimedia or in interactive quiz formats as the positive benefits were not only mentioned here but also in much research literature that was cited in an earlier chapter. Another positive benefit outlined by teachers was that the VLE encouraged students to do course work at home and outside class time and this was a very desirable attribute and was a core purpose of introducing the VLE in the first place.
On the limitation front, teachers expressed concerns that the introduction of the VLE might adversely impact on non-attendance at classes. The findings in this study were similar to those presented by Simpson (2006), who suggested that course delivery through mediums such as the VLE had the disadvantage that some students choose to substitute it in place of class attendance and also suggested that it is often the weaker students who choose the non-attendance route (Van Walbeek, 2004). Regardless of any attendance issue being cause by the resources available to students via the VLE there is a strict attendance policy in operation in the FEC which clearly stipulates that attendance must be at a level of 80% or higher to achieve FETAC certification, so it is possible that any non-attendance fears by teachers are to a certain extent unworthy of concern. Furthermore it is suggested at interview by one teacher that what is uploaded to the VLE should be carefully planned to make certain this doesn’t impact on attendance and the ‘holding something back’ for class ensures that students will require the F2F contact of their course teacher.

Technical support was another issue presented as a barrier to acceptance of the VLE into the FEC. Teacher cite many technical issues with regard to both setting the system up and the on-going issues that occurred from time to time especially in the administration section of the VLE. Other issues emerged as problems with additional software plug-ins that were required on user computers to view or listen to multimedia file formats. It would seem essential that technical support should be executed in a concise, planned manner within the FEC whether this entails employing a technician who is shared between schools or offering a post of responsibility or other incentive to a suitably trained member of staff. It would appear to be very important that sufficient funding, planning, training and support from the top down within the FEC and from higher authorities from the VEC to prevent these from becoming an inhibiting factor to the progression of technology such as the VLE in the adult education settings. It is imperative that all aspects of technology should be supported and developed in an educational setting, as technologies like the VLE become an inherent part of modern adult education.

6.2.3 The Student and the VLE

It appears that this case study FEC and its students are not very different from the average FEC which can be seen in relation to earlier peer reviewed research that was analysed from both a national and international level and which was corroborated through data findings within this FEC.
Students enrolled on business courses in the case study FEC have very good ICT skills and don’t seem to have any problems navigating and using the VLE. A key finding in this study suggests that 70% of the students reported positive attitudes towards the VLE in general and cited its ability to present multimedia files as a great bonus and felt that these files positively contributed to their overall learning experience. Also all learners mentioned the ability to access their core course resources such as hand-out notes, assignment briefs, mock exams etc. via the VLE especially as access is available to these files via the internet 24/7 when the students were at home or outside the Centre was cited as a big plus in favour of the VLE.

Similar praise was expressed with regard to the tools and features within the VLE especially the quiz tool which was singled out for special mention. The ability to communicate directly with the teachers was mentioned along with the ability to communicate through forums; both have advantages as a resource to aid the learning process for all students. This feedback is valuable to teachers going forward as these resources have the potential to be developed further and used through a broader number of course subjects. One limitation, mentioned by students in relation to multimedia files, was the fact that additional plugin software was required to view some audio or video that was not compatible with software installed on the destination computer of the user requesting the file, this problem was also alluded to in the previous section. This was solved over the timeframe of the study as teachers became familiar with workarounds and posted links on the VLE to download software plugins with a view to taking a proactive approach to solving any impending problems.

On the communication front it was interesting to note that while teacher to student, student to teacher communication occurred frequently and successfully from within the VLE, students admitted to preferring to communicate with their fellow students through social network sites such as Facebook.

The respondent students in the FEC all have many responsibilities and commitments outside the classroom and acknowledged that often difficulties arose that impacted on full time attendance at the FEC. All students welcomed the resources offered by the VLE to allow a certain flexibility in accessing course material when they were absent from the Centre. While there were certain reservations in regard to a question posed to students regarding possible abuse of the system with the facilities to collect resources and not attend all classes, most students did say that they
could not depend solely on access to resources through the VLE to keep abreast of their studies but did require some F2F conventional class time.

6.2.4 Blending Learning and the VLE

One could certainly conclude that the VLE does have definite potential to assist course delivery and student learning, with the teacher acting as a facilitator in the learning process. Most teachers and students for that matter felt that the future did include the VLE in learning delivery but stated that this would not take the form as a pure e-learning platform, rather they suggested that the future would include some conventional F2F instruction to supplement the VLE with only a portion of the course content offered online. Students mentioned the fact that they enjoy the class contact time both with their teachers and also the contact with their class peers. In fact many mentioned that it is the learning that occurs between student to student as being an important consideration by the students that were questioned in this study.

Obviously the best approach is to offer a blended learning to students in the FEC but selecting the best mix for making a good blend would take a bit of planning and practice. However, as seen from literature on the subject, there is some research to consult. Educator must devise a plan that aims to develop a blended learning design to find the most effective and efficient combination of learning modes for the individual learning subjects, contexts, and objectives (Neumeier, 2005: 164). The focus is not to choose the right or the best, the innovative as opposed to the traditional; but to create a learning environment that works as a whole (Neumeier, 2005: 165). Teachers need to be proactive in this regard and be ever aware that they hold the key to develop and extract the most potential from the resource and use it to elicit and exploit the resource to its maximum pedagogical advantage.

6.3 Limitations of the Research

The author wishes to acknowledge that this research project is limited by a number of factors. Some of the important limitations requiring deliberation will be considered in this section.

This study essentially is a snapshot of VLE introduction into a FEC over a very restrictive timeframe. It is a sample analysis extracted from a cohort of business students only from a single FEC. In essence this suggests that no clear generalisation can be made with any certainty about the wider population of adult learners in FECs throughout Ireland. Furthermore the fact that the timescale was not
conducted over a complete academic year but rather over a restrictive four month period places a further limitation on the reliability of the results. This timeframe for research was undertaken late in the academic year and unfortunately this is a very demanding time for teachers and students as end of year exams and assignment submission dates are all due at this time. A further limitation of this study is the possibility that the data collection methods are open to being skewed if respondents gave biased opinions. Also the researcher believes that some of the data collected especially from the questionnaire, in that some of the answers were possibly given in a hurried manner leading to incomplete and unsubstantial data being collected. Most of the above are consistent with limitations cited by (Cohen et al., 2008).

However, it is hoped that this study and its findings are still of importance as they have provided data from a FEC setting, a case study location that does not appear very frequently in research literature. The findings, therefore, have great potential to act as the basis for further research on the same topic.

6.4 Recommendations for Future Research

The following recommendations arise from the principal findings of this case study in association with a review of the literature. Research into this topic is far from complete and future research needs to be carried out to look at the use of VLEs in other FECs over a more protracted timeframe in order to evaluate and analyse the introduction, implementation and usage of the VLE in order to analyse the potential in relation to the opportunities and constraints found before definite guidelines could be compiled with a guarantee to their accuracy.

Also as only the business class cohorts of the FEC were examined in this study, the process need to be deployed to the case study FEC at large, and only then can the finding be confidently described as accurate.

6.5 Concluding Comment

This study highlights the need for discussion, planning and evaluation of all issues concerning the introduction and implementation of the VLE in the FEC setting. The benefits for educators are great and in this study it is demonstrated that the VLE can be introduced and integrated successfully into the teaching and learning environment. The researcher anticipates that the findings of this study will enable the case study Centre to enhance learning through the VLE in the future to the benefit of
all. There are still issues that need solving and there are barriers that need addressing but responses given in this study should be sufficient to start the introduction process for any other FEC which is embarking on the introduction of the VLE into their own educational setting.

The findings and recommendations provided may provide teachers and other stakeholders with valuable information regarding the introduction and implementation of the VLE and arm them with the knowledge to assist them regarding the technological, pedagogical and organisational change that would be required should the VLE system be introduced. The obvious end goal of any implementation would be to benefit learning delivery within the FEC environment and to assist learners by providing them with the modern tool and teaching methods that would make their educational journey more efficient, effective and rewarding.
References


Appendices
Appendix A: Director Permission Form

Dear Helen

I am researching the introduction of a Virtual Learning Environment in a Further Education Centre.

I am using the following research tools with selected participants from both the teachers and students within the Centre and selecting only the business courses for analysis:

- Questionnaires
- Interviews
- Student Observation

I would like to ask for your permission to carry out this research in Abbeyleix Further Education Centre.

The result of the research findings will form part of my Master’s 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 on a voluntary basis.

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

Yours faithfully,

I am willing to give permission for this research and I understand that the names of individuals will not be used or published.

Signed:

Date: 12th January 2011
Appendix B: Teacher Permission and Consent Form

Dear Colleague

I am currently researching the introduction of a Virtual Learning Environments (e.g. Moodle) into the FEC setting and assessing the effects both positive and negative that this will have on learning outcomes for adults enrolled on business courses within the Centre. This research is being conducted by the researcher as part of a Master’s thesis for the University of Limerick and the research outcomes may be published.

You are being requested to be a participant in this research by taking part in some of the following research techniques:

- Questionnaires
- Interviews
- Student observation

It must be pointed out that your participation in this research is voluntary. And should you elect to participate you can be reassured that under no circumstances will your name be used and any contribution you make to this research will be strictly confidential.

If you are satisfied with the conditions outlined above, please sign below indicating your agreement.

Yours faithfully,

[Signature]

Seán Scully
IT/Business Tutor
Abbeyleix Further Education Centre

I am willing to participate in this research and I understand that my participation and in this research will be strictly confidential

Name: _______________________________ Date: _______________
Appendix C: Student Permission and Consent Form

Dear Student

I am currently researching the use of Virtual Learning Environments (e.g. Moodle) and the effects both positive and negative they have on learning outcomes on adults in a FEC setting. This research is being conducted by the researcher as part of a Master’s thesis for the University of Limerick and the research outcomes may be published.

You are being requested to be a participant in this research by taking part in some of the following research techniques:

- Questionnaires
- Interviews
- Student observation

It must be pointed out that your participation in this research is voluntary. And should you elect to participate you can be reassured that under no circumstances will your name be used and any contribution you make to this research will be strictly confidential.

If you are satisfied with the conditions outlined above, please sign below indicating your agreement.

Yours faithfully,

Seán Scully
IT/Business Tutor
Abbeylax Further Education Centre

I am willing to participate in this research and I understand that my participation and in this research will be strictly confidential

Name: ___________________________ Date: _______________
Appendix D: Teacher Questionnaire

Welcome to this questionnaire on the introduction of the VLE into Abbeyfeale Further Education Centre.
There are 25 questions in this questionnaire.
Please take time to carefully read the questions.
Please note that any question preceded by an * require an answer.

*1. At Abbeyfeale FEC what group(s) do you teach? (Tick as many as apply)

- Junior Cert
- Leaving Cert
- Business Administration
- Business Secretarial
- Advanced Certificate in Business Management
- Art Craft and Design
- Advanced Certificate in Art and Business
- Nursing Studies
- Community Care
- Creative Craft
- Skills Course
- BTEI
- FETAC Level 6
- ECDL Core
- ECDL Advanced
- BTEI (Part Time)

Other (please specify)
2. What is the level of the course subject(s) that you teach?
(tick as many as apply)
- Junior Cert
- Leaving Cert
- FETAC Level 3
- FETAC Level 4
- FETAC Level 5
- Fetac Level 6
- ECDL Core
- ECDL Advanced

3. How many of your course subjects that you teach are computer related?
- All
- None
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8

Please Comment

4. Do you have access to a computer outside Abbeyfeale FEC?
- Yes
- No

5. Do you have broadband access available to you at home?
- Yes?
- No?

Comment
6. If you answered Yes to Question 5 above, which of the following mediums do you connect through to receive your broadband?

- Wired (e.g. Eircom etc)
- Wireless (e.g. Eircom, Irish Broadband etc)
- USB “dongle” (e.g. 3G, O2 etc)

Comment:

7. How would you rate your computer abilities?

- Very Basic
- Basic
- Good
- Very Good

8. Do you find Moodle easy to use?

- Yes
- No

Comment (please specify):

9. Please list the courses available to learners at Abbeyleix FEC that you feel would be most suitable for Moodle?

10. What resources within Moodle have you used to enhance the learning experience of your students?

(please tick all that apply)

- Forums
- Quizzes
- Wikis
- Glossaries
- URL Links
- Surveys
11. Do you use Moodle to deliver multimedia presentations such as video and audio?
- Yes
- No

Comment if applicable

12. If you answered Yes to the previous question, do you have any problems uploading and viewing any of the multimedia files?
- Yes
- No

Comment (please specify)

13. Using multimedia resources available to students will enhance their learning experience?
- Yes
- No

14. Do you find that it takes a lot of time to create and upload resources to Moodle?
- Yes
- No

Other (please specify)
15. Do your students find it difficult to attend classes every day because of other commitments?
- Always
- Sometimes
- Never
Comment (please specify)

16. Using Moodle could cause class attendance problems in the Centre?
- Yes
- No
Comment (please specify)

17. Moodle encourages students to do course work at home/outside class time?
- Yes
- No

18. Do you use the reporting feature that is built-in to Moodle to tackle student activities?
- Yes
- No
19. Name three advantages you find in favour of using Moodle to enhance your teaching experience?

20. Name three disadvantages you find when using Moodle?

21. Do you moodle to keep in contact with other teachers?
   - Yes
   - No

22. Do you use Moodle to communicate with your students?
   - Yes
   - No

23. Do you require in-service professional training on the proper use of Moodle to deliver a better learning experience?
   - Yes
   - No
   Comment (please specify)
24. Do you answer communication requests from students outside classtime and at weekends?
- Yes
- No

25. Do you believe that VLEs like Moodle will replace traditional classroom F2F teaching in the future?
- I believe that all learning will take place through e-learning in the future.
- I believe that learning will be consist of a blend of both traditional classroom and e-learning in the future.
- I believe that e-learning is just a fad at present and all learning will remain in the classroom in the future.

Thanks for your time in completing this questionnaire.
Your opinion is much appreciated.
Sean
http://www.seansmoodle.com
Appendix E: Student Questionnaire

Moodle Student Questionnaire

Welcome to this questionnaire on the advantages/disadvantages found since the introduction of Moodle into Abbeyfeale Further Education Centre.
There are 25 questions in this questionnaire.
Please take time to carefully read the questions.
Please note that any questions preceded by an * require an answer.

* What is your gender?
  - Male
  - Female

* What age group do you belong to?
  - Under 20
  - 20-30
  - 30-40
  - 40-50
  - 50-60
  - Over 60

* Is full time attendance at Abbeyfeale FEC difficult because of other commitments?
  - Often
  - Sometimes
  - Never

  Comment (please specify)

  

* Do you have access to a computer at home/outside of the centre?
  - Yes
  - No
* Do you have broadband Internet access available to you at home/outside the centre?
  - Yes
  - No

If you answered Yes to Question 5 above, which of the following mediums do you connect through to receive your broadband?
  - Fixed wire (e.g. Eircom, Digiweb etc)
  - Wireless (e.g. Eircom, Digiweb etc)
  - USB Mobile “dongle” (e.g. 3G, O2 etc)

* Do you have a European Computer Driving Licence (ECDL)?
  - Yes
  - No

* How would you rate your competency in using computer systems?
  - Beginner Level
  - Improver Level
  - Advanced knowledge of IT systems
  - Proficient using most applications
  - Expert level in applications

* What course are you enrolled on at Abbeyfeale Further Education Centre?

* Do you find Moodle is easy to use?
  - Very easy
  - Easy
  - Difficult
  - Very difficult

* How often do you use Moodle outside class time?
  - Never
  - Every day
  - Every other day
  - Only when asked
  - Once a week
  - Never
**Name three advantages you found in favour of using Moodle to enhance your learning experience?**

*Name three disadvantages you found by using Moodle?*

**Do you use Moodle primarily to achieve the following? (Tick as many as apply)**

- [ ] Access handout notes
- [ ] Access question sheets
- [ ] Access work files
- [ ] Access multimedia files
- [ ] Access quiz
- [ ] Access messages from my tutors
- [ ] Access wikis or glossaries
- [ ] Other reason

Other (please specify)

**In the past you could access handout notes etc from a shared drive (p: drive) on the Centre's server. Why do you think Moodle offers a better option for file access than the old method of accessing files via the P: drive?**

**Your Moodle access has included a number of multimedia files such as video files and links to videos on YouTube. Have you had any problems viewing these files or accessing links?**
In relation to the previous question, do you feel that multimedia or video files assist your learning experience.

- Never watch the video's
- Watching video's have no effect on my learning
- Watching video's does assist my learning

Comment (please specify)

*Do you think the quizzes that were available through Moodle assisted your learning experience?

- Liked the quizzes and felt I learned from them.
- Did not like the the quizzes and felt that they made no contribution to my learning experience.
- Paper based quizzes are a better way to help me learn.

Comment (please specify)

*On a scale of Fair to Very Good, how would you rate Moodle for each of the following content items

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<thead>
<tr>
<th></th>
<th>Fair</th>
<th>Good</th>
<th>Very Good</th>
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</thead>
<tbody>
<tr>
<td>Handout Notes</td>
<td></td>
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<tr>
<td>Work-through exercises</td>
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<tr>
<td>Quizzes</td>
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<tr>
<td>Wikis/Glossaries</td>
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<tr>
<td>Video/multimedia files</td>
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</tbody>
</table>

*Do you use Moodle to communicate with your fellow students?

- Yes
- No

*Do you feel that access to Moodle allows you the option not to attend all classes at the Centre?

- Yes
- No
Do you think that VLE’s like Moodle will have a contribution to make to student learning in the future for Centre’s like Abbyleix FEC or will traditional classroom learning remain?
- I think all learning will be online in the future with no need for class contact time?
- I think that some learning will be online in the future but in conjunction with class contact time
- I think that all learning in the future will still be classroom based similar to the way it is now

Moodle encourages me to do course work at home?
- Yes
- No

Do you have any disability or learning difficulty that effects your overall learning experience? (Answer if applicable)
- None
- Visual impairment
- Hearing impairment
- Dyslexia
- Physical disability
- Other (please specify)

Are there any other comments you wish to express in relation to the use of Moodle to enhance your learning experience in Abbyleix FEC?

Thanks for your time in completing this questionnaire.
Your opinion is much appreciated and valued.
Sean
http://www.seansmoodle.com
Appendix F:  Teacher Interviews

Teacher Semi-structured Interview Questions

Question 1
What is your understanding of the term Virtual Learning Environment?

Question 2
In your opinion does the use of the VLE enhanced teaching and communication opportunities within the FEC?

Question 3
What do you believe could be the potential barriers for teachers and learners that the changes brought about by the introduction of the VLE into the classroom?

Question 4
What teaching methods should be adapted to use the VLE to its full pedagogical potential to enhance learning?

Question 5
What do you feel are the main advantages to introducing a VLE in the learning environment?

Question 6
What do you feel are main disadvantages to introducing a VLE in the learning environment?

Question 7
Do you consider that all courses taught within the FEC are suitable for delivery through the VLE?

Question 8
Do you think that the VLE will allow FEC courses to be delivered purely through e-Learning?
**Transcripts of Semi-structured Interviews – Teacher**

**Question 1: What is your understanding of the term Virtual Learning Environment?**

**Teacher A**

“When I think of a Virtual Learning Environment, I think of Moodle. I completed my degree with the IPA a couple of years ago and they put up lecture notes on Moodle and if I remember correctly this comprised of things like class announcement and lecture notes. To be honest did think much of it at time, and thought that these things could be just as effectively be emailed to me? It was only when it was introduced into the centre a couple of months ago that I really started to think about it. I suppose it allows students access to resources when they are at home. To me allows a form of “distance education” over the net but think that it wouldn’t suit all the students. “

**Teacher B**

“I think basically it’s a system to support teaching and learning over the internet. Being used by Universities a lot but not used as much in second level and further education. E-learning springs to mind. A repository of all course information, especially course notes, project briefs, hyperlinks and the like, which the students can access 24/7 via the internet.”

**Teacher C**

“A VLE is a system designed to support teaching and learning in an educational setting. Blackboard and Moodle are VLEs. I first learned what Blackboard was about 8 years ago when I was undertaking my degree in business. I was attending the IT in Carlow and my lecturers posted notes, assignment briefs, and sample answer-sheets on each subject. They also used it to post any notifications for us regarding the course. I used Moodle for the first time a few months ago with my business students and then saw how beneficial it was. It allows them to learn using a centralized resource repository rather than just using paper based notes and books. “
Question 2: In your opinion does the use of the VLE enhanced teaching and communication opportunities within the FEC?

Teacher A

“Well in my opinion student’s love getting stuff from the web, they are probably on it anyway when they are outside the class. The VLE does allow the giving information fast which must be good thing for us teachers. For the business students up until now I always used the shared drive on the server to distribute material and that was often messy as I used an individual folder for each student and each topic. This way I now can concentrate my time on providing a good teaching experience for the students.
Tools like the Wiki and the quizzes feature are brilliant but a lot of work preparing material, but I expect that over time I will amass a good quantity of resources.

The fact that I can monitor students from the VLE and see who is logged on and generate reports is a great feature and I bet there are many more useful tools there just waiting for me to discover. Sure maybe when I get a little more confident I’ll explore the system further.

As regards the question on communication, well it’s still a long way short of F2F communication that we are used to in the classroom. But I do love the instant message feature and some of the students have personalised their profile which looks cool. I did find in the past that is before Moodle that I often just sent emails to students and sometimes they would claim that they forgot to check their mail account, but with Moodle their no excuse, so this feature has will address that.”

Teacher B

“I recently tried out the forum feature in Moodle and it worked well, good to get the student communicating. Problem was the shy learners were not participation as well as I would like, but this is a problem that exists outside Moodle as we all know. I also like the messaging feature between
the students and myself and feel that this creates an additional medium of communication that surely has a positive effect on learning.

Have used the quiz feature a lot especially multiple choice questions as this suits a lot of topics that I deliver in the centre and they helped a lot. I am still learning the software and am constantly thinking of way to integrate it into my teaching delivery.”

Teacher C

“I do believe it does enhance teaching and communication within the FEC. As we all know students learn in different ways and instead of just using books, whiteboards, overhead projectors etc. The VLE is a very interactive way for students to learn and for communication between student and tutor.

As IT is a large part of my business course I find it an exciting way to further use IT in the delivery of my course. Students were very excited about using Moodle too, it was a new way for them to receive information and communicate with me through the many facilities that in the software. I found the email facility very beneficial as students see straight away whilst using Moodle that they have a have communication for myself.”

Question 3: What do you believe could be the potential barriers for teachers and learners that the changes brought about by the introduction of the VLE into the classroom?

Teacher A

“ I think maybe you can just give all your resources to students over Moodle and I recommend that you should keep some back for class time. There is a danger that if learners are getting everything from Moodle they will feel that they don’t have to bother to attend class; I certainly think this would be an issue for a lot of teachers.

Also in the current economic climate I feel that I want to protect my job and if it is seen that I can bring students through the course with reduced class contact time, well maybe I would be expected to do this for all classes
in the future. I fear that these worries I have are in some preventing me for partaking fully in the use of this which is indeed a good resource. And another thing is there is no professional in-service training provided by management to enable us to use the resource to best effect, just told in a staff meeting that this is the way to go and obviously we are then expected to self-learn the resource.

I think that the different abilities in IT skill sets between many of the class groups and individuals in the centre would cause problems. This is bound to happen because of the different age profile of students in the FEC. Also some of the students don’t have broadband access in their homes is another barrier that we can’t do much about at present.”

Teacher B

“For older teachers this may be a problem I guess, especially the teachers with little skills with computing. Don’t know maybe more in-service training on Moodle would solve this. Teachers are a bit worried at the moment about being giving extra work and getting no thanks from management. I feel that there is a lot of work in preparing resources before they are put on the VLE and uploading big files does take a long time.

As well as that, I don’t know how to add students to courses or some of the other technical issues required to get Moodle up and running. If I hadn’t you to ask for help I don’t know how I would cope, so maybe schools and centres would have problems if they don’t have someone technical to administrate the system.

But back to your original question, I would say the time as regards preparation and uploading course content would be potential disincentives for teachers accepting the changes that the introduction of Moodle would bring to the centre.”

Teacher C
“I suppose a big barrier for students may be their ability to use IT and their fear initially around the use of IT. However this would only be a problem in the first month or two of the course as my students would be getting better and better at IT as time went on.

A lot of students complain of not having internet facilities such as broadband access at home, I think this would be a potential barrier.

As well as that, some teachers would not have IT as part of their course. Therefore some teachers’ IT skills would also be very weak. So training would have to be provided for all teachers in the Centre to enable an acceptable use of the VLE to take place. I would imagine that many students would expect all teachers to use the system to the same extent.

Getting time to put resources up onto Moodle would be a potential barrier for teachers; however this should improve as the teacher’s become more confident, compile suitable resources and become familiar with Moodle.”

Question 4: As a pedagogical and communications tool, what potential does the VLE offer to enhance learning?

Teacher A

“I don’t think it will replace the traditional classroom setting with the teacher at the top of the class for a long time to come. The VLE is a good tool though and as I said in the last question I have not extracted it full potential yet. From what I used of the resources, I feel definitely the teacher’s role is more of a facilitator to learning rather than having a traditional one. Maybe we as teachers need to sit down and adapt our teaching methods so that the technology can be used in better ways going forward. For starters I don’t believe the “chalk and talk” method of teaching delivery is the way to go.”

Teacher B

“I certainly think that us all as teachers recognise that a different teaching style will be required in a VLE context. Bit concerned about the time all this
will take and we certainly could do with a bit of training in this department. But at the moment I am experimenting with the adaption of my own teaching style to fit-in with the VLE. I think educationists and maybe a government initiative is necessary to set some ground rules on the pedagogic approach to take in relation to adapting the system into our teaching.

I recently read an interesting article on the Moodle website suggesting that teachers should adapt social constructivism within their teaching in an attempt to convey meaning with their students. I suppose this approach would encourage students to discuss ideas that would benefit their learning with other students and maybe the teacher just over-seeing the whole process. Through this approach it may help our learners to construct narratives and help them make sense out of their own learning experiences. This would be great for our adult learners as this could assist in them as participants in their own learning experience."

**Teacher C**

The VLE is a new and exciting tool for students and I know that my business students are always interested in using computers in new novel ways! I do not think that it would replace my other methods of traditional teaching such as using books, boards, handouts etc. But it is definitely a new tool to add to my delivery of course content. As I mentioned the email facility is a great communication tool available through Moodle and students when accessing their notes can also access an email from me. I also think in this regard the forum facility could be good too and as I’m still learning Moodle I hope to use other facilities embedded in the VLE next term with the students."

**Question 5: What do you feel are main advantages to introducing a VLE in the learning environment?**

**Teacher A**

“Well I do agree that the VLE is a good pedagogic tool for teachers and greatly assists the learning process for the students. The tools like the quizzes and forum offer great potential for learning. The group email facilities are great for communication between
students and fellow teachers. Also the administration feature is good to track student’s logons.”

Teacher B

“As a teacher I feel very enthusiastic about Moodle and it has some smashing feature that are very useful for teaching and allow for learning to be presented in an interactive and visually stimulating way which ought have enormous benefit especially for lower ability students.

Likewise I found the VLE to be a very useful and effective as an administrative tool and I found the quizzes features great for multiple choice questions and cloze type questions and this coupled with that fact that I could provide feedback to the students.

I feel this is great and enhances the teaching experience greatly. I guess I’m still learning the system and bet that their lot of tools that I will discover over time and incorporate into my teaching.

You know I was thinking just the other day that how on earth did we survive as teachers without this resource in the past. At any rate I guess that the next generation of students will expect us all to use resources like Moodle as part and parcel of teaching. I definitely would say that teachers and management will need proper induction and proper on-going training on not just the use, but also on how to apply the VLE in our teaching and it will be only really then that the system being to be a great success story.”

Teacher C

“For my perspective the advantages are: It’s a new and interactive way for students to learn using computers. The communication facilities as I’ve mentioned enhances the communication process between students and teachers. I can monitor what students are using Moodle for and when they
last accessed it etc. which is beneficial to me as a teacher to see who is working!

The tool for quizzes was hugely successful when used with students! It allowed them to learn in a novel way and many students said that they found it much easier to learn their theory in this way, than just reading theory books. If a student is absent for whatever reason, they can access the course resources from their own home. No more excuses.”

**Question 6: What do you feel are main disadvantages to introducing a VLE in the learning environment?**

**Teacher A**

“As with any technology I fear that its use could divide the students into “haves and have not’s”, take where students that don’t have access to broadband for example will they be at a disadvantage and not be able to avail of the VLE.

Another concern that I would have for teachers in relation to the introduction of Moodle is the amount of time it would take to integrate all their paper based resources into it. Also the time is takes to upload multimedia type files like movies to the Moodle server take ages. Instead recently I decided to create just hyperlinks to YouTube to get around the above problem and found that rather than view the movies specified, learners are inclined to view many unrelated movies on the YouTube site. Lastly I don’t myself or want teachers in general just to use the technology because it’s there or teachers adapting a habit of just sticking something up on Moodle and their teaching work are done. No, we need to work together with all our colleagues to find meaningful ways to use the Moodle to work for the benefit of our students.”

**Teacher B**

“A big disadvantage would be who would administer the system; I know that even adding students and enrolling them on courses takes know-how
and time. Would each individual teacher have to do these tasks for each of their groups or classes?

Time would be a factor when adding resources to Moodle each day and that is when you have created suitable resources. Also I am getting some problems with file sizes and file types when I try to put some multimedia files up on the system and have to try and solve the problems myself. I am beginning to think that the system is creating a bigger workload than assisting my teaching.

And what about the students that haven’t broadband at home, hard to answer that one.”

Teacher C

“Well I think some of the disadvantages are: I would see a big disadvantage with certain students in that their attendance would suffer as they could access notes at home. We have a very strict attendance policy in the Centre and students that fail to meet these criteria run into difficulties! Therefore I would see that Moodle would only be one of your methods of teaching and in most cases you cannot beat the face to face interaction between students and teachers.

The fact that some teachers have poor IT skills would be a disadvantage to introducing a VLE – training needs to be provided.
Some students on certain courses would have poorer IT skills and there would be only a limited emphasis on IT in their course. Therefore would Moodle be used to its potential?”

Question 7: Do you consider that all courses within the centre are suitable for inclusion in the VLE?

Teacher A

“I think it if very suitable for computer type courses and business groups.
Some of the other courses that I teach on are not in a computer room and have not as big an element of computing in them, so might not suit them as much. Some of the students in these classes have very poor IT skills and
Teacher B

“It could be tweaked by individual teachers to fit all courses. But I bet this could cause problems with students that have little computer skills and also some teachers aren’t great at IT either. Don’t want the “digital divide” situation arising all over again.”

Teacher C

“Don’t see any problems using the VLE for all classes in the centre, but maybe an odd group such as Skills would create problems as some of these students have little or no computer skills. I suppose it would be up to each individual teacher to decide this, but its inclusion would certainly benefit all students in the centre and I think you couldn’t discriminate against some of them be not providing access.”

Question 8: Do you think that the VLE will allow FEC courses to be delivered purely through e-Learning?

Teacher A

“No not as purely e-learning, but I think it does have a place in learning delivery in the centre, maybe as part of a blend between on-line and conventional classroom face to face delivery. The type of adult learners in this centre like the physical presents interaction with teachers and I believe that many lack self-confidence and thus like having a teacher that they can ask questions and constantly look to for advice inspiration and encouragement.”

Teacher B

“Not for a long time yet. In the short term I worry that some students may abuse the system and not attend all classes because of the VLE. I don’t
believe all students would survive on their course if they were on their own with just Moodle to steer and motivate them through the year. No, a lot of our students would openly admit that attending the Centre gave them great confidence and motivation to complete their course. It the nature of the learners that we are getting, as a lot of them are out of education for years and some had bad experiences with previous education.

I myself did a small course through e-learning last year and even though I had good tutor support, I felt it a lonely experience. However I do reckon that a blend of the VLE and traditional classroom would work great together, bet that it the way direction that education is going.”

Teacher C

“I definitely do not think that the VLE would allow courses to be delivered purely through e-learning. You cannot replace student/teacher contact and human interaction in a classroom. Most students would struggle in my opinion learning at home on their own. We have adult learners in our centre and a large majority of them would have had a bad experience or been let down by the education system in the past.

Therefore our type of student would need the interaction with a teacher and fellow students. How could they ask questions or get something explained to them without a teacher being involved. The students learn way more that you think form the classroom and the learning that takes place from one and other is immeasurable. I say only a very few of our students would survive on an e-learning course.”
Appendix G:  Student Interviews

Question 1
What is your understanding of the term Virtual Learning Environment?

Question 2
In what way do you feel the VLE assisted your learning experience?

Question 3
There are many tools and features within the VLE, please talk about how you used these to assist your learning?

Question 4
In your opinion what are the advantages by learning through the VLE?

Question 5
In your opinion what are the disadvantages by learning through the VLE?

Question 6
How often do you access the VLE from home or when you are not at the Centre?

Question 8
Do you believe that you could have completed the course by using just the VLE and not attending any of the classes?
Transcripts of Semi-structured Interviews – Student

Question 1: What is your understanding of the term Virtual Learning Environment?

Student A

“My understanding of the term Virtual Learning Environment is a system like Moodle, which enables the teacher to share all notes and files over the internet with all their students. It is very convenient as the student like myself can access the files by logging on to the Moodle website from anywhere, anytime. Some of the teachers don’t use it though.”

Student B

“Virtual Learning Environment is an e-learning thing whereby the teacher can communicate directly with the students. I found some of the new learning for FETAC Level 6 was hard and I felt the VLE helped and gave me that little bit of extra confidence to complete the course. I like it when you can contact a tutor about something and they get back through Moodle very quickly and give you feedback on how you are doing on the course in general.”

Student C

“From what I remember was said in class, it’s an interactive method of teaching that gives help and support to us students over the internet. Its Moodle I suppose! This is the first time I used Moodle and next year I am going to college and all my friend tell me it’s what they use at college all the time.”

Question 2: In what way do you feel the VLE assisted your learning experience?

Student A

“I felt the VLE assisted my learning experience as my teacher was able to upload all notes and files necessary for the course. It was very convenient
for anyone who missed a class as they don’t have to go looking for what they missed as the notes would be there on Moodle and you can just log-on 24/7.”

Student B

“I’d say the VLE introduced me to a very different way of learning through the past year which I found it very interesting and beneficial. But sometimes I fell that what the point of having the VLE in the centre if all the teachers won’t use it.”

Student C

“Whilst taking my ECDL exams and some of the FETAC exams I was able to practice with past exams placed on Moodle and also take the quiz’s and score myself which was very helpful and brilliant when I was preparing for these exams.”

Question 3: There are many tools and features within the VLE, please talk about how you used these to assist your learning?

Student A

“While completing my course we were provided with audio and video files which I found very useful and informative, it was really enjoyable and convenient to be able to access them anytime. We also had a quiz feature which I enjoyed, we were given a multiple choice quiz with four possible answers and the score would be calculated as each question were answered. And then we could go to complete the quiz a second time and the answers would be mixed up, making it a really useful and a great way to learn. Let’s see, another feature which I used on the VLE was being able to send messages to other members of the class to discuss the coursework.”
Student B

“The one feature of VLE that I used was the quiz. Having studied the module beforehand I was then able to access a quiz to test my knowledge. At the end of the quiz a score was given and the correct answers revealed. When I’d repeat the quiz, like the sequence of the correct answer is changed so one is not able to memorise it, and this is frustrating at first but I now know that it is designed to help you learn. I like when teachers put up videos on Moodle as I learn a lot from these rather than just reading about something.”

Student C

“We could message the teacher via Moodle if I or they were not in attendance at the Centre which was very helpful. Also, the quiz feature was very helpful because it gave you a score and showed you what you got wrong so you could correct them and this helped me a lot. I especially liked this when we were doing the ECDL theory exam and also when we were learning the HTML and JavaScript for the Web Authoring module and here I did use the wiki a bit to learn to learn the tag elements and the JavaScript code a bit better.”

Question 4: In your opinion what are the advantages by learning through the VLE?

Student A

“In my opinion, the advantages of learning through the VLE, was that it could be accessed anytime, from any computer. If you miss a class you don’t have to go looking for what you missed, all the notes are uploaded and can be viewed instantly. It’s also good for the environment, and for the school budget, as it saves the tutor having to photocopy many pages of notes, as they can upload them electronically. I liked this, as it saved me having to store many pages of notes and take them to class every day, instead they can be viewed online at any time. And lastly I liked the video’s that were available on Moodle and feel I learn a lot form watching and listening to them, like it’s different than just books which just get boring after a while.”
Student B

“The advantages of this type of learning are that I can learn at any time of the day or night and if say I was unable to attend class the information can be received from home. It is also possible to continue to work full time if one wishes to study by this method. It can be less costly since one does not have the expense of travelling to a college. I work on a part time job and now and again I will miss an odd class at the centre, so the VLE is a way of getting all I need to study for my exams and to complete the assignments on time.”

Student C

“For me it was great to have all the stuff I needed to do my assignments and to prepare for exams all on the one place on the VLE. Like I know that I can use the net to find all I need but I find that I get distracted on the net and end up surfing to pointless websites that have nothing to do with my course.”

Question 5: In your opinion what are the disadvantages by learning through the VLE?

Student A

“I didn’t feel there were any disadvantages for me of learning through the VLE. However, I feel some students may possibly take advantage of having the VLE system by not coming to class, as they would know they could access the notes etc. that they missed during class time.”

Student B

“I think that students must be motivated to work on their own and not be dependent on the guidance of the tutor. The personal touch is missing from this method of learning and may not suit some students who like the face-to-face connection that we have in the classroom.”
“I don’t think it’s everyone cup of tea. Students would also need to be fairly good at computers and surfing the internet. And I’d guess you would need to be strict with your allocation of time for study via this system as its very much up to the us (the students) to study unlike class timetables in the centre you know what to study and when.”

Question 6: How often do you access the VLE from home or when you are not at the Centre?

Student A

“While completing the course, I accessed the VLE almost every day from home. I be on the net anyway and would end up on Moodle at some stage.”

Student B

“I only used the VLE quiz feature when I had completed the course to test my knowledge so it was only in the last few weeks of school term and only then did I really availed of this method. I logged about once a day at that stage but I got three kids pulling out of me at home witch takes most of my time.”

Student C

“Every evening I am on my laptop, I use Facebook and Twitter a lot and sometimes my friends would send me a tweet that new notes or something were up on Moodle and I log-in there then. It’s great for the likes of that.”

Question 7: Did the combination of face-to-face teaching and online learning that the VLE provides assist you in your learning?

Student A
“Yeah the combination of face-to-face teaching and online learning I suppose does help me a lot in my learning and I believe each type of teaching complements the other very well. I do think a combination of the classroom and Moodle work OK but no, I don’t think Moodle will ever replace what we are doing in class at the moment.”

**Student B**

“Yes I did find that the combination of both, assisted me in my learning as I was able to use the quiz at the end of the term to check if I was correct in my understanding of the modules in question. I do think learning will change though and see my teenagers use YouTube a lot when they are trying to learn something new.”

**Student C**

“Yes, the combination of both assisted me on my course. We were provided with course notes, past exams, quiz’s over the weekends which were very good particularly coming up to exams.” But you do need the contact with the tutor and your classmates that you get in the centre, I know I’d really miss that.

**Question 8: Do you believe that you could have completed the course by using just the VLE and not attending any of the classes?**

**Student A**

“I don’t think it would have been possible to complete the course by only using the VLE. Even though the course content provided on the VLE was excellent and very informative, there were several modules that we studied while using the VLE which was totally new to me, such as Excel and PowerPoint. I really enjoyed being taught these modules in class, and if any of the students wasn’t sure how to do something, the tutors were very helpful and explained the topics very well to us. Therefore, if I was only using the VLE to complete these modules I would have found it quite difficult, and a lot less enjoyable as I enjoy being shown how to do something in class and then successfully doing it myself.”
Student B

“Personally I would not have completed the course on the VLE alone. I prefer the face-to-face type of teaching and that’s by a long shot.”

Student C

“As we only began using the VLE fairly late in the year, I feel personally I could have completed the course by just using the VLE. I could message the tutor with any queries or ask other course attendees. I did a course through FAS last year over the web and I found that fine, guess it depends on the sort of person you are. We (the students) were talking about this at lunch today and many others said that they didn’t agree with me and said that they wanted to be in class to ask questions to the teacher and said that they also learnt lots for each other as well”.
Appendix H: Student Observation Checklist

Class: _____________________  Duration (hrs): __________

Room: _____________________  Number of Students Present: __________

Date: _____________________

Please complete this form by ticking the appropriate boxes and filling in any other information as necessary.

1. Do you notice if students are using the VLE at the start of the class?
   Yes ☐  No ☐

2. What percentage do you think were logged-on to the VLE?
   Less than 10% ☐  More than 30% ☐
   About 50% ☐  More than 50%

3. For the students that were logged-on to the VLE did you notice what activity they were engaged in through the system.
   Accessing Resources ☐  Using tools like the Quiz ☐
   Communicating ☐  Accessing Multimedia Files ☐

4. If your class was conducted in a computer room, did you request students to log-on to the VLE during class time?
   Yes ☐  No ☐

5. Did any students request help logging-on to the VLE with account names or password issues?
   Yes ☐  No ☐  (If Yes, number helped) __________

6. Did any student request your help in relation to accessing resources, tools or features from within the VLE?
   Yes ☐  No  (If Yes, number helped) __________
7. In relation to Question 6 above, what area did require help from you with the students?

- Resources such as Hand-out Notes
- Using tools like the Quiz
- Communicating or using the Forum
- Accessing Multimedia Files
- Wiki or Glossary Tool

8. Did you notice the students communicating through the VLE with other students?

- Yes ☐
- No ☐

(If Yes, number noticed) _______

9. Did you notice the students communicating through another medium other than the VLE?

- Yes ☐
- No ☐

10. If you answered Yes to above, what medium were the students communicating through?

- Email (e.g. Gmail or Yahoo) ☐
- Bebo ☐
- Facebook ☐
- Twitter ☐
- Other Please Specify: _______________________

Are there any other comments or information that you wish to include here:

_________________________________________________________________________

Thank you for your time and effort in completing this form which is much appreciated.
Appendix I: List of Available Courses at Abbeyleix FEC

**Full-Time**

- FETAC Level 6 Advanced Certificate in Business Management
- FETAC Level 6 Advanced Certificate in Art and Business
- FETAC Level 5 Business Administration
- FETAC Level 5 Business Secretarial
- FETAC Level 5 Nursing Studies
- FETAC Level 5 Community Care
- FETAC Level 5 Art Craft and Design
- FETAC Level 4 Creative Art
- FETAC Level 4 Skills

**Part-Time**

- ECDL Core Level
- ECDL Advanced Level (All Modules)

BTEI Courses Which include FETAC Minor awards for the following modules:

- FETAC Level 5 Word Processing
- FETAC Level 5 Wood Carving
- FETAC Level 5 Communications
- FETAC Level 5 Text Production
- FETAC Level 5 Desktop Publishing
- FETAC Level 4 Mathematics
Appendix J: Supplementary Findings

Below are some findings and comments that are not recorded anywhere else in this thesis, but may or may not be of use to anyone involved in the introduction of a VLE process into a FEC setting.

The Cost of Installing Moodle in the FEC

When it was first touted in the FEC that the VLE was to be introduced into the educational setting, our director organised a meeting with the web developer to install and configure Moodle on the Centres website. This initial installation and configuration cost in the region of €500 and is considerable in the current climate and worrisome of consideration for a small rural FEC like the one where the study was being conducted.

Also a short amount of time after the VLE was implemented into the FEC, the amount of web space available by the Centre’s web hosting organisation was deemed to be far too small. After a meeting with the web developer it was deemed necessary to lease an additional 20 Gigabyte of web space. While this may not seem significant it is worth considering as another extra cost was applicable.

Cloud Computing

While findings in this study clearly suggest that many teachers highly value the VLE to allow access by students to their hand-out notes, assignments briefs, hyperlinks etc., some teachers in the Centre are actively using cloud computing to achieve the same result. Recently technological developments such as Microsoft Live Skydrive which offers up to twenty five Gigabytes of free online storage does offer great potential for teachers going forward. Many teachers could obviously use this type of online storage to deliver files to students rather that the VLE. This would signify that for a VLE to be successful is could be suggested that educators have to make better use of the many tools within the VLE and integrate the platform with add-ons like LAMS to really extract the best from possibilities from the system and make it compete with the many emerging technologies that are now becoming available.