Title:
The Introduction of Virtual Learning Environment e-Learning Technology At A Sixth Form College: A Case Study

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“I certify that this work is entirely my own and has not been accepted as part of a submission to another degree course”

Signed: ........................................

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ABSTRACT

The use of technology to support teaching and learning in further education has moved from a mere experiment to become a fundamental part of many colleges' curriculum. This has brought a significant change into the FE colleges' operations and management of course delivery. A major part of that change has been intensified by the widespread introduction and use of VLE e-Learning technology. One of the characteristics of the technology is that it combines a variety of tools and resources into a single integrated system. To embed VLE into a college curriculum is not merely to employ a single intervention but to change the fabric of students and teachers' experiences of teaching and learning as well as that of the senior management of the institution concerned.

In the past, much of the literature on VLEs has concentrated on studies which list and compare system functions, describing small scale and short term applications or providing speculative theories and predictions. Little attention has so far been paid to analysing what effects a VLE's use has on the participants particularly across a large group of users and over a long period of time.

To this extent, this study presents an evaluation of the introduction and management of the recently introduced VLE e-Learning technology at a sixth form college. The study attempted to answer four fundamental questions:

- How effective was the case study college in managing the introduction and implementation of the technological change to enhance the use of e-learning?
- What was the impact of the VLE e-learning on teaching across the case study college?
- What was the impact of the VLE e-learning technology on students' learning?
- Did the VLE e-Learning technology cut the costs of course delivery?

To answer these questions, a case study research method was used so as to have a real life scenario rather than making hypothetical statements. The impacts of the technology were carefully evaluated against the four stated questions by using the Davis Technology Acceptance Model and change management concepts.

The study concluded that the introduction and management processes of a technological change in an academic institution play significant roles in its acceptance and use.
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GLOSSARY OF TERMS

A2- The Second Year of Advanced Level Programme
AAT- Association of Accounting Technician
ADKAR- Acronym for; Awareness, Desire, Knowledge, Ability and Reinforcement
AdNet- Administration Intranet
AS- Advanced Subsidiary
AVCE- Advanced Vocational Certificate in Education
BECTA- British Educational Communication and Technology Agency
BTEC – Business and Technology Education Council
Dfes- Department for Education and Skills
e-LTDLCM- e-Learning Technology Development Life Cycle Model
EOU- Ease of Use
FE- Further Education
GCE- General Certificate of Education
GCSE- General Certificate of Education
GNVQ- General National Vocational Qualification
ICT- Information and Communication Technology
ILT- Information and Learning Technology
MBWA- Managing by Wondering Around
NCIHE- National Committee of Inquiry into Higher Education
NGFL- National Grid for Learning
NOF- New Opportunities Fund
OASIG- Special Interest Group Concerned with Organisational Aspect of ICT
Ofsted- Office for Standard in Education
PC- Personal Computer
TAM- Technology Acceptance Model
UK- United Kingdom
VET- Vocational Education and Training
VLE- Virtual Learning Environment
VR- Virtual Reality
CHAPTER 1 – INTRODUCTION

1.1 BACKGROUND INFORMATION

Economic, social and technological forces continue to change the global economy, the way of life in organisations and the world. Specifically, these forces have and continue to revolutionise teaching and learning in academic institutions. Urden and Weggen (2000) assert that technology the rapid obsolescence of knowledge and the training, the need for just-in-time training delivery, and the search for cost-effective ways to meet the training needs of a globally distributed workforce have redefined the processes that underlie the design, development and delivery of courses in academic and training institutions. In addition, Urden and Weggen commented that the need for different learning models due to the skills gap and demand for flexible access to lifelong learning have also influenced teaching and learning.

In addition, the current technology revolution in society emerging from the development of Information and Communications Technologies is also transforming the learning paradigm. This technology facilitates communication and allows learners to access information in an open-ended way and to construct new knowledge representations in their minds, which is the basis for learning. Thus, learning will improve since the new technologies can help teachers to engage learners in active, constructive, intentional, authentic, and cooperative learning (Jonassen et al. 1999).

Formal learning is shifting from the teaching-centred receptive knowledge acquisition process, derived from teaching to the more active, knowledge construction experience. It is not only the approach that is different; the UK educational system is also undergoing a change in its pedagogical foundations. The whole formal learning process is in question: the participants' roles, the learning environment, the educational centres, the materials and contents, the means used as well as the disciplines have been transformed and renewed (Jonassen et al. 1999).

It is a notable fact that, previously, academics have controlled the pace, place, time and style of presentation and interaction. However, with the advent of e-Learning, the
control of these elements shifts to the learner. This has fundamentally redefined the role of the academic. Williams (2002) describes the role of the tutor as changing to that of a moderator, responding to comments, stimulating debates and asking open questions. Blass (2001) identifies the shift as listed in table 1a that the 'residual' academic will need to make in order to remain employable in the 'future' university.

Table 1a - THE EMERGENT MODEL OF THE FUTURE ACADEMICS

<table>
<thead>
<tr>
<th>New role for academic</th>
<th>New skill/knowledge needed to fulfil new role</th>
<th>Old skill/knowledge being replaced</th>
</tr>
</thead>
<tbody>
<tr>
<td>New forms of conversation with students</td>
<td>New language, syntax and mode of conversing</td>
<td>Lecture and tutorial systems</td>
</tr>
<tr>
<td>ICT usage</td>
<td>Use of technology as a means of communication</td>
<td>Use of technology to help produce aids to communication</td>
</tr>
<tr>
<td>Monitoring of performance</td>
<td>'Policing' students in terms of tracking logins, contact, and electronic assessments</td>
<td>Mass marking of student assessments will disappear as assessment goes on-line</td>
</tr>
<tr>
<td>Increased visibility</td>
<td>Recorded and broadcast delivery</td>
<td>Lectures in one place only to one group of students</td>
</tr>
<tr>
<td>Creative and innovative</td>
<td>Continuous capacity to learn to keep ahead of pace of change</td>
<td>Knowledge base will change quickly over time, so previous knowledge becomes obsolete</td>
</tr>
<tr>
<td>Ability to deliver key skills plus cognitive skills plus development of reason</td>
<td>Addition of key skills to curriculum which adds the development of abilities as well as development of processes of knowledge</td>
<td>Narrow delivery according to learning outcomes will be superseded by broader development outcomes and generic learning outcomes</td>
</tr>
<tr>
<td>Cyber thinkers</td>
<td>Development of cyber thought processes including rapid information processing and thought processes</td>
<td>Specific narrow academic focus with limited application, or any retro thought process contributors</td>
</tr>
<tr>
<td>Global appreciation</td>
<td>Increased knowledge of international contexts and applications and development of comparative analysts</td>
<td>Specific comparative field will disappear as everyone becomes a comparative analyst</td>
</tr>
<tr>
<td>Role of change agent</td>
<td>Organisational development skills</td>
<td></td>
</tr>
<tr>
<td>Delivery of workplace education</td>
<td>Ability to balance corporate goals with educational values and standards</td>
<td>Isolation of academics from real world</td>
</tr>
</tbody>
</table>

Source: The emergent model of the future academics (Blass, 2001).

Although, Blass's assertion is viewed by some in the academic community as over exaggeration of the changes taking place, the earlier study by Skolnic (1998) in which
he identified the principal themes emerging from the literature regarding higher education in the twenty-first century further strengthened Blass's argument. He highlighted that there will be pressure for both institutional and employees' survival as universities will be economically or efficiently driven. The transition from the teaching paradigm to a learning paradigm emerges as extensive use of information technology leads to learning networks and consumer-centrism. Given these emerging views of the future for universities and further education colleges, it is understandable that most further education colleges and universities are embracing some e-learning ideas and entering the virtual market place.

On the basis of these arguments, it is therefore understandable why the UK governments felt that all this can not be left aside or dealt with by complementing the traditional learning activity with adaptations to the new digital media. Further more, the new communication and information technologies affect fundamental aspects of our society by imposing new strategies in the construction of the knowledge of the world that individuals develop.

Weiser (1991) commented that these technologies require an integrating, global treatment, taking into account their most innovative ubiquity and collaboration enabling features as the fundamentals of this new learning paradigm, where context and interaction play an important role. If this assertion holds, then, the activity theory based on constructivist principles (Vygotzky 1978) would have to become the driving force of the new learning style. In this context, learners are the main developers of their knowledge construction; teachers are there to guide them in the process. To do this, learners have the right to gain access to all the information they need, and appropriate pathways to select and experience the knowledge by interacting with information and with others, and let them develop creative thinking in every chunk of learning that will help them construct their increasingly developing new knowledge of the world in a progressively more independent way (Constructionism, Papert 1991). It is however clear that academic institutions in the UK can not and must not shy away from these developments but rather find ways of coping with the trends.
1.2 HOW THE UK GOVERNMENT RESPONDED TO THESE DEVELOPMENTS

The UK responded to these developments by instituting a shift in policy. The most significant of the shift was the replacement of Keynes by Friedman as the guiding light of the government's political economic strategy that entails both quantitative and qualitative changes for education. This radical change has exposed the UK organisations to a more complex environment than it has been in the past. Community expectations of the public sector have changed markedly. Recipients of government services are now considered clients and demand quality service. At the same time, the public sector agencies are under increasing pressure to be more efficient. Hence these have forced the public sector organisations to adopt commercial management practices to satisfy both of these new demands. In the educational sector, the shift has led to a general reformation of the further education sector. As part of the reformation process, there was a critical review of further education funding policy for the first time in the 1988 Education Reform Act since 1944. The move was geared towards the accomplishment of a viable, efficient and modern further education sector.

Against this background, not only was educational expenditure along with all other items of public expenditure to be severely cut back, but also both what is, and can reasonably be expected of education and training has been altered. Gradually, a shift from state to private provision was encouraged and implemented. But this process is not complete – even in FE only a 'quasi-market' exists according to LeGrand (1997). Hence the process of 'marketisation', which has characterised the reform of public services in the UK, has been felt particularly in the FE sector (Carter & Fairbrother, 1999).

The academic environment moved from being an environment of academic autonomy to one of accountability to stakeholders (Middlehurst & Kennie, 1997). Armstrong et al. (1997) describe the changes that have taken place within the last 15 years as nothing short of 'a world-wide revolution in further and higher education'. The list of changes includes: (i) the larger, more diverse student group; (ii) changes in funding, both to higher education institutes (HEIs) and students; (iii) changes in learning spaces; (iv) modularisation; (v) change from an elite to a mass system of higher
education (Nicholls, 2001). Added to this is the lifelong learning agenda (Watson & Taylor, 1998) and the role of technology in this new world, or 'Learning Society' (National Committee of Inquiry into Higher Education (NCIHE), 1997).

In order to make the further education sector more efficient, the recruitment, retention and achievement of students became integral criteria for determining the funding needs of the further education colleges. These government initiatives have led to an increasing number of quasi-autonomous colleges with devolved budgets competing for individual clients in the market place. Increasingly, education is being treated as a private good rather than a public responsibility.

The concept of e-learning was instituted and encouraged by the government to support a flexible learning culture. For instance, while David Blunkett was the UK Secretary of State for Education, he announced the launch of UK e-learning, proposing collaboration between top universities (Thomson, 2000). So also in July 2003, with the publication of its consultation document, the government set out its vision for embedding e-learning throughout the compulsory and post-compulsory education sectors in a unified way. The belief was that e-Learning would enhance the efficient management of resources, reduce the cost expended on the planning and delivering of lessons, raise student recruitment, retention, and achievements and above all create a flexible learning culture. There has been some empirical evidence which suggests that the technology can enable academic institutions to achieve these objectives. For instance, Phoenix University was launched as a private e-university in the USA generating $12,800,000 from on-line and distance learning courses (MacLeod, 2000). It is also important to reflect on the response of the further education sector to the changes in the government policy.

1.3 HOW DOES THE FURTHER EDUCATION SECTOR RESPOND?

It appears that the shift in government policy has exerted much pressure on the further education sector. Skolnik (1998) identifies principal themes emerging from the literature regarding higher education in the 21st century and highlights the pressure for

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1 See http://www.cilip.org.uk/update/issues/april04/#1
both institutional and employees' survival, as further education and universities will be economically and efficiently driven. Due to this, the further education sectors have further intensified their cost cutting strategies. The changing faces of the funding regimes, which depend on students' recruitment, retention, and achievement, have again subjected the further education colleges to a certain degree of cost rationalisation. It has also forced fierce competition among the further education colleges particularly in striving for the larger share of the market, which to a large extent is a prelude to survival. A lot of pressure has been exerted through budgeting. In order to cope with all of these changes and meet government targets for funding purposes, e-learning technologies have become popular within the sector.

What then is e-Learning?

In this teaching and learning development, however, several terms have been attached to characterise the innovation and creation that has been occurring. Some terms are: e-Learning, distributed learning, online learning, Web-based learning and distance learning.

Zahm (2000) described computer-based learning as usually delivered via CD-ROM or as a Web download and that it is usually multimedia-based learning. Karon (2000) discussed the convenience factor of well designed computer based learning by saying that any well-designed computer-based training, whether it is networked or delivered via the internet, is more effective than traditional instructor led training. Karon went on to say that self-paced courses are available when learners are ready to take them, not just when the course delivery is scheduled or the instructor is available. Hall (1997) incorporated both Zahm's (2000) and Karon's (2000) definitions by underlining computer-based training as an all-encompassing term used to describe any computer-delivered training including CD-ROM and World Wide web.

Similar also to e-Learning and its related terms is technology based learning (Urden and Weggen 2000). Urden and Weggen claimed that e-Learning covers a wide set of applications and processes, including computer-based training, Web-based learning, Virtual classrooms, and Digital collaborations. They make e-Learning inclusive and
synonymous to all computer-related applications, tools and processes that have been strategically incorporated into the teaching and learning process.

In summary, e-Learning is a terminology which is widely used to cover a wide set of applications and processes, such as Web-based learning, computer-based learning, virtual classroom, and digital collaboration. It includes the delivery of content via intranet/extranet (LAN/WAN), Internet, audio and videotape, satellite broadcast, interactive TV, and CD-ROM. E-learning is basically one methodology and technology for delivering and enabling learning. "It is learning with the aid of information and Communications technology tools\(^2\)"

In most FE Colleges, an e-Learning initiative is an implementation of teaching and learning and collaboration that is made available to teachers and students over the college intranet, and is thus readily available to all the stakeholders at their convenience. E-learning is designed to make teaching and learning available to a broader audience, while saving costs. The most widely used of these technologies in the further education sector is the Virtual Learning Environment technology (VLE).

It is important to stress that Virtual Learning Environment e-Learning Technology is only one of the families of e-Learning. Ellaway et al (2005) define VLE as an integrated set of online tools, databases and managed resources that exist as a coherent system functioning collectively in support of education. VLEs are increasingly common in all areas of further education. The author further commented that this widespread use of VLEs is a relatively recent phenomenon which is driven by the increasing ubiquity of computer-based activities in education, the ever-growing pressures for increasing the quantity and quality of educational efficiency and student support, and the technical opportunities provided by increasing mature web technologies.

To this extent, it is wise to say that this new radical response to a shift in government policy has resulted in a significant change in the management of FE colleges and

\(^2\) This definition was extracted from The UK Government Learning Strategy Website. See http://www.dfes.gov.uk/elearningstrategy/elearningstrategy.
above all the teaching and learning. These institutions must pursue this trend and adapt to the new environment in order to be able to compete and remain vibrant in this technological age. West-Burnham et al (1995) commented that:

If Schools and Colleges are to respond effectively to the demands made upon them in an increasingly turbulent environment, they may very well find themselves devoting as much, if not more, management attention to the understanding and influence of organisational culture as they do to the creation and modification of formed organisational charts and role relationships.


This period of change needs to be managed in order to help the further education colleges’ guard against failure and to be able to appropriately address the issue of employee concerns. Prosci, (2002) comments that change management is the process, tools and technologies used to effectively manage people and the associated human resources issues that surface when implementing change. For a change process to be successful, it must be accepted by all the stakeholders. Numerous studies have been carried out by different scholars such as Prosci (2002), Born (1995), Baird et al (1990) Gray and Stake (1998) and Humphreys (1996) in the area of change management and they have suggested numerous models for managing change.

However, the most relevant to this study is the Davis Technology Acceptance Model (TAM) which was introduced in 1989. The model is considered to be useful in this study because it is a tool that aims to isolate factors which most affect the integration of new technology in an organisation and can also be used to predict user acceptance of technological systems and applications.

Hence this model will be used as a basis for evaluating the success or failure of the recently introduced VLE e Learning Technology at a South East Essex sixth form college and to investigate the acceptance or rejection of the technology by teachers and learners. The reason being that the acceptance of the technology by the employees of the organisation, will to some extent influence the effective use of the technology which may impact positively on the recruitment, retention, and achievements of learners and possibly cut costs of delivery courses.
1.4 OBJECTIVES OF THE STUDY

The study sets out to answer four fundamental questions:

- How effective was the case study college in managing the introduction and implementation of the technological change to enhance the use of e-learning?
- What was the impact of the VLE e-learning on teaching across the case study college?
- What was the impact of the VLE e-learning technology on students' learning?
- Did the VLE e-learning technology cut the costs of course delivery?

1.5 PURPOSE OF THE STUDY

As in many further education institutions, the use of Virtual Learning Environment e-Learning Technology at a South East Essex sixth form college was introduced and implemented in 2003 with the aim of promoting and supporting teaching and learning activities. However, the activity of individual teachers in the context of the use of the technology since the technology was introduced, is still in question. There is currently inadequate central support for individual teachers who have developed interest in the VLE e-Learning technology within the case study college. By 2005 the growth in use of e-Learning reached the point where an upgrade to the infrastructure and the support services was needed. This development could have offered the case study college's leaders the opportunity to review and develop the e-Learning support to assist in meeting the needs of the users. Unfortunately, that opportunity was missed by the management of the case study college.

The case study college's senior management approach to the introduction and management of the technological change raised a serious question in regard to their ability to create an organised, coherent e-Learning system that the stakeholders could accept and use to support teaching and learning in an effective way. The whole process of change was neither totally planned top-down nor bottom-up. There were clashes of departmental culture and misunderstandings to be resolved between the college management and the academic staff.
Prior to the introduction of the VLE e-Learning technology, there were no formal consultations with heads of academic departments and there were no debates about priorities and funding allocation. As a result of this disorganisation and lack of senior management’s consideration of issues relating to change management, individuals and departments within the case study college resisted the change. Administrative rules and practices were in chaotic state. No one person or group were initially in control and the leadership roles in this were really not clear. Although, the roles of leaders were clearly stated in the organisational structure of the college, these roles were often not carried out as appeared on the chart.

After four years of the existence of the technology at the case study institution, the college is yet to experience a coherent institutional e-Learning system which is in line with strategic priorities. If there is any positive thing about the whole process is the fact that there now exist a few departments which are organised as groups within which staff are taking on specialised roles, sharing resources and using templates to improve the quality of teaching and learning. However, this arrangement was more of individuals within a department who arranged themselves this way.

Currently, there is only one contact point for networked central and local helpdesk, providing a range of user support services. Perhaps, the most significant of the existing problems is the fact that there are no formalised ways to deal with future upgrades, both in terms of technical change management and in terms of communicating and negotiating with users. The question then arises as to why it was not possible to aid the actualisation of the management aspirations in terms of e-Learning objectives. Could that be attributed to how the technology was introduced or was it the change process? Were there other underpinning issues that needed to be addressed in order to achieve the full benefits of VLE e-Learning technology?

Against this background, the study looks at various ways of planning and implementing technological change to enhance users’ acceptance in academic institutions by using the Davis Technology Acceptance Model (TAM). It also evaluates how a South East Essex sixth form college has introduced and managed VLE e-Learning technology in terms of a complex adaptive systems model. It is hoped that the resulting insights may help other further education colleges who are
seeking to develop a coherent and effective e-Learning service, and are finding that things do not always go according to plan.

1.6 LIMITATION OF THE STUDY

The focus of the study will be on the extent to which e-learning technology can affect learning in an academic institution with particular emphasis on a South East Essex Sixth form college. There will be a case study which will be based on the recently introduced Virtual Learning Environment e-Learning technology at a South East Essex Sixth form college. Although there will be extensive review of literature relating to leadership of post-compulsory institutions and e-Learning, the actual study will be limited to a South East Essex Sixth form college. The focus of the study will be more on the processes of introducing and managing technological change to aid users' acceptance and enhance students' learning. The study will aim to establish the best practice for managing technological change in the further education sector. The research will constitute a pilot study for a national initiative on e-Learning. It will assess the likely success or failure of this initiative.

1.7 ORGANISATION OF THE STUDY.

The study will be divided into six chapters:
Chapter 1 is an introduction to the subject of enquiry.
Chapter 2 will provide a comprehensive review of literature on e-Learning, the Davis Technology Acceptance Model and the management of change.
Chapter 3 will outline the research design and methodology.
Chapter 4 will provide essential contextual information
Chapter 5 will present the main findings
Chapter 6 will present an analysis, synthesis and discussion of the findings
Chapter 7 will provide conclusions and recommendations
CHAPTER 2 - LITERATURE REVIEW

2.1 INTRODUCTION

The antecedent of the rapid developments in information and communication technology began in 1947 when Claude Shannon, an engineer at the Massachusetts Institute of Technology (USA), cut up the world in a new way. Instead of dividing the world into pieces of matter, as atomic physicists had done successfully, he cut it into pieces of information. These pieces of information are bits-binary digits. All messages, all information, can in principle be turned into a string of bits. Bits are the fundamental units of information.

Shannon's work showed that every channel, no matter how narrow, no matter how long, from interplanetary radio links to the streaming light that pours down a fibre-optic cable, can be treated in the same way as a path for the bits into which all information can be cut. His work also showed that there is always a feasible way to send a signal along a channel, no matter what the background noise. It is possible to send back pictures from a spacecraft at the edge of the solar system with only a few watts of power as long as those messages are correctly encoded.

While Shannon was developing information theory, digital computing was being born in rooms full of vacuum tubes. The tubes were switches arranged in such a way that they could turn each other on or off. They represented and solved mathematical problems which boiled down into pure logic. The switches could be open or closed, yes or no, ones or zeros. In other words, the switches work in the world of bits, which in principle, could be used to carry any information imaginable. This principle suggests that what matters about computers are the bits, not the switches that represent them. The stage was then set for an extraordinary technological leap.

Prior to this discovery, particularly during the industrial revolution and its aftermath, machines had to work in the world of men. They had to be of a size that men could relate to and control. The physical work that they did determined the size they should be. However, the developments in computer technology have changed all that due to the ability of computers to treat information with mathematical precision, to transmit
it with arbitrary accuracy and to manipulate it with unprecedented speed. This is bringing into being a whole new concept within and around the physical world.

The amount of computational power that is now available to mankind is astronomical. The extensive use of information and communication technology around the world is enormous. For instance, it was reported in the Economist (1994, 1998) that computers and communications now account for most of the capital expenditure in American Industry.

Also in 1997, the United Kingdom government announced its intention of encouraging the widespread use of information and communication technology in teaching and learning in schools and colleges. The main purpose of the programme, the National Grid for Learning (NGfL), was introduced to provide a network of information and learning materials. The funding for this was achieved via the Standards Fund. To enhance the success of the programme, the government introduced a supporting national programme of in-service training for teachers and school librarians. This was funded by the National Lottery’s New Opportunities Fund (NOF). These programmes have been the key components of the government’s information and communication technology strategy for schools and colleges. The 2004 report published by the Office for Standards in Education (Ofsted) through the Department for Education and Skills (DfES) indicate that funding for information and communication in schools increased substantially since 1998. From April 1999 until December 2003, £230 million was made available from the New Opportunities Fund across the United Kingdom to help increase the competence of all teachers in their use of information and communication technology in teaching and learning.

The amount of communication that goes on today is, if anything, even more astonishing. Consequently, the means of communication are also changing. These changes in computation and communication are what academics refer to as

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3 This fund was distributed to the Local Education authorities (LEAs) via the Standards Fund. The DfES also made specific grants to various development agencies and software authors to support the creation of digital resources.

4 For more information on this, please see Ofsted (May 2004 Publication) entitled ‘ICT in schools’ The impact of government initiatives five years on, HMI 2050. These statistics were extracted from the publication

5 The scheme was delivered through independent training organisations, approved by the NOF and quality assured in England by the TTA. LEAs were directly involved.
information revolution. This information revolution has impacted tremendously on every aspect of human life ranging from the way and means by which humans transact business, to the way they communicate, as well as having a significant impact on academic institutions in the sense that, it has changed the way teachers teach and how learners learn. For instance, there are new approaches to the planning and delivery of courses as well as the management of academic institutions. One of these approaches is the extensive use of e-Learning technologies. Due to the growing number of institutions using the technologies coupled with huge investments in them, academics have developed an interest in evaluating the roles the technologies play in teaching and learning. There have been significant studies which attempt to evaluate the benefits of these technologies in teaching and learning both in the USA and UK. It is important to reflect on the available evidence in the USA and UK. Why USA? America has always been in the forefront of computer technology and as such they tend to have wider experience in this area, which may help to rationally explain some issues relating to e-Learning use in the UK.

2.2 THE REVIEW OF STUDIES ON THE EVALUATION OF THE BENEFITS OF E-LEARNING

In the last few years, schools and colleges in the UK have dramatically increased spending on classroom technology mainly because there has been a widely held belief by governmental, business and educational leaders that wiring schools, buying hardware and software, and distributing the ICT equipment throughout will lead to abundant classroom use by teachers and students and improve teaching and learning (Cuban, Kirkpatrick, and Craig, 2001). In recent years, a growing number of critics of technology in the classroom have raised questions about what kind of return schools and colleges have received for this investment.

The UK’s return on this massive investment in class room technology seems even more questionable when parents, policy makers, and educators look for evidence of the impact on student achievement. Supporters of education technology continue to believe that technology will make a difference to academic achievement, but tend to rely on anecdotal evidence about student motivation and the development of critical thinking skills to support this belief. They have been forced to depend on faith and
their observations in a large measure. This is because there is still very little scientifically based research to gauge the effectiveness of technology on students’ learning. Given the lack of much evidence that technology increases academic achievement, it is not surprising that some observers are asking whether the resources and time devoted to technology might produce more significant increases in academic achievement if focused on other educational needs. However, there seems to be some emerging evidence in the USA about the impact of e-learning in academic achievement which will be examined in the next section.

2.2a The American Experience

Recently, a growing number of researchers in the USA have published studies that provide substantial evidence that technology can play a positive role in academic achievement. Several organisations like Edutopia, the North Central Educational Lab (NCREL) and the Centre for Applied Research in Education Technology (CARET) are documenting research studies that link technology to increases in academic achievement. Two studies are representative of the growing body of research on technology’s role in academic achievement. One of these studies is Wenglinsky’s (1998) study, “Does it Compute?”

This study looked at the relationship between educational technology and student achievement in Mathematics. The study concluded that for 4th and 8th graders, e-Learning technology had a positive impact on achievement as measured by NAEP’s mathematics test. However, it is critical to note Wenglinsky’s caveat to this conclusion. He argued that not all uses of e-Learning technology were beneficial. Wenglinsky found that using computers to teach low order thinking skills, was negatively related to academic achievement. By contrast, teachers who had students’ that used computers to solve simulations saw their students’ mathematics scores increased significantly. As he explored the reasons for the different ways that teachers used technology, Wenglinsky found that professional development was the difference between those teachers who used skill and drill software and those who used software that could create simulations. Teachers who had training and skills used technology in ways that focused students on simulations and applications which encouraged
students to develop problem solving skills. Those teachers who had no training used skill and drill software (Wenglinsky, 1998).

More recently, educators in Missouri (USA) published their findings on a study of the impact of the state-wide eMints programme on academic achievement. This programme was designed as a comprehensive approach to assist teachers to integrate technology into their teaching. Participating teachers received classroom equipment over a two-year period. In addition to traditional workshops, eMints training included peer coaching for individual teachers. The training was designed to help teachers integrate technology, so that they could use inquiry-based teaching and emphasise critical-thinking and problem-solving skills.

The research team found that when inquiry based learning and true technology integration were combined, they created a synergy that really boosted students' learning (Brannigan, 2002). The power of pairing technology with inquiry learning was said to be directly reflected in the test scores of more than 6,000 3rd and 4th grade students in eMints classrooms who scored in the proficient or advanced categories when compared with other students who took the Mathematics Assessment Programme tests (Brannigan, 2002; Evaluation Team Policy brief, 2002). These two studies highlight the importance of re-thinking current perceptions of the role of technology in education. They also offer a clear direction for educators who are trying to answer the questions raised by academics. Both studies argue that improvements in student learning occur when technology is paired with instructional strategies like project-based instruction, which actively involves students in intellectually complex work that demands higher-order thinking and problem-solving skills.

Becker's (2000) research on teacher professional engagement and constructivist-compatible computer use added further weight to the argument that technology is a particularly strong tool for supporting active, inquiry-based learning. Becker argues that the kind of active learning necessary to master principles and concepts and explain student work is easier to implement in a technology-rich environment where students have a rich array of information to work with rather than only pre-selected,
quality filtered textbook content, when communication structures enable students to pose relevant questions to appropriate individuals and when technology-based tools such as databases, analytic software, and composition software help them to extract understanding from information.

Each of these studies also highlight the importance of Michael Fullan's observation that "the more powerful technology becomes, the more indispensable good teachers are" (Fullan, 1998). If teachers are expected to use technology in ways that enrich and enhance student achievement, they must therefore be provided with the professional development they need to develop the confidence and skills to apply technology and an understanding of how technology supports standards-based education. Preparing teachers to use technology effectively may also mean following the example of Missouri's eMints programme and ensuring that professional development focuses on instructional strategies like project-based learning, and cooperative or collaborative strategies, in addition to technology skills.

2.2b The UK E-Learning Experience

Since e-Learning is just emerging as a major development in further and higher education, the projections of the UK's educators and industry leaders through the past decade have obtained particular significance in public policy deliberations as well as in institutional planning efforts.

There appears to be empirical evidence such as the Becta 2007 Harnessing Technology Review Report, which suggests that, the huge investments in e-Learning technologies by academic institutions in the UK have triggered the interest of academics in the evaluation of the effectiveness of the technologies to ascertain whether the investments are commensurate with their benefits in terms of the performance levels and progress of students.

In drawing conclusions from other available studies, it is necessary to acknowledge the extent and nature of the evidence available. Large scale surveys such as those undertaken as part of the evaluation of curriculum online (see Kitchen et al., 2006),
the impact of ICT in schools (Condie et al., 2005) or by BESA (BESA, 2006) provided quantitative data on access, provision, attitudes and preferences using samples that can be defended statistically. Much of the evidence of impact of ICT on attainment and a range of outcomes such as motivation and engagement were derived from small-scale case studies which are often summaries of the impact of the technology in its earlier stages. The number of different technologies available and the rate at which they are developing provide considerable scope for researchers.

Foster's (2005) study confirmed that e-Learning technology can make a significant impact on teaching and learning, if properly introduced and managed. The author asserts that:

...there is much scope for the use of e-learning to enhance the learner's experience..., and calls for more and smarter investments in networked colleges and systems

(Foster, 2005: p. 66)

In addition, Foster also reiterates the importance of harnessing technology strategy and makes some specific suggestions about the kinds of Information and Learning Technology tools for which there is a need for further deployment in the further education sector:

The use of technology however is about more than capital investment and there has to be a strategic approach to staff development and the personalisation of learning through, for example, learner tracking tools, diagnostic tools and multimedia approaches that improve recruitment, retention and achievement. Technologies should be harnessed to transform teaching and learning in the classroom and beyond... Developing tools and resources for practitioners must be a priority

(Foster, 2005: p.67)

Foster's emphasis on harnessing technology is consistent with the UK Government approach of promoting the importance of e-learning in recent years. The Department for Education and Skills (DfES) document, 'Success For All', outlined a long-term reform strategy for the further education and training sector, and explicitly recognised
the importance of the use of electronic technology to deliver, support and enhance teaching and learning:

E-Learning continues to grow in importance in widening post-16 participation and in improving learner retention and achievement... Our aim now is to improve quality, raise standards and increase coherence in e-Learning across all post-16 delivery routes.

(DfES, 2002: p.32)

Evidence also emerged from various research studies conducted in the UK in recent times which suggested a link between e-Learning and student performance and motivation. The ImpaCT2 Study into the use of Information and Communication Technology (ICT) in schools, commissioned by Becta, found that the new technologies in schools had a motivational effect on some learners, particularly on boys (Comber et al., 2002). Another report from the ImpaCT2 evaluation (Harrison et al., 2003, p. 5) found evidence of a positive relationship between ICT use and achievement in schools, although in some subjects, the effects were not statistically significant. On the issue of attainment, available evidence is somewhat inconsistent, although it does appear that, in some contexts, with some students, in some disciplines, attainment has been enhanced.

Based on the findings of these studies, it is reasonable to say that, the adoption of e-Learning technologies into the curriculum by any further education college may not be a prelude to improvements in the students' learning and improve the quality of teaching or automatically cut costs expended on the teaching and learning resources. It all depends on how the technologies have been introduced into the institution and how well the employees of such an institution have accepted the change. The management of academic institutions therefore have significant roles to play in achieving positive outcomes.

In chapter four of this research, it is noted that the case study college's academic staff were not satisfied with the way the Virtual Learning Environment e-Learning Technology was introduced and managed by the senior management. Hence, this factor was likely to have led to resistance to the technological change taking place
within the college. In addition to this, the learners' attitude towards using technology has been shown by researchers to be one of the most important factors in technological acceptance and student motivation. Learners' perception about the characteristics of instructional delivery media and their ability to learn by using an e-Learning approach have been shown to be the key determinants in predicting student motivation and success in traditional classroom (Coggins, 1988; Gee, 1990).

These perceptions may also be equally important when implementing computer technologies as the major source of information transfer to students in Virtual Learning Environment. Some empirical studies have also indicated an interaction between learning style and attitude toward computer technology. According to Reiff and Powell (1992), their reflective observation subjects had a negative attitude toward computers. They suggested that for students whose learning styles are concrete and experimentation-activity oriented, computer-assisted instruction would be an appropriate option, while when reflective learners are introduced to this method of instruction, they may feel uncomfortable and frustrated. Similarly, a study by Enochs, Handley, and Wollberg (1984) found that those students with more interest in objects or things (Concrete experience) and less interest in working with people learned better by using computer-assisted instruction.

Further more, Smith’s (1982) Learning-How-To-Learn (LHTL) theory suggests that learners rely on a “bag of tricks” which includes prior learning strategies and tactics, as well as things that worked in other situations to make sense of a new environment. In his contribution to the debate, Eastmond (1995) indicates that prior learning experience, among other factors, is important for students to adjust to online learning.

Al-Kodmany et. al.'s (1999) case study on using Asynchronous Learning Networks (ALNs) to teach students on two different campuses also found that without prior exposure to the technologies involved, the technologies used in the course became barriers to learning. One of their suggestions for online instruction is not to attempt to teach the technology and the course at the same time; rather, to impose certain prerequisites on technologies that are used in the course or include a mini-course on the technologies that are part of the course itself. Some researchers have also argued that the successful implementation of any new technology depends on factors related
to users' attitudes and opinions (Davis, Bagozzi, and Warshaw, 1989; Zoltan and Chapanis, 1982). For instance, Webster and Hackley (1997) studied teaching effectiveness in technology-mediated learning and found a positive relationship between students' attitudes toward technology and their learning outcomes. It seems, then, that being knowledgeable about technologies and knowing how to use them is significant to learning outcomes.

It is worth noting that, while there is evidence that e-Learning technologies are increasingly becoming integrated into the learning experiences of students and that learning is being enhanced by new technologies, growth has been limited by the need to provide fast connectivity and a Virtual Learning Environment (VLE) or Learning Platform. The evidence that exists indicates that good resources can have an impact on motivation and attainment. Once established, e-Learning can offer flexible, personalised learning and bridge the gap between home and college learning. There is a concern however, that there is not yet a good understanding of how teachers can support students and make the most of e-learning packages.

The research conducted by Becta (2005) concluded that, where Virtual Learning Environment e-Learning technologies are used, they allow access to online resources anywhere and at any point in time. The research also showed that the communication software gives students the opportunity to express their views and post comments in discussion forums or on message boards. This allows them to discuss sensitive issues or provide feedback. Somekh et al., (2004) suggest that the establishment of Virtual Learning Environments has provided a focus for collaboration between institutions where it is used as a repository of resources for sharing.

Blass et al (2003) also argued that e-Learning does offer a Unique Selling Point (USP) that is consistent with the expressed national priorities of widening participation and increasing commercialisation of the education sector. They further argued that that

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6Learning platforms describe ICT systems which deliver and support learning, combining functions such as organisation, mapping and delivery of curriculum activities and offering facilities for learners and teachers to enter into dialogue about the associated learning activities (Becta, 2005). Hence both Virtual Learning Environments (VLEs: Software tools which bring together resources for curriculum mapping, delivery, assessment, tutor support, communication and tracking) and managed Learning Environments (MLEs: a range of information systems and processes that support learning and the management of learning) are examples of learning platforms.
Unique Selling Point is accessibility. Accessibility in this context has two strands. First, the physical flexibility of e-learning in terms of time, place and pace allows for the participation in learning of those who would otherwise be unable to access learning experiences (Blass et al, 2003). The learners may be able to access the e-learning materials from home, work or wherever they choose, at the time of day or night that they choose, and they control the pace at which they progress through the materials. Canning (2002) found that students create learning spaces in their own homes, rather than using any official space allocated to them by their employing organisation.

This flexibility of access is not meant to imply that the e-learning experience should be entirely unconstrained, rather that the control of pace, place, time and style of presentation and interaction shifts more towards the learner. Blass et al (2003) argue that some time constraints may be put on e-learning discussions without jeopardising their success. Secondly, e-learning offers the opportunity of being accessible in the sense of recognising learners’ needs and designing an experience to address them.

It is worth mentioning that the introduction of these technologies into the FE sector has not been smooth. Some colleges have managed the implementation of the technologies and some have had great difficulty in incorporating them into their day-to-day practices. Despite these problems, empirical evidence suggests that many universities and further education colleges in the United Kingdom are embracing e-Learning in one form or another without really getting to grips with the extent of the paradigm shift required to make e-Learning a success (Becta 2007).

The Davis et al (1989) study has shown that the successful implementation of e-Learning technologies in academic institutions largely depends on how it has been accepted by the users which to a large extent is the outcome of a technological change management process. For instance, Becta (2005) research concluded that the implementation of a learning platform within a school is affected by four main issues:

- An evaluation of financial outlay required;
- The potential benefits;
- Technical factors such as training;
• Change management.

These factors were thought to ensure that the technological competence of staff and consideration of how the platform would enhance and enable teaching and learning practices. In their contribution to the debate, Ofsted (2005) commented that, in England, few schools had a strategic plan that saw ICT as a tool for raising standards. They also concluded that planning lacked coherence and there was little evidence of rigorous evaluation of the use of ICT at institutional level. BESA (2005) reported that the best opportunities for exploiting the potential of ICT were in schools where technology was an integral part of institutional planning strategies which included procedures for maintaining and enhancing the ICT capability and infrastructure of the institution on a regular basis. Therefore a strategic plan, preferably one that is developed in the context of a whole-school policy, is important in that it identifies priorities, sets targets and timetables and gives a framework against which to monitor and evaluate progress.

It has been argued that leadership and management are significant factors in the extent to which policy becomes practice and developments in ICT become embedded into the life of the school and experience of staff and students. The Ofsted (2004) report concluded that good leadership was a critical factor in the development of ICT maturity and recommended that courses on strategic leadership in ICT should be made available to middle management and those working to support schools in implementing new ways of working with ICT. In particular, they recommended that all those working with schools should be aware of the impact of ICT on teaching and learning in their area of expertise. Despite all this, empirical evidence suggests that where the technology has been effectively embedded, it is impacting positively on teaching and learning. For instance, in an extensive review of literature on ICT and attainment, Cox et al. (2003) found evidence of positive effects on student attainment in almost all National Curriculum subjects. This was most noticeable in the core subjects of English, Mathematics and Science where there has been greater investment in the development of subject-specific ICT resources to support teaching and learning. Cox et al (2003) concluded that teachers' pedagogies had a large effect on students' with aspects such as the technologies selected, the ways in which they were deployed and the extent to which the teacher planned and prepared for the lesson.
being significant. Further more, Harrison et al. (2002) showed that the use of ICT can motivate students and result in a positive effect on attainment amongst those students who make relatively high use of ICT in their subject planning.

Despite the many optimistic projections of its prospects, the expansion of e-learning is currently meeting with an assortment of obstacles, including the reluctance of many of the teaching staff at a South East Essex sixth form college to accept the VLE e-Learning technology. It has become a kind of ‘contested terrain’ in the college, a realm in which there has been much dispute between the different faculties and administration about control over the development and maintenance of courses.

On the qualitative side of the impact of the technology on knowledge acquisition, there is a significant number of institutions that are currently exploring distance learning via e-learning technology who are expressing disquiet about the immediate implications of this choice of education and its overall effects on further and higher education. Noble, (1998) characterised much of this sort of education as a ‘digital diploma mill’, providing a shallow semblance of the education that is available through more traditional delivery. Kreuger and Stretch (2000) purported that the technology-centred perspective of education will weaken education in certain disciplines.

The most significant problem identified with the early e-Learning experience has centred on the development of the e-Learning materials themselves. David Hoyle, head of commissioned learning productions for the University for Industry (now renamed as Learn Direct) summed up the situation:

> Higher Education institutions and Further Education colleges leave a lot of fantastically good content but in traditional media-print or old-fashioned multimedia. There is a very good opportunity to convert material for web use. Generally, institutions have not been as adept as might have been hoped.

(Goddard, 2000: p.72).
Williams (2002) suggests that there are three areas which need to be considered:

1. **Pedagogy**- The materials designed and placed on the system must be capable of addressing the needs of individual learners and generally facilitating the acquisition of knowledge. The technology must be able to develop the competence of each learner through teaching and learning strategies that build on individual needs. Hence, this requires strategies that actively engage and stretch all students; that creatively deploy teachers, support staff and new technologies to extend learning opportunities; and that accommodate different paces and styles of learning.

2. **Participation**- This basically means that the technology needs to be easy and readily available for the learners where and when needed. There is a need for involvement on the part of both the learners and their tutors. The technology should be designed in a way that would enhance interaction. Ellaway, R. (2005) argued that this participation could be influenced by the two forms of cultural context which apply to VLE, the cultures they sit within and the cultures they may contain. The VLE is a distinct entity which has its own internal cultures manifested by particular language, practice, attitudes and values shared by its users. A VLE e-Learning technology rarely constitutes the primary activity of its users, as opposed to student learning or separate from a course context. The cultural contexts that VLE e-Learning technology exist and function in were grouped by Ellaway into three:

   a. **Distal cultures**- These are the cultures that exist beyond the immediate context of use which include those of the parent organisation, the regional location and those that pertain to the network of practice (NOP).

   b. **Proximal**- Those of immediate context of use which to a large extent include the specific instances of its different communities of practice (COP) as well as other context-specific factors.

   c. **Individual cultures**- These are the cultures of the individuals that participate in the proximal communities of practice but which are not part of the proximal cultural mix. In other words, we are talking of their cultural background and influences.

3. **Access**- It is highly significant that the technology is available to learners at any time and anywhere. The learners must also have access to the resources
needed to access the system whether at home or within their institutional environments.

However, regardless of the arguments in support of or against the use of e-Learning technology in academic institutions, the most important thing is that the technology is widely used in the further education sector. E-Learning technology has undoubtedly revolutionised the way courses are delivered and how students learn all over the world. Hence, this is a significant change which must be carefully introduced and managed by academic institutions, if they are to benefit fully from the available technologies.

Of course, change in itself is an inevitable element to which humans are subjected. However, the focus of this study is more on the management of technological change with particular emphasis on users’ technology acceptance. The Davis Technology Acceptance Model (TAM) which was introduced in 1989 will be useful in the process of evaluating the introduction of the Virtual e-Learning Environment at a South East Essex sixth form college. This is significant in the sense that the model highlights the important role that users’ acceptance plays in the management and achievement of technological change objectives. In order to understand the significance of technological change in organisations, it is important that we first do a comprehensive review of the concept of change. What then is change?

2.3 THE CONCEPT OF CHANGE

In his book, The Empty Raincoat, Charles Handy (1994) observes that:

…the world keeps changing. It is one of the paradoxes of success that the things and ways which got you where you are, are seldom the things to keep you there.

(p. 49).

The well-known observation of John Henry Cardinal Newman (1801 – 90) that ‘to live is to change, and to be perfect is to have changed often’, seems very relevant to our contemporary world even though the assertion was made in the last century.
Baird et al (1990) comment that:

...change pervades modern society and is happening at an ever-increasing rate.

(p. 252).

O'Murchu (1987) gives a broad interpretation of change in the modern world by citing some examples which highlight the vastly increased pace of change in recent times. For example, in 1950 over 40% of the world population lived under colonial control but the figure was reduced to only 1% by 1977. This has given rise to enormous political changes, which have opened up commercial opportunities for many companies, for example, in the former Eastern Block countries. In the field of knowledge, whereas our quantity of knowledge doubled between 1600 and 1900, a period of 300 years, currently the quantity of information is doubling every three years. O'Murchu (1987) captures the deep impact of this phenomenal change by asserting that:

The most powerful waves of change in today's world take place at the broadest and deepest levels of our experience, creating a ripple effect in our social institutions and in our personal lives.

(p. 9).

Despite the high profile given to change in contemporary discussions, change itself is not a recent phenomenon. In their detailed account of The Universe Story, Swimme and Berry (1992) show how change is a recurring theme as they trace the long sequence of transformations of the universe over 15 billion years of existence from the initial flaring forth to the imminent Ecozoic era. Their narrative is one of constant change. Another early contributor to the debate, the Greek philosopher Heraclitus (470 - 536 BC), held that all things are in a state of continual flux and 'nothing is permanent but change' (quoted in Tripp 1976:74).

Although of necessity brief, this overview serves to establish the reality of change in both contemporary society and throughout history, the main difference over time being its accelerated pace in the modern world. Therefore it seems that 'we cannot block the flow of change. We may hold it at bay for a while but ultimately it waits for neither humanity nor its mighty institutions' (O'Murchu 1987:217). However, in
business organisations and academic institutions, particularly in the United Kingdom, there have been persistent changes in the business environment and a constant shift in the United Kingdom government's policies in education, which have had negligible effects on schools and colleges.

Organisations are constantly changing in order to adapt and keep up with the pace of changes taking place in the environments in which they operate. Some notable scholars hold the view that, 'change is the order of the day and that if there ever was a time when business-as-usual described the way businesses ran, that time has elapsed' (Webber 1988: 4). Living as we do in a world that is characterised by rapid change, this reality is reflected in society's undertakings and institutions. Many contributors to the management debate have commented on the impact of change on organisational life, which is necessitated by the turbulent and demanding environments in which they operate. Due to the changes taking place in the organisational environments since 1980s, Cummings and Huse (1989) comment that, there is now emphasis on changing the organisations to make them more responsive to today's highly competitive and uncertain conditions.

Contrasting the earlier stable organisational world of the 1950s and the 1960s with the current reality, Daft and Lengel (1994) are of the opinion that, today's companies and their environments are more similar to the weather than to the precise assembly-line systems typical of Newtonian thinking. Faced with the reality of this unpredictability, some scholars such as Baird et al (1990) have concluded that, in order for today's organisations to survive and grow, they must change with the environments in which they operate.

Somewhat earlier, in a time of relative stability, solutions to organisational problems seemed more attainable, but increasing complexity of contemporary challenges has made their resolution more difficult. Gray and Starke (1988) support this statement by asserting that:

It used to be that the field was replete with simplistic, prescriptive formulae designed to give managers an off-the-shelf approach to change. Today, however, it has become one of the most complex areas in the field of organisational behaviour.

(p. 589).
In addition, change can emanate from different sources as discussed below.

2.4 SOURCES OF CHANGE

There are many possible starting points for a change programme. Change can be internally or externally driven. Paulk (1991) refers to these as “push” and “pull” change factors respectively. Internally driven change is initiated when the organisation develops a new process or technology and “pushes” it into use to gain competitive advantage; in contrast, externally driven generally originates from customer demands, arising from requirements for a better service (Paulk, 1999). On the other hand, in the public sector organisations, new government initiatives and legislative changes together with continuing pressures on resources can force public sector bodies to consider radical change as a way of life (Information Technology Infrastructure Library (ITIL) 1999). Kotter, (1995) asserts that the basic goal is the same, which is to make fundamental changes in how business is conducted in order to cope with a more challenging market.

It is important to stress that technological change is taking place all around us (Hammer, 1990; Kotter, 1995; Davis, 1989) from major technological change such as the development of change complex robots capable of exploring far reaching planets of our solar system to minor changes in administrative procedures at work (ITIL, 1999). The rate of change of technology means that the technology used by any organisation is in a constant state of flux (Buchanan, and Huczynski, 1985); each generation of business application and IT infrastructure is superseded by the next wave of developments (ITIL, 1999). In their contribution to the debate, the United Nations Development Programme (UNDP), (2001) commented that advances in technology bring potential benefits and risks, which are not always easy to predict. They further claimed that today’s technological transformations are intertwined with globalisation, and together they created, the network age which has brought with it new opportunities and increased social and economic rewards from creating and using technology.

Technology is not inherently good or bad; however, the value of technology depends on how it is used (UNDP, 2001). It is in any organisation’s best interest to adapt and
grow with technological change. However, the rate of change of technology is not going to slow down anytime soon (Kotter, 1996) and as such needs to be managed. In the process of getting the change process right in an organisation, Anderson, et al., (1997) posited that the strategic management of technology should involve the senior management team in making a commitment to certain goals by analysing the organisation’s performance in relation to its technologies and future prospects and then produce a vision and a mission statement.

Kotter, (1996) asserts that the urge for organisations to keep growing in this technological age, adapting to technologies is a must. However, he sounds a note of caution in this regard by stressing that, in order to adapt and grow with advancements in technology, the proposed technologies must be accepted by the stakeholder and carefully adopted by the organisation as whole. The issue here is not just about having advanced technology in place; the most important question should be how the technology has been accepted by the stakeholders. To this extent, this study will explore the Technology Acceptance Model in order to understand the processes that are needed to implement a successful technological change in the further education sector.

2.5 ACCEPTING TECHNOLOGY

Introducing new technology into an organisation is one thing, but accepting the technological idea is another. Often, the leaders of an organisation might have their own notion as to what should be in place in order to facilitate and enhance productivity. This notion might be contrary to what the employees believed to be the required tools for enhancing productivity. The issue here is not just about introducing technology but more importantly is the acceptance of the technological initiative by the majority of the potential users. In order to explain this, figure 2.5a shows the Technology Acceptance Model (TAM) which was first introduced by Davis in 1986. The TAM isolates factors which most affect the integration of new technology into an organisation and is used to predict, explain and increase user acceptance of technological systems and applications and to understand why end-users can reject the use of new technological solutions. The TAM focuses on two major characteristics of
a system or software application, the perceived ease of use (EOU) and the perceived usefulness (U).

Figure 2.5a: The Technology Acceptance Model (TAM) (Davis, 1989)

2.5a Explanation of the Davis TAM

The purpose of the model was to predict the acceptability of a tool and to identify the modifications which must be brought to the system in order to make it acceptable to users. This model suggests that the acceptability of an information system is determined by two main factors: perceived usefulness and perceived ease of use.
Perceived usefulness is defined as being the degree to which a person believes that the use of a system will improve his/her performance. Perceived ease of use refers to the degree to which a person believes that the use of a system will be effortless. Several factorial analyses demonstrated that perceived usefulness and perceived ease of use can be considered as two different dimensions (Hauser et Shugan, 1980; Larcker et Lessig, 1980; Swanson, 1987).

As presented in figure 2.5a, the Davis Technology Acceptance Model postulates that the use of an information system is determined by the behavioural intention. On the other hand, the behavioural intention is determined by the person’s attitude towards the use of the system as well as his perception of its utility. According to Davis, the attitude of an individual is not the only factor that determines his/her use of a system, but is also based on the impact which it may have on his/her performance. Therefore, even if an employee does not welcome an information system, the probability that he/she will use it is high, if he/she perceives that the system will improve his/her performance at work.

Davis perceived that ease of use also influences in a significant way the attitude of individual through two main mechanisms: self-efficacy and instrumentality. Self-efficacy is a concept developed by Bandura (1982) which explains that the easier a system is to use, the greater should be the user’s sense of efficacy. Moreover, a tool that is easy to use will make the user feel that he/she has a control over what he is doing (Lepper, 1985). Efficacy is one of the main factors underlying intrinsic motivation (Bandura, 1982; Lepper, 1982) and it is what illustrates the direct link between perceived ease of use and attitude. Perceived ease of use can also contribute in an instrumental way to improving a person’s performance. Davis (1989) asserts that due to the fact that the user will have to deploy less effort with a tool that is easy to use, he will be able to spare efforts to accomplish other tasks. However, it is important that we clarify the fundamentals indicated in the TAM’s diagram to enhance understanding.
Perceived Ease of Use (EOU)

This was defined as 'the degree to which a person believes that using a particular system would be free of effort'. This shows that EOU and U are influenced by external variables, such as:

- a user's experience of the current system and fear of redundancy.
- popular opinions regarding the new implementation, both positive and negative.
- age-users feeling they are too old to learn (Collerette, et al, 2002).

In this, TAM suggests that EOU has a direct effect on U and U has a direct effect on BI as illustrated in figure 2.5a as having a direct impact on the Actual System Use. TAM further posits that the two characteristics, EOU and U result in the potential users attitude towards using the proposed system or application (Davis, 1989).

Perceived Usefulness (U)

This was defined as 'the degree to which a person believes that using a particular system would enhance their performance'.

Behavioural Intention (BI)

This was defined as 'the measure of strength of ones intention to perform a specified behaviour'. Ajzen and Fishbein (1967) suggestion that a user's behavioural intention or BI is a person's subjective probability that they will perform some behaviour and is determined by the users' attitude to the proposed system which is in agreement with Davis assertion. In terms of technology acceptance, BI can be a potential user's intention 'to use' or intention 'not to use' a proposed system.

Attitude Towards Using (A)

This was defined by Davis, (1989) as "an individual's positive or negative feeling about performing the target behaviour".
Careful examination of the TAM shows that the root cause of the non-acceptance of a technological system or application is the impact of the external variable on its potential users. In a way, what this indicates is that the probability that a system will be accepted and used can be increased by focusing and acting on the factors that influence users’ perception of a system (Collerette, et al, 2002). In their contribution to the issue of technology acceptance, The Human Development Report 2001 (UNDP, 2001) listed three reasons for supporting the adoption of new technology:

1. Potential benefits, where the expected benefits are at least as great as the risks.

2. Costs of inertia versus costs of change, where new technologies improve on those they replace.

3. Means of managing risks, where potential harms can be managed and their likelihood reduced through systematic scientific research.

Kotter, (1995) argued that, while the reasons listed above are valid from a managerial point of view, empirical evidence suggests that it remains difficult to convince workers in many organisations of the need for technological change. Fender, (2004) asserts that people react in different ways to change. He suggests that while some embrace change, some pine for the old days of clearly defined roles and responsibilities. In order to solve this problem, Born (1995) suggests that in a typical IT project, fewer than 33% of the design effort should concentrate on technologies and ideally over 2/3’s or more should deal with people issues, because the introduction of any technological solution in any organisation constitutes a significant change which needs to be carefully introduced and managed.

In addition, there have been other studies which complement the TAM. One of these is the Technology Acceptance Traffic Light Model which was introduced in 2004 by Kearns. The logical explanation of the model resembles the notion of Lewin’s 3-step model:
1. Unfreezing- overcoming the habits and inertia of an organisation.

2. Moving- making the change to the new system.

3. Refreezing- making the changes last (Lewin, 1947).

The Technology Acceptance Traffic Light Model was based on the notion that the introduction of any technological solution is synonymous with change. On the basis of this notion, Kearns (2004) proposes that by using the Davis’s TAM together with change management techniques coupled with the lessons learned from the most common reasons for Business Process Remodelling (BPR) failure, it may be possible to enhance a user’s perception of a proposed system and generate a positive attitude toward using it. In theory, this was thought to result in a positive behavioural intention towards using the proposed technological solution. Overall, the model suggests the best practice for a change process by using a traffic light analogy:

1. **Red**: stop usage of current technology solution

2. **Amber**: the transition period between the old and the new system.

3. **Green**: go, if the way is clear, i.e. implement the proposed solution as long as the environment and human resources are ready to accept it.
Figure 2.5b: The TAM Traffic Light Model (Kearns, 2004)
2.5b Explanation of the TAM Traffic Light Model

The model consists of three fundamental areas namely:

- The Current Technological Solution (CTS)
- The Change Management
- The Proposed Technological Solution (PTS)

The Current Technological Solution (CTS) of the model exhibits similar variables identified by the TAM:

- \( BI \ [c] \): Behavioural Intention towards using the current solution.
- \( A \ [c] \): Attitude towards using the current technological solution.
- \( U \ [c] \): Perceived usefulness of the current technological solution.
- \( EOU \ [c] \): Perceived Ease of Use of the current technological solution.

The Proposed Technological Solution (PTS) exhibits equally similar variables identified by the TAM:

- \( BI \ [p] \): Behavioural Intention towards using the proposed solution.
- \( A \ [p] \): Attitude towards using proposed technological solution.
- \( U \ [p] \): Perceived Usefulness of the proposed technological solution.
- \( EOU \ [p] \): Perceived Ease of Use of the proposed technological solution.

In spite of these suggested solutions for introducing and managing change in organisations, people still resist technological change, why? The understanding of the reasons for this could help to reduce this obstacle. Hence there have been numerous studies done in this area and it is important that we review some of them.

2.6 RESISTANCE TO CHANGE

The advent of new technology requires both new technological skills and knowledge (Heiss and Jankowsky, 2001). The typical reaction to new technology is fear, anxiety and uncertainty in the form of resistance to the change (Trader-Leigh, 2002); resistance to change is accepted as a natural reaction. It is however, one of the major obstacles facing organisations when trying to implement change (Prosci, 2002). Employees fear and resist change for a variety of reasons, fear of redundancy, fear of
extra work and other factors. Born, (1995) found that management who rationalise away such concerns will generate an instant protective reaction.

Numerous studies have revealed that people often resist change. Egan (1988) offers useful explanations as to why this is so. He asserts that, ‘the three certain things in life are death, taxes and resistance to change’ (p. 13). It is widely assumed that resistance to change is a common and natural phenomenon (Buchanan and Huczynski, 1995). Initiating change is a competitive and often hostile activity (Lindblom, 1994).

The introduction of new technological solutions is often met with resistance. Resistance to change can be regarded as an external variable which will have a direct effect on Use and Ease Of Use in the TAM (Davis, 1989). Patrick (2001) proposes that the champion of change may perceive what the audience for change considers as careful assessment and scrutiny as resistance to change. However, the human factors involved in change are cited as a major obstacle (Collerette et al, 2002). It is rational to mention that major technological changes or innovations can still anticipate resistance, especially when proposed changes alter values and visions related to existing order (Trader-Leigh, 2002). Trader-Leigh (2002) likens it to “a kind of warfare” and notes that anyone who wants change has to overcome massive inertia. Technological change that satisfies one group of people can often reduce the satisfaction of other groups (Trader-Leigh, 2002; Morton, 1991, ITIL, 1999) Lindblom (1994) believes that change ordinarily benefits some people by injuring others. The scholar further observed that the best way to block change is to render people unaware of possibilities. He notes that dominant stakeholders use this tactic to misrepresent the change efforts and present an enhanced view of the status quo.

In order to throw more light into the debate, it is important to review other studies which have highlighted other factors that are responsible for resistance to change. For a start, the insights gained by the industrial psychologist James Fisher (1996) from his work as a company executive and consultant, shed some light on the intransigence that can arise. He notes that, while technical systems change rapidly, the systems that govern our social behaviour have evolved little in 2,000 years.
Moreover, in the introduction to his book Imaginization, Morgan (1993), asserts that, ‘an organization has no presence beyond that of the people who bring it to life’, indicating the critical importance of people’s behaviour in organisations in the quest for change.

Cummings and Huse (1989) note the obstacles that can arise:

Change can generate deep resistances in people and in organisations, making it difficult if not impossible to implement organizational improvements.

(Cummings and Huse, 1989: p. 111).

In addition to unwillingness arising from the general workforce, Garratt (1987) highlights problems associated with specialists and their perspectives on moving to new ways. This is because many specialists are trained to exclude areas of knowledge, skills and attitudes throughout their training and professional life so that the idea of accepting and valuing areas previously excluded is a difficult one and liable to be rejected unless handled carefully.

So far in the discussion, it has been shown that resistance to change in organisations, both at general and specialist levels, can pose significant problems when trying to introduce a new way of doing things.

Baird et al (1990) asserted that:

...people do not resist all change, only change that they do not understand or that they see as psychologically or economically threatening.


Concurring with this view, Gray and Stake (1988), comment that not all changes are resisted. They suggest that, as people have a natural instinct to adapt to their environment, resistance arises in reaction to a particular situation, rather than emanating from a built-in response to change.

However, in my view, to effect change, managers need to understand the source of this resistance. Gray and Starke (1988) classified these sources into rational and emotional resistance to change. Rational resistance is considered to be associated with
a lack of knowledge or information and suggest that it can be addressed by providing the necessary facts about the proposed change.

Humphreys (1996) provides some broad insights into the emotional needs of people. He comments that:

...the primary need of people in our culture is to be loved, recognised, valued and accepted. Any threat to that emotional and social need poses great danger for people and so it is not surprising that, just as for physical threats, creative protections are developed to reduce or eliminate risks to emotional and social well-being.

(Humphreys, 1996: p. 1).

The author also identified the workplace as one of the locations where these threats can arise. Gray and Starke (1988) assert that:

...it is important to remember that 'emotional resistance cannot be overcome with rational solutions' as it is encountered usually when logic and reason fail to reduce resistance.

(Gray and Starke, 1988: p. 576)

In the context of problem solving in an organisation, Garratt (1987) argues that two inputs are needed (i) a technical content side and (ii) a social-emotional input which provides the 'lubrication' for (i). He asserts that, without the social-emotional side being consciously managed, the problem-solving process overheats and seizes up. Several scholars have contributed to this debate on resistance to change including Argyris (1995), Bennett (1991), Cummings and Huse (1989), Daft (1995), Egan (1988), Gray and Starke (1988), Ivancevich et al (1994) and Kanter (1984). Analysing the various perspectives put forward by the cohort of contributors to the change debate, the following broad areas emerge as underpinning resistance to change in organisations:
Self Interest:

Daft (1995) asserts that:

Employees typically resist a change they believe will take away something of value.


So also Humphreys (1996) argues that the perceived loss may relate to economic well-being, e.g. some people may fear losing their jobs or employees may just not know the economic outcome of a proposed change.

Gray and Starke (1988) comment that:

...changes in social systems almost always affect the status of people' and consider that any change resulting in reduced status for an individual or group of individuals will be resisted.

(Gray and Starke, 1988: p. 577).

Fear:

Kanter (1984) is of the opinion that uncertainty is one of the outcomes of change. This in turn, can lead to fear of failure as people are faced with learning new ways. Gray and Starke (1998) argue that the psychological security associated with tried and tested ways is removed, leading to a perceived loss of predictability. They further stressed that unless these fears are acknowledged and addressed, resistance to the proposed change may ensue.

Group Pressure:

Ivanicevich et al (1994) comment that pressure to resist change may come from peers while Pugh et al (1983) have the view that the strong influence of group norms has long been established a long time ago by making reference to Elton Mayo’s Hawthorn studies and suggest that this reality must be taken into account when effecting change.
Inertia:

Ivancevich et al (1994) emphasise the attitude of ‘this is how we have done it for years’. This sort of attitude captures the type of resistance to change built in by the traditional rules, policies and procedures in many large organisations. It has been shown that self-interest, fear, group pressure and inertia may all conspire to impede the path of change. Therefore, what can organisations do to ameliorate their impact?

Organisational Culture:

It could be argued that organisational culture represents the largest barrier to the effective implementation of e-Learning and knowledge management initiatives. The learning need assessments should specifically address organisational culture and the organisation’s readiness to embrace e-learning. Learning organisations are inherently more poised to reap the benefit of a substantial e-learning investment. Cultural readiness can often be ignored in the process of initiating e-learning. Organisational culture is the personality of the organisation. Culture is composed of the assumptions, values, norms and tangible signs (artifacts) of an organisation’s members and their behaviours.

2.7 RESPONSES TO RESISTANCE TO CHANGE

Force-field Analysis, developed by the distinguished psychologist Kurt Lewin, can be a useful tool for broadly analysing change situations. Lewin (1951) proposed that change ensued from the competition between driving and restraining forces. In other words, when a change is instigated, some forces drive and facilitate it, while others create resistance to it. The required change can be achieved by decreasing the restraining forces and increasing the facilitating forces. Egan (1988) provides some systematic steps in the use of Force-field Analysis at the transition stage of change:

- List all the restraining forces, i.e., obstacles to change
- List all the facilitating forces – persons, places, things, trends
- Underline the forces in each list that seem most critical
- Identify strategies for taking appropriate action on those identified.
Herbert (1976) sounds a note of caution regarding the possible strategy of merely increasing the driving forces. He refers to the 'coiled spring effect' (p. 345) in this strategy i.e. an increased resistance is encountered when pushing downward on a coiled spring; likewise only applying more pressure to change may result in merely increasing the resistance. Bearing in mind this possibility, the choice of a balanced approach, paying attention to both restraining and driving forces (Egan 1988), seems necessary in order to progress change.

While Force-field Analysis provides general insights into effecting change, in addition some more specific tactics for overcoming employee resistance can be effective. Numerous scholars, including Bennett (1991), Daft (1995), Egan (1988b), Kirkpatrick (1985), Kotter and Schlesinger (1979) and Nutt (1986), have recommendations to offer in this area. Possible approaches suggested include:

**Communication and Education:**

The aim here is to make employees aware of all aspects of the proposed changes and to convince them that such changes are necessary. Daft (1995) argues that:

> Good communication and education are used when solid information about the change is needed by users and other who may resist implementation.

*(Daft, 1995: p. 282)*

McGill (1996) asserts that:

> Good communication is an essential component in successful change. All stakeholders need to understand, accept and approve of proposed major change and this requires comprehensive and continuing communication to all who will be affected.

*(McGill, 1996: p. 52)*

Despite the need for communication, it seems that, at times, organisations can be remiss in this regard. In his contribution, Jones (1996) commented that organisations
and individuals sometimes try to make changes by stealth (p. 16). To endorse his point, Jones recounts how a group of managers adopted Tom Peter's idea of Managing by Wandering Around (MBWA). Initially, this was done without informing staff, who having been left in the dark about the change, began to worry about what was happening. However, once it has been explained, staff will have the opportunity to offer support and encouragement to the initiative. Therefore, communication is an important tool in solving this particular uncertainty.

In a recent position paper, the Irish employers' body stressed the need for direct communication with staff, particularly in creating a climate of continuous improvement. It expressed the view that 'communicating with employees should not be a difficult, complicated or contentious process. However, there is evidence that this is often the case (Business & Finance 1996: 35).

Plant (1987) identifies a particular problem area in communication, especially in larger organisations. He labels it the 'soggy sponge' of middle management, which often prevents effective communication in either direction as messages are distorted, if not blocked. By putting mechanisms in place to facilitate upward feedback, Plant suggests that this 'soggy sponge' can be penetrated.

**Participation and Involvement:**

When endeavouring to bring about change, the received wisdom suggests that the involvement of employees is important. Smith (1995) reports that:

...most management theorists support the notion that successful change requires participation.

(Smith, 1995: p. 19)

While Kanter (1983) considers that people at all levels in the organisation need to be 'change masters', by allowing potential resisters to participate in designing change, they are enabled to understand it and become committed to it (Bennett 1991; Daft 1995; Gray and Starke 1988). Cummings and Molloy (1977) suggest that if people have a strong need for involvement, the very process of participation can be
motivating, leading to a greater effort to make changes work. Smith (1995) also mentioned the motivational effect of participation when he describes some of the positive outcomes of staff involvement. By seeking input from those at the coalface, leaders will have better information, make better decisions and, by involving staff, have more motivated staff. People like to feel they can contribute to their own destiny, if not control it.

**Facilitating and Support:**

Daft (1995) suggests that the visible support of top management helps to overcome resistance to change as such support indicates firmly to employees that the change is important for the organisation. The Irish employers' body says that management support is widely recognised as being the key to success of continuous improvement (Business & Finance 1996).

Ivancevich et al (1994) argue that to be supportive, a manager needs to show concern for subordinates, be a good listener, and facilitate change when fear and anxiety fuel resistance. Kirkpatrick (1985) is of the view that when employees feel that those managing change are genuinely interested in their feelings and perceptions, they are likely to be less defensive and more willing to share their concerns and fears.

**Negotiation:**

Daft (1995) suggests that this is a more formal means of achieving cooperation, involving formal bargaining to gain acceptance of change. Resistance to change can be reduced through negotiation. Ivancevich et al (1994) assert that, a negotiated agreement works by giving something to another party in order to reduce resistance.

**Coercion:**

Using this approach, formal power is used in order to reduce resistance to change. Coercion can be explicit or implicit, but both involve managers using threatening behaviour. Humphreys (1996) argues that employees can be threatened with job loss or loss of privileges. Whereas such tactics may reduce employee resistance in the
short run, there is a danger that it may create a more permanent climate of hostility and therefore is less appealing in the longer term.

Drawing together this discussion on the various methods that have been put forward to counter resistance to change, it must be borne in mind that just as the sources of resistance are numerous, so also are the possible solutions to counteracting this reluctance to embrace new ways.

Morgan (1995) comments:

However, being aware of the range of tools available to reduce resistance to change should help managers to ‘peel the onion’ in order to ‘move to progressively deeper levels of understanding about this complex issue.

(Morgan, 1995: p. 309)

To overcome the obstacle of ‘resistance to technological change’, Kearns (2004) also suggests that it is necessary to achieve ‘buy-in’ from prospective users of the system and the likelihood of achieving ‘buy in’ should be enhanced with the effective use of change management. Born (1995) concluded that change management is required throughout the duration of the change project. The main focus should be to understand the existing culture and skills set and communicate the new vision and plan for future. The Traffic Light TAM model was therefore proposed as a visual aid to highlight the existence of acceptance variables in both technological solutions. Prosci (2000) also suggests that by utilising change management models and other models such as the ADKAR\(^7\) model which aims to positively increase the value of the variable BI \([p]\) while at the same time decrease the value of the variable BI \([c]\), could help to minimise resistance to technological change.

Table 2a: The ADKAR Model (Prosci, 2002)

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<tr>
<th>STEPS</th>
<th>ENABLERS</th>
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<tbody>
<tr>
<td>A</td>
<td>Awareness of the need for change</td>
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\(^7\) ADKAR Model was introduced in 2002 by Prosci – The Model is a management tool that can be used to diagnose employee resistance, help those employees through the change process and create a change management plan for them. ADKAR is an acronym for: Awareness, Desire, Knowledge, Ability and Reinforcement.
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| **D** | Desire to participate and support the change | • Fear of job loss  
• Discontent with current state  
• Imminent negative consequences  
• Enhance job security  
• Affiliation and sense of belonging  
• Career advancement  
• Acquisition of power or position  
• Incentive or compensation  
• Trust and respect for leadership  
• Hope in future state. |
| **K** | Knowledge on how to change | • Training and education  
• Information access  
• Examples and role models |
| **A** | Ability to implement required skills and behaviours | • Practice applying new skills or new processes and tools.  
• Coaching  
• Mentoring  
• Removal of barriers |
| **R** | Reinforcement to sustain the change | • Incentives and rewards  
• Compensation changes  
• Celebrations  
• Personal recognition |
The ADKAR Model proposes that employees must go through the five stages in order to change. Prosci, (2002) posits that the model examines readiness of the employees at each step and enables management to develop a plan to induce readiness. The reviewed literature will help to provide answers to the question this study is attempting to answer.
CHAPTER 3 - RESEARCH DESIGN / METHODOLOGY

3.1 INTRODUCTION

Investigating the effect or causes of a particular problem can be a daunting experience. It is even more difficult when the situation to be investigated is one that has to do with human behaviour. Human behaviours are not homogenous and people behave or react to situations in different ways. However, this does not mean that the general pattern of group behaviours can not be generalised. It is possible to achieve this if appropriate research instruments are put in place. This is why research is considered to be a rigorous and technically complicated form of investigation. Many scholars share this view. For instance, Howard and Sharp (1983) discuss this issue by stating that:

Most people associate the word ‘research’ with activities which are substantially removed from day-to-day life and which are pursued by outstandingly gifted persons with an unusual level of commitment.

(Howard and Sharp, 1983: p.6)

There is of course a good deal of truth in this viewpoint, but one can argue that the pursuit is not restricted to this type of person and can prove to be a simulating and satisfying experience for many people with trained and enquiring minds.

Furthermore, Howard and Sharp (1983) define research as:

Seeking through methodological processes to add to one's own body of knowledge and, hopefully, to that of others, by the discovery of non-trivial facts and insights.

(Howard and Sharp, 1983: p.6)

Drew (1980) agrees that research is conducted to solve problems and to expand knowledge and stresses that ‘research is a systematic way of asking questions and a systematic method of enquiry’ (pp. 4-8)
While Osadiya (2002) defines research as:

...a critical and highly synthesised academic exercise that requires a substantial amount of knowledge and methods of gathering and analysing data to establish a widely accepted phenomenon or facts. In order to achieve this requires a great deal of knowledge and expertise that is far beyond the skills of persons that are not academically equipped.

(Osadiya, 2002: pp. 7-8)

Johnson (1994) also defines research in a similar way as:

...a focussed and systematic enquiry that goes beyond generally available knowledge to acquire specialised and detailed information, providing a basis for analysis and elucidatory comments on the topic of enquiry.

(Johnson, 1994: p. 3)

One thing common to all these definitions is that, a great deal of skill is needed in researching a particular problem. Appropriate skills enable the researcher to identify appropriate research questions, instruments and possibly use a combination of different methods so as to identify a widely acceptable phenomenon. The use of the combination of research methods in investigating problems in social science is often appropriate in terms of achieving triangulation.

Some researchers such as Gable (1994), Kaplan and Duchon (1988), Lee (1991), Mingers (2001) have argued persistently in favour of combining one or more research method in answering research questions. This method is what they refer to as 'triangulation'.

Each approach has its strengths and weaknesses and each is particularly suitable in a particular context. The approach adopted and the methods of data collection selected will to a large extent depend on the nature of the enquiry and the type of information required.

There are different approaches which can be used in collecting data, but no approach prescribes nor automatically rejects any particular method.
For instance, quantitative researchers collect facts and study the relationship of one set of facts to another. They measure, using scientific techniques that are likely to produce quantified and, if possible, generalisable conclusions. Researchers adopting a qualitative perspective are more concerned with understanding individuals’ views of the world. They seek insight rather than statistical analysis. They doubt whether social ‘facts’ exist and question whether a ‘scientific’ approach can be used when dealing with human beings but there are occasions when qualitative researchers draw on quantitative techniques, and vice versa.

Classifying an approach as quantitative or qualitative, ethnographic, survey, action research, etc, does not mean that once an approach has been selected, the researcher may not move from the methods normally associated with that style. Researchers always strive for reliable facts. However, research is said to be reliable if we are certain that whenever it is used to measure the same thing in the same condition, at different places as well as at different times, it will produce the same result.

For these fundamentals to be achieved there is a need for a thorough and acceptable systematic gathering of data, carefully analysed using appropriate and generally acceptable methods in order to be confident in our statements, conclusions and findings.

In social science research, it is often difficult to assert to a certain degree of confidence, as social science research tends to deal/ solve human problems which often vary subject to individuals, groups, environment, class, settings, beliefs, and cultural differences. Hence, within social science researchers, there are different paradigms which have significant roles to play in the choice of method a researcher will use in investigating a problem. Creswell (1994) defined a paradigm as sets of ideas and beliefs, which provide a consensual framework within which practitioners’ operate.

A paradigm will define existing knowledge, the nature of the problem or problems to be investigated, the appropriate methods of investigation and the way in which the findings should be analysed and interpreted. As such, paradigms encompass theories and methodologies.
Education research tends to focus on two fundamental paradigms:

3.2 POSITIVIST PARADIGM:

This paradigm holds the view that social sciences are essentially the same as the natural sciences and are therefore concerned with discovering natural and universal laws, which regulate and determine human behaviour.

3.3 THE INTERPRETATIVE APPROACH

This holds the view that people differ from inanimate natural phenomena and from each other.

Whichever view a researcher tends to adopt in the conduct of his/her research, a systematic approach is necessary. This means that the social/education management researchers need to apply both quantitative and qualitative approaches in solving social problems. It is worth mentioning that these two approaches differ in their approach.

For instance; the quantitative study will use a hypothetical-deductive method in order to make assertions. The method is usually conceptualised as consisting of a series of stages:

1. **Observation**: The researcher observes a phenomenon considered worthy of investigation.
2. **Conjecture**: The researcher thinks of a plausible explanation.
3. **Hypothesis formation**: The conjecture is put in the form of a predictive statement, which can be empirically tested.
4. **Testing**: A rigorous empirical test is designed and carried out under controlled conditions with all observations and measurements accurately recorded.
5. **Data analysis**: The resulting data are carefully analysed using applied logical reasoning.
6. **Final stage:** In the light of the results, the researcher decides whether the hypothesis is confirmed, rejected or in need of modification and further testing.

On the other hand, in qualitative methodology, inductive logic prevails. Categories emerge from the data collected, and analysed rather than an identified priori by the researcher. This emergence is thought to provide rich, "context bound" information leading to patterns or theories that help explain a phenomenon. However, both the quantitative and qualitative approaches have their merits and demerits.

Although widely used in education psychology, the experimental approach in its pure form is not usually seen as appropriate for institution-based education research (in school or college). Cohen and Manion (1980, p.188) suggest that "in educational settings, most empirical studies are quasi-experimental rather than experimental".

However, the non-reactive approach to research is the exact opposite of the experimental one. Instead of the researcher seeking to plan experience in advance, they will use data experiences and behaviour which are totally undisturbed by the research act. Johnson, (1994) asserts that a non-reactive research method is one, which gives priority to minimising disturbance to the subject of study.

However, the quantitative study is said to be consistent with the qualitative paradigm. It is an inquiry into a social or human problem, based on a theory composed of variables, measured with numbers, and analysed with statistical procedures in order to determine whether the predictive generalisations of the theory hold true.

The qualitative study is designed to be consistent with the exemptions of a quantitative paradigm. This study is defined as an enquiry process of understanding a social human problem, based on building a complex, holistic picture, formed with words, videos and photographs reporting detailed views of informants and conducted in a natural setting.
If research is perceived as a thorough academic exercise used in investigating identified problems, then, there should be theories on which the methods used should be based.

Theory is a vital part of the research process. It can be relevant in a broader context. In our daily lives, we have expectations based on prior experiences. If we did not, and had to treat every situation as new, then our lives would be virtually impossible. For example, we have prior expectations of how people will behave, based on prior experience, and if these expectations are not met, then we would wonder why. We theorise as to the possible reasons for this in order to understand. This in turn, may lead us to alter the way we think or behave. We may do this many times in a day, whether we are aware of it or not. This "commonsense" form of reasoning is essential in our day-to-day life. It can be imprecise at worst, vague at best. For a manager to employ such a technique to the exclusion of more rigorous methods, it can lead to the acceptance of pre-conceived ideas which are not properly scrutinised, to "group thinking".

It is more reasonable to examine the more precise reasoning process of deduction and its opposite, induction which is like the "everyday" reasoning above.

Deduction involves reaching conclusions through abstract conceptualisation, and "a deductive research method entails the development of a conceptual and theoretical structure prior to its testing through empirical investigation" (Gill & Johnson 1991). The process involves deciding which concept/s is/are most relevant to our theoretical problem. However, because concepts are abstract, we need to change them into concrete observables or indicators, because when concepts are clearly defined, it enables researchers to test theories empirically. Based on the results of the researcher's tests, one can then either reject the theory or accept it as creating laws, which have yet to be disproved.

This reasoning is referred to as the "hypothetico-deductive" method, or "positivism". Positivism therefore, rests on the idea that the external world is observable and

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8 For more on this, see Gill & Johnson 1991
measurable through objective methods. However, there have been criticisms of this paradigm. Some critics argue that the positivist paradigm's assertion that science ought only to be based on observable data is debatable. Critics call this "scientism", that is, the assertion that the use of objective measures to the exclusion of all others is the only way to acquire knowledge.

Critics such as Easterby-Smith et al (1991) have argued that positivist methods fail to take into consideration the human factor. They assert that one can never be totally impartial in any epistemological investigations. However, this is a factor that has been denied by positivists. Humans are subjective and cannot be understood in terms of causality as the natural world can. We must, therefore, take into account factors such as social context, attitudes, beliefs etc. Research in a social context, must therefore entail a form of explanation of a situation of events that relies upon elucidation of actors' internal logic or subjectivity which Gill and Johnson 1991 refer to as 'EMIC'. There must be in the analysis explanations that impose an external logic or frame of reference upon subjects so as to explain their behaviour. This is what Gill and Johnson refer to as, 'ETIC'

By using this method, social scientists must, therefore, develop an understanding of the "frames of references" of behaviour. Phenomenologists say that by doing this, and avoiding the rigid structure of the deductive method, which imposes a preconceived theory onto behaviour, they can access human subjectivity.

The most obvious counter-argument to this and one frequently cited by positivists is that because the method is unstructured, and unable to be replicated, it can be biased and is, therefore, regarded as unreliable.

Induction is a method of reasoning by which we infer by observing, and only then, construct our theories; it is therefore, the opposite of deduction. It can be seen that as induction involves this process whereby we move from empirical observation to explanation and then theory construction, it is comparable to the "commonsense" process. There has been much debate between positivists, who favour deductive
techniques and phenomenologists (also called “social constructionists), who favour the inductive process.

Phenomenologists argue that although deduction may be applicable in some instances within a social framework, because explanations must be founded on observation, it will fail. Gill & Johnson (1991) state that:

...there are fundamental differences between the subject matter of the social sciences (human beings) and the subject matter of the natural sciences.

(Gill & Johnson (1991))

In order to have a better understanding of the differences between the two methodologies, Easterby-Smith et al, (1991) discussed the characteristics of each of the research methodologies as presented in table 3a.

<table>
<thead>
<tr>
<th>Basic beliefs:</th>
<th>Positivist paradigm</th>
<th>Phenomenological Paradigm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The world is external And objective</td>
<td>The world is socially constructed and subjective</td>
</tr>
<tr>
<td></td>
<td>Observer is independent</td>
<td>Observer is part of what is observed</td>
</tr>
<tr>
<td></td>
<td>Science is value free</td>
<td>Science is driven by human interest</td>
</tr>
<tr>
<td>Researcher should:</td>
<td>Focus on facts</td>
<td>Focus on meanings</td>
</tr>
<tr>
<td></td>
<td>Look for causality and fundamental laws</td>
<td>Try to understand what is happening</td>
</tr>
<tr>
<td></td>
<td>Reduce phenomena to simplest elements</td>
<td>Look at the totality of the situation</td>
</tr>
<tr>
<td></td>
<td>Formulate hypotheses and then test them</td>
<td>Develop ideas through induction from data</td>
</tr>
</tbody>
</table>

Easterby-Smith et al, (1991, p. 27)
Table 3a reflects the identified characteristics of both the positivism and phenomenology paradigms. The positivists generally assume that reality is objectively given and that such can be described by measurable properties which are independent of the researcher and his/her instruments. Generally, positivists’ studies attempt to test theory, in an attempt to increase the predictive understanding of phenomena. On the other hand, the phenomenologists start out with the assumption that access to reality (given or socially constructed) is only through social constructions such as language, consciousness and shared meanings. The philosophical base of interpretative research is hermeneutics and phenomenology (Boland, 1985). Interpretative studies generally attempt to understand phenomena through the meanings that people assign to them. It does not pre-define dependent and independent variables, but focuses on the full complexity of human sense making as the situation emerges (Kaplan and Maxwell, 1994). Easter-Smith et al. (1991) further stressed that each of these approaches has its respective merits and demerits as presented in table 3b.

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Positivism</th>
<th>Phenomenology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enables wide coverage of situations</td>
<td>Enables change processes to be looked at over time</td>
<td></td>
</tr>
<tr>
<td>Fast</td>
<td>Enables understanding of behaviour</td>
<td></td>
</tr>
<tr>
<td>Economical</td>
<td>Natural</td>
<td></td>
</tr>
<tr>
<td>Relevant to needs Of policy-makers</td>
<td>Facilitates emergence Of new theories</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Disadvantages</th>
<th>Positivism</th>
<th>Phenomenology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inflexible</td>
<td>Slow</td>
<td></td>
</tr>
<tr>
<td>Artificial</td>
<td>May be expensive</td>
<td></td>
</tr>
<tr>
<td>Ineffective in understanding Behavioural Processes</td>
<td>Interpretation of analysis can be difficult</td>
<td></td>
</tr>
<tr>
<td>Ineffective for generating new theories</td>
<td>Untidy- may leave loose ends and may also be difficult to</td>
<td></td>
</tr>
</tbody>
</table>
Making prediction of action or change difficult (because they focus on what is)

Given low credibility by policy-makers

Easterby-Smith et al (1991, p. 32)

The points highlighted in table 3b clearly suggest the reasons for using a qualitative research approach for investigating research questions as opposed to a quantitative research methodology. Qualitative research methods are designed to help researchers understand people and the social and cultural contexts within which they live. Kaplan and Maxwell, (1994) argue that the goal of understanding a phenomenon from the point of view of the participants and its particular social institutional context is largely lost when textual data are quantified.

Although, most researchers do quantitative or qualitative research work, some researchers such as Marcus, (1994), Lee, (1991), Mingers, (2001), Gable, (1994) have suggested one or more research methods in the one study called triangulation. Most research processes combine the two approaches of phenomenology and deduction. In this way, they can be used to complement one another, and also provide the tools for cross-checking data.

The above arguments have been the basis of the choices of the research methods which I will use in the study of my research questions. I will triangulate in order to establish valid and reliable arguments. Further more, this is a pilot study for a national initiative on the Virtual Learning Environment e-Learning technology, which is aimed at establishing the extent to which the technology can cut costs and enhance learning in an academic institution and also to identify the logistical problems which may occur in the process of adopting the technology into the Sixth Form College's curriculum. In the process of doing this, I hope to use a combination of research methods in order to be confident in my findings. I will use a case study approach which will incorporate a questionnaire survey, face-to-face and group interviewing methods.
Why case study?

One of the rational explanations for using a case study approach was based on a lack of access to statistical data which is needed for analysis. This is due to the cautious attitudes of the senior management of the case study college to sharing information particularly, for research purposes. Theoretically, one of the justifications for using a quantitative research methodology is based on the fact that the researcher will have access to a substantial volume of data which can be analysed to reach a generalisable conclusion. However, where it becomes difficult to have access to large volume of data as it is in my case, the best approach to the investigation would be to embark on a qualitative method where primary data can be generated for analysis. One other justification for using a case study approach was that case study is an ideal methodology when a holistic, in-depth investigation is needed (Feagin, Orum & Sjoberg, 1991).

The fact that case studies have been used in varied investigations, particularly in social sciences is another reason for using it in this study. Yin, Stake and others who have wide experience in this methodology have developed robust procedures. When these procedures are followed, the researcher will be following methods which have been developed and tested as any in the scientific field. Most importantly the case study methodology enabled me to design a process which brings out the details from viewpoint of the new system’s stakeholders by using multiple sources of data.

On this note, I have resorted to using a qualitative approach, to be precise, a case study approach.

What then does a case study approach entail?

Yin (1984) refers to a case study as the collection and presentation of detailed information about a particular participant or small group, frequently including the accounts of the subjects themselves. It is a form of qualitative descriptive research which looks intensely at an individual or small participant pool, drawing conclusions only about that participant or group and only in that specific context. In this context, the researchers do not focus on the discovery of a universal, generalisable truth, nor
do they typically look for cause-effect relationships; instead, emphasis is placed on exploration and description. Hence, case studies produce much more detailed information than what is available through a statistical analysis.

In his contribution, Adelman (1977) describes a case study as an umbrella term for a family of research methods having in common the decision to focus on inquiry around an instance. The author asserts that case-study approach is particularly appropriate for individual researchers because it gives an opportunity for one aspect of a problem to be studied in some depth within a limited time scale. It is a research method, which aims at providing answers to a particular problem in a particular setting at a particular time.

Creswell (1998) also defines case study research as:

...a bounded system, which is bounded by time and place, and it is the case being studied — a program, an event, an activity, or individuals.

(Creswell, 1998: P.61)

While Merriam (1988) describes case study as an exploration of a ‘bounded system’ or a case over time through detailed, in-depth data collection involving multiple sources of information rich in context.

The advocates of case study research method such as Yin, (1984), Creswell (1998), hold the views that while the statistical methods might be able to deal with situations where behaviour is homogenous and routine, case studies are needed to deal with creativity, innovation, and context. The use of a case study approach is not in any way new in social sciences. There appears to be some empirical studies which confirmed this.
3.4 EMPIRICAL EVIDENCE OF THE USE OF CASE STUDIES IN SOCIAL SCIENCES

The earliest use of case study form of research in social sciences can be traced to Europe, predominantly to France in the 1920s. In the United States the methodology was most closely associated with The University of Chicago's Department of Sociology. From the early 1900's until 1935, the Chicago School was pre-eminent in the field and the source of a great deal of literature. There was a wealth of material in Chicago, since it was a period of immigration to the United States and various aspects of immigration of different national groups to the city were studied and reported on (Hamel et al., 1993). Issues of poverty, unemployment, and other conditions deriving from immigration were ideally suited to the case study methodology. Zonabend (1992) asserts that a case study is undertaken by giving special attention to completeness in observation, reconstruction, and analysis of the cases under study and it is often applied in a way that incorporates the views of the "actors" in the case under study.

The existing literature confirmed that the applications of case study methodology have been carried out in High-Risk Youth Programmes (Yin, 1993) by several researchers. The effects of community-based prevention programmes have been widely investigated using case study methodology. Where the High-Risk Youth studies assumed a single case evaluation, these studies typically used a collection of cases as a multiple-case study. This has been true in the various substance abuse prevention programmes that are community-based (Holder, 1987; Sabol, 1990; Yin, 1993). Numerous studies sponsored by the United States of America General Accounting Office are distributed in the literature between Evans (1976) and Gopelrud (1990). These studies have gone beyond the quantitative statistical results and explained the conditions through the perspective of the "actors." Thus, case study evaluations can cover both process and outcomes, because they can include both quantitative and qualitative data.

One can undoubtedly argue that case study has long been used in social science research as a means of investigating problems. Creswell (1998) asserts that case study holds a long, distinguished history across many disciplines. Hamel (1993) traces the
origin of modern social science case studies through anthropology and sociology. He cites anthropologist Malinowski's study of the Trobien Islands, French Sociologist Le Play's study of families, and the case studies of the University of Chicago's department of Sociology in the 1920's and 1930's. In recent times, Thomas and Znaniecki (1958) used a case study approach to study 'The Polish Peasant in Europe and America: an antecedent of qualitative case study research'.

Other organisations that have used case study techniques extensively are governments in evaluative situations. The government studies were in most cases carried out to determine whether particular programmes were efficient or if the goals of a particular programme were being met. The evaluative applications were carried out to assess the effectiveness of educational initiatives. In both types of investigations, mere quantitative techniques tended to obscure some of the important information that the researchers needed to uncover.

In education, case studies have been increasingly used. While law and medical schools have been using the technique for an extended period, the technique is being applied in a variety of instructional situations. Business schools have been most aggressive in the implementation of case-based learning, or "active learning" (Boisjoly & DeMichiell, 1994). Harvard University has been a leader in this area, and cases developed by the school have been published for use by other institutions. Although case study has been used in different fields, there have been problems associated with the method because construct validity is especially problematic in case study research because of potential investigator subjectivity. Hence it is important to stress that there are different types of case studies.

3.5 TYPES OF CASE STUDIES

Yin (1993) identified three types of case studies:

a. Exploratory cases are sometimes considered as a prelude to social research.

In this type of case study, fieldwork and data collection are undertaken prior to definition of the research questions and hypotheses. This type of study is considered to be a prelude to some social research. In this scenario, the framework of the study
must be created ahead of time. Since this study is intended to be a pilot study for e-learning initiative, by using this type of approach, it became very useful in determining the final protocols which could be used in similar future studies.

b. Explanatory case studies may be used for doing casual investigations. Explanatory cases are suitable for doing casual studies. In every complex and multivariate cases, the analysis can make use of pattern-matching techniques (Yin and Moore 1988).

c. Descriptive cases require a descriptive theory to be developed before starting the project. Pyecha (1998) used this methodology in a special education study, using a pattern-matching procedure. Descriptive cases require that the investigator begin with a descriptive theory or face the possibility that problems will occur during the project. Pycha (1988) used this methodology to study special education, by using a pattern-matching procedure.

It is important to state that a case study approach could be a valuable method of research, with distinctive characteristics that make it ideal for many types of investigations. It can also be used in combination with other methods. Its use and reliability should make it a more widely used methodology, once its features are better understood by potential researchers. What are these characteristics?

3.6 CHARACTERISTICS OF A CASE STUDY METHODOLOGY

a. The essential characteristic of case studies is that they strive towards a holistic understanding of cultural systems of action (Feagin, Orum & Sjoberg, 1990). Cultural systems of action refer to sets of interrelated activities engaged in by the actors in a social situation.

b. Case study is typically a system of action rather than an individual or group of individuals. Case studies tend to be selective, focusing on one or two issues that are fundamental to understanding the system being examined.
c. Case studies are multi-perspectival analyses. This means that the researcher considers not just the voice and perspective of the actors, but also of the relevant groups of actors and the interaction between them. This one aspect is a salient point in the characteristic that case studies possess ((Feagin, Orum & Sjoberg, 1991).

e. Case study is known as a triangulated research strategy. Snow and Anderson (cited in Feagin, Orum & Sjoberg, 1991) asserted that triangulation can occur with data, investigators, theories, and methodologies. Stake (1995) stated that the protocols that are used to ensure accuracy and alternative explanations are called triangulation. The need for triangulation arises from the ethical need to confirm the validity of the processes.

With all these unique characteristics of a case study research approach, there are equally some unique benefits of using the research method.

3.7 ADVANTAGES OF A CASE STUDY METHODOLOGY

a. Feagin, Orum & Sjoberg, (1991) argued that case studies research method permits the grounding of observations and concepts about social structures in natural settings studied at close hand. The use of the case study research methodology in this study enabled me to study the teachers, students and the senior management of the case study college in their natural settings, essentially, through face-to-face interviews and group discussion. The detailed and rich data generated in the process permitted me to develop a solid empirical basis for specific concepts and generalisation as to the role training plays in the acceptance and use of e-Learning technologies in organisations.

b. Feagin, Orum & Sjoberg, (1991) assert that case studies provide information from a number of sources and over a period of time, thus permitting a more holistic study of complex social networks and of complexes of social actions and social meanings. Since this study seeks to capture the teachers, students and the senior management views on the success or failure of the technological change within the organisation, the case study approach offered me the empirical and theoretical gains in understanding the larger social complexes of all the stakeholders’ attitudes, and motives towards the new technology.
Ed.D Thesis Title: The Introduction of VLE e-Learning Technology At A Sixth Form College: A Case Study.

c. Feagin, Orum & Sjoberg, (1991) also argued that case studies can furnish the dimensions of time and history to the study of social life, thereby enabling the investigator to examine continuity and change in life world patterns. The case study approach enabled me to examine the ebb and flow of social interaction between the major stakeholders of the new e learning technology over time and the display of the patterns of everyday working relationships between these stakeholders as they change. The methodology permitted me to uncover the historical dimension of this social interaction within the case study college’s setting.

d. Yin (1984) asserts that a case study approach encourages and facilitates in practice, theoretical innovation and generalisation. Like other qualitative research, a case study approach lends itself to theoretical generalisation. On this note, by using a case study approach in this study, I was able to theoretically re-examining the Davis TAM’s model in the context of the case study college’s situation and interpreted the model in innovative ways.

In spite of these advantages, the case study approach have been severely criticised by many scholars. To this extent, it is important to review some of the arguments relating to these criticisms of the methodology.

3.8 THE CRITICS OF CASE STUDY APPROACH

In a way, the field of sociology is associated most strongly with case study research, and during the period leading up to 1935, researchers in other fields raised several problems. This coincided with a movement within sociology, to make it more scientific. This meant providing some quantitative measurements to the research design and analysis. Since the Chicago School was most identified with this methodology, there were serious attacks on their primacy. This resulted in the denigration of case study as a methodology (Tellis, 1997). However, in 1935 there was a public dispute between Columbia University professors, who were championing the scientific method, and The Chicago School and its supporters. The outcome was reported to be a victory for Columbia University and the consequent decline in the use of case study as a research methodology.
Hamel (Hamel et al., 1993) was careful to reject the criticisms of case study as poorly founded, made in the midst of methodological conflict. He asserted that the drawbacks of case study were not being attacked, rather the immaturity of sociology as a discipline was being displayed. As the use of quantitative methods advanced, the decline of the case study hastened. However, in the 1960s, researchers were becoming concerned about the limitations of quantitative methods. Hence, there was a renewed interest in case study. Strauss and Glaser (1967) developed the concept of "grounded theory." This along with some notable scholars' studies accelerated the renewed use of the methodology. A frequent criticism of case study methodology is that its dependence on a single case renders it incapable of providing a generalizing conclusion. Yin (1993) presented Giddens' view that considered case methodology "microscopic" because it "lacked a sufficient number" of cases. Hamel (Hamel et al., 1993) and Yin (1984, 1989a, 1989b, 1993, 1994) argued that the relative size of the sample whether 2, 10, or 100 cases are used, does not transform a multiple case into a macroscopic study. The goal of the study should establish the parameters, and then should be applied to all research. In this way, even a single case could be considered acceptable, provided it met the established objectives.

The literature provides some insight into the acceptance of an experimental prototype to perceive the singularity of the object of study. This ensures the transformation from the local to the global for explanation. Hamel (Hamel et al., 1993) characterized such singularity as a concentration of the global in the local. Yin (1989a) stated that general applicability results from the set of methodological qualities of the case, and the rigor with which the case is constructed. He detailed the procedures that would satisfy the required methodological rigor. Creswell (1998) asserts that case study can be seen to satisfy the three tenets of the qualitative method: describing, understanding, and explaining.

On the other hand, Yin, (1994), asserts that the body of literature in case study research is "primitive and limited" in comparison to that of experimental or quasi-experimental research. Yin further suggests that the requirements and inflexibility of the latter forms of research make case studies the only viable alternative in some instances. It is a fact that case studies do not need to have a minimum number of
cases, or to randomly "select" cases. The researcher is called upon to work with the situation that presents itself in each case. Yin (1984) asserts that case studies can be single or multiple-case designs, and that a multiple design must follow a replication rather than sampling logic. When no other cases are available for replication, Yin argued that the researcher should be limited to single-case designs. Yin (1994) pointed out that generalization of results, from either single or multiple designs, is made to theory and not to populations. Multiple cases strengthen the results by replicating the pattern-matching, thus increasing confidence in the robustness of the theory.

Yin (1994) proposed three remedies to counteract this: using multiple sources of evidence, establishing a chain of evidence, and having a draft case study report reviewed by key informants. Internal validity is a concern only in causal (explanatory) cases. This is usually a problem of "inferences" in case studies, and can be dealt with using pattern-matching. External validity deals with knowing whether the results are generalisable beyond the immediate case. Some of the criticism against case studies in this area relates to single-case studies. However, that criticism is directed at the statistical and not the analytical generalization that is the basis of case studies. Reliability is achieved in many ways in a case study. One of the most important methods is the development of the case study protocol.

Case studies can be either single or multiple-case designs. Single cases are used to confirm or challenge a theory, or to represent a unique or extreme case (Yin, 1994). Single-case studies are also ideal for revelatory cases where an observer may have access to a phenomenon that was previously inaccessible. Single-case designs require careful investigation to avoid misrepresentation and to maximize the investigator's access to the evidence. These studies can be holistic or embedded, the latter occurring when the same case study involves more than one unit of analysis. Multiple-case studies follow replication logic. This is not to be confused with sampling logic where a selection is made out of a population, for inclusion in the study. This type of sample selection is improper in a case study. Each individual case study consists of a "whole" study, in which facts are gathered from various sources and conclusions drawn on those facts.
In the course of this study, there are few drawbacks which I have identified in the use of case study research methodology in investigating problems. These drawbacks are explained below.

3.9 DISADVANTAGES OF A CASE STUDY APPROACH

a. A case study research approach is usually quite time consuming. It takes too long to collect, organize and describe data. It was extremely time consuming for me to arrange both the face-to-face interviews and group discussion with the students and senior management of the case study college. The processes of collecting, organising and transcribing data were equally cumbersome.

b. It has been argued by Feagin, Orum & Sjoberg, (1991) that a case study methodology represents the depth of information, rather than the breadth of it. In the course of this study, I became aware that the processes of collecting data by using a case study research approach were more concerned with the depth of the information rather than the breadth of it. This might explain why the issue of generalisation tend to dominate the arguments against the use of the case study approach. For instance, those who argued against case study are of the opinion that case studies are difficult to generalise because of inherent subjectivity. Because cases are based on qualitative subjective data, they are believed to be generalisable only in a particular context.

To conclude this section, it is reasonable to suggest that the use of case study approach in this study allowed me to concentrate on a specific instance and identify, identified, the various interactive processes at the case study college. Hence, these processes may have remained hidden if I had used a large-scale survey. Hence, these processes were crucial to the success or failure of the introduction and implementation of the studied new e-Learning technology at the case study college.

Furthermore, regardless of the research methodology a researcher chooses to use to investigate a problem; such a method must be thoroughly evaluated against the context of the research question. If an inappropriate research method is applied, it can lead to severe consequences. The implication of this is that it may lead to the
conclusion of such research as invalid and unreliable. Issues of validity and reliability are an important part of any study in the social sciences. As such, it is important to identify some ways of dealing with the results. These issues of validity and reliability can only be overcome if appropriate research methodologies have been used in gathering relevant data, which can be thoroughly analysed. Each research method has its strengths and weaknesses.

Hence, the arguments in favour of the use of case studies in social science research have been very instrumental in choosing this form of research methodology in investigating this topic of enquiry.

It is therefore worth mentioning that, in the process of using a case study research approach in investigating my research question, I will also use group interviewing and questionnaire survey instruments in order to generate data which can be analysed and used to establish the validity and reliability of my findings.

3.10 GROUP INTERVIEWING

It is evident in the academic literature that group interview is widely used in social science research as one of the research tools which provide answers to fundamental questions on a given problem /topic of enquiry. Different scholars have defined group interview in many ways:

Susan Henthorn (2001) defined a group interview as:

...a small group of people brought to a central location for an intensive discussion with a moderator who focuses discussion on various issues in accordance with a general outline of question areas.

(Henthorn, 2001: p.1)

Henthorn argued that the purposes of a group interview are three fold:

1. To probe intensively for qualitative data related to specific problem areas;
2. To generate new ideas as a pre-testing device prior to a quantitative survey research study;
3. To have respondents' experience and react to stimulus such as an idea a researcher might want to test before proposing it.

Smith (1954) also defined group interviewing to be:

...limited to those situations where the assembled group is small enough to permit genuine discussion among its entire members.


Glensne and Peshkin (1992) also suggest that interviewing more than one person at a time sometimes proves very useful. In his contribution, Kreuger (1988) defines a group interview as a:

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

(Kreuger, 1988: p. 18).

There are other interviewing techniques such as telephone interviews, face-to-face interviews, and the use of questionnaires. These are classified in social science research as 'traditional' methods of gathering data for analysis. They have been criticised by many social scientists as not being adequate for generating comprehensive data in some specific areas. Some of the arguments put forward were that the traditional methods of interviewing hardly provided a reliable response to questionnaires. They strongly argued that, there is a tendency that the respondents might not give their true opinions when answering some of the questions in the questionnaire and this can hardly be verified by the researchers. So also, some argued that it is often difficult for the researcher to know if the respondents actually interpret the questions in the questionnaire as intended by the researcher.

Rice (1931) expressed concern about the accuracy of the traditional information gathering methods by stating that:

...a defect of the interview for the purposes of fact finding in scientific research, then, is that the questioner takes the lead...data obtained from an interview are likely to embody the preconceived ideas of the interviewer as the attitude of the subject interviewed.

(p. 561 cited in Kreuger, 1988:p. 18)
As such, a group interview has been favoured as an alternative to the traditional methods of interviewing. Group interviewing today takes on many different forms as researchers modify procedures to suit their own research needs. For instance, its use in market research aims to gather consumer perceptions and opinions on product characteristics and advertising. Group interviews also enable the producers, manufacturers and sellers to understand the thinking of consumers. In educational research, it will probably enable the researcher to find out about the opinions of certain groups within a given academic institution about the causes and effects of existing problems within the institution, which may be difficult to find by using the traditional methods of interviewing.

One of the justifications for the use of group interviewing in investigating problems was that, it can elicit respondents' perceptions, attitudes and opinions particularly in encouraging self-disclosure among participants in order to generate qualitative data which researchers may later analyse.

Kreuger (1988) suggests that

\[ \ldots \text{the purpose of qualitative research is to obtain information of a qualitative nature from a pre-determined and limited number of people.} \]

(Kreuger, 1988: p. 26).

Group interviews are an important part of any qualitative research project as they provide the opportunity for the researcher to investigate further, to solve problems and to gather data, which could not have been obtained in other ways.

Merton (1990) also offered a useful comment by suggesting that:

\[ \ldots \text{group interview will yield a more diversified array of responses and afford a more extended basis both for designing systematic research on the situation in hand...} \]

(Merton, 1990: p 135)

Stewart and Shamdasani (1990) summarise the benefits of using group interviews by asserting that researchers will be able to:

- "Obtain general background information about a topic of interest;
Generate research hypotheses that can be submitted to further research and testing using more quantitative approaches;

- Stimulate new ideas and creative concepts;
- Diagnose the potential for problems with a new programme, service or product;
- Generate impressions of products, programmes, services, institutions, or other objects of interest;
- Learn how respondents talk about the phenomenon of interest, which may facilitate quantitative research tools;
- Interpret previously obtained qualitative results” (p. 15)

Morgan and Spanish (1984), Merton (1987), Bers (1989), Stewart and Shamdasani (1990), Kreuger (1994) and Secker (1995) have all defined a group interview in different ways but there are common elements in their various definitions, which include:

- Consist of a small group of 4-12 people;
- Meet with a trained researcher/ facilitator/ moderator;
- Last for 1-2 hours;
- Discuss selected topic(s);
- Take place in a non-threatening environment;
- Explore participants’ perceptions, attitudes, feelings, ideas and;
- Encourage and utilise group interactions.

The above characteristics of a group interview distinguish it from all other research interviewing methods in that most interviews do not explicitly include participant interaction as an integral part of the research process.

In educational research, Lewis (1992) follows Powney and Watts’ (1987) definition of a group interview as:

...a group conversational encounter with a research purpose and suggests that in particular, they help to reveal consensus views... and may enhance the reliability of children’s responses.

(p. 413).

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Watts and Ebbutt (1987) propose that responsibility for both the focus and content of the interview rests with the researcher but also report that:

...group interviews are of little use in bringing intensely personal issues to the surface... the dynamics of the group denies access to this sort of data.


There are at least two epistemological traditions, which have informed group developments. A theory of knowledge with roots in the natural sciences has been an important influence on the development of approaches preferred by many market researchers. This has however, encouraged them to analyse and represent group data quantitatively. On the other hand, many educational researchers are eclectic; they draw on methods from disparate traditions and often combine both quantitative and qualitative approaches within the same research project. The rigid divisions between qualitative and quantitative methodologies are not particularly helpful. Silverman (1993) asserts that:

...positivism is 'a catch-all' term without a referent which seems to encompass anything which quantitative researchers do not like- a term of abuse which conceals that its critics have no coherent alternative.

(Silverman, 1993: p. 198)

Subsequent to this statement, Kitzinger (1994) after completing a review of 40 published studies, which drew on group data, challenges the definition of groups, viz that researchers actually make use of participant interactions. She reports:

I could not find a single published study concentrating on the conversation between participants and very few that even included any quotations from more than one participant at a time.

(Kitzinger, 1994: p. 104).

Hence, Morgan and Spanish (1984) argued that the idea of approaching any problem through multiple methods is one that most researchers now 'honour' in the breach. They suggest that:
...correct social research is best divided into camps according to the favoured form of data collection: survey vs. interviews. Groups not only give us access to certain kinds of qualitative phenomena that are poorly studied with other methods, but also represent an important tool for breaking down narrow methodological barriers. (Morgan and Spanish, 1984: p. 254).

3.11 FACE-TO-FACE INTERVIEWS

I will also use face-to-face interviews to gather data for analysis. The reason for this is largely based on the importance of the approach in generating qualitative data.

The main advantage of face-to-face is that it enables a researcher to adapt the questions as necessary, clarify doubt and ensure that the responses are properly understood by repeating or rephrasing the questions. I will be able to pick up non-verbal cues from the respondent. Any problems that the respondent may be experiencing will be detected through their body language, unconsciously exhibited by any person.

This would be impossible to detect in a questionnaire survey. Face to face interviews help researchers to achieve the desired results and help them to gauge the expression of the respondent.

One of the reasons for using this method of gathering data from the senior management of the case study college was based on the fact that they have busy schedules and asking them to complete questionnaires would probably not be appropriate.

3.12 RESEARCH DESIGN: (FITNESS FOR PURPOSE)

In achieving the objectives of the research, I decided to use a case study research methodology. It is apparent that the issues identified with case study research method have been extensively discussed in this section. As such, I am confident to say that I am aware of the shortfalls of the use of a case study research approach in investigating problems.
Therefore, I have considered the use of a case study research methodology to investigate the feasibility of the recently introduced Virtual Learning Environment e-learning technology at the South East Essex Sixth Form College (SEEVIC) to be the most appropriate method. Using a case study method would allow me to concentrate on a specific situation and to identify the various interactive processes at SEEVIC. I strongly believe that, statistical methods are appropriate for dealing with situations where behaviour is homogenous and routine, while case studies will be more appropriate to deal with creativity, innovation and context. Hence the proposed research interest falls into this category.

Within the case study, various interviewing methods were applied to gather data for analysis. My investigation focused on three different areas of the subject of the case study, namely:

- **The Senior Management of the college and e-Learning Development Officer** - the authority that is responsible for the decisions on strategic planning and allocation of resources. By focussing on the senior management of the college, the researcher was able to gain an insight into how much money had been invested and their projected future spending on e-learning resources. This enabled me to make comparison between the past spending which would indicate whether the technology had reduced costs expended on course delivery.

- **The students** - since one of the aims of introducing e-learning to the college is to support and promote learning, it was very important to talk to these students on how the new technology had impacted on their learning. The approach to this would be to use a combination of questionnaires and group interviewing research methodologies. The group interview involved a small group of students brought to a central location within the college for intensive discussions with a moderator (researcher) who would focus discussions on various issues concerning the impact of e-learning on students’ learning. The group interview research method is far better than one-to-one method of
interviewing as the group’s opinions can be collectively gathered in non-threatening environments. It also gave the opportunity to the researcher to probe answers and clarify ambiguous comments.

- **Teaching staff** - It was also important to seek for the views of the teachers who were using the technology by using questionnaires. The 5-point Likert scale method – 1 being strongly agree while 5 strongly disagree- was used to administer the responses to the questionnaires.

**The e-Learning Development Officer**

This is the person who is responsible for the running of the e-Learning technology at the case study college. By involving her in the investigation, it would be possible to find out the extent to which the technology had been used and how well it had been embedded into the teaching and learning. There were face-to-face interviews where issues relating to the success or failure of the technology were discussed.

In order to ascertain the validity and reliability of the research instruments used, a combination of research methodologies were used among these identified stake holders groups. In the process, I hoped to triangulate between interviews and documentary evidence such as the college’s Self Assessment Reports, Annual Financial Reports, The Learning and Skills Reports and all other available documents from the DfES. Using questionnaires, face-to-face interviews and group interviews enabled me to confirm the validity of responses.

**3.13 ETHICAL ISSUES**

In the course of the investigation, I needed to follow the principle of voluntary participation where participants’ are not coerced into participating in the research. This is especially important in that, in this type of study, the researcher have to rely on the participants’ voluntary and honest disclosure in order to address the subjects of the enquiry. Closely related to this notion of voluntary participation is the requirement of informed consent. Essentially, this means that prospective research participants must
be fully informed about the procedures and risks involved in the research and must give their consent to participate.

As part of the ethical standards of this research, I deemed it important to ensure that I did not put participants in a situation where they might be at risk of harm as a result of their participation. I ensured that I protected the privacy of research participants. This is often a common practice in research.

Almost all research guarantees the participants’ confidentiality; they are assured that identifying information will not be made available to anyone who is not directly involved in the study. The stricter standard which I applied in this process was the principle of anonymity where the participants remained anonymous throughout the study. Clearly, I considered the anonymity standard to be a stronger guarantee of privacy. In the process, I ensured that the participants’ privacy was observed. A document was issued and signed by the participants to ascertain this. The official reports obtained from the college and the Learning and Skills Council were used as directed by the officials of these institutions. The questionnaires designed for the participants had no name or number, so that individual views will not be linked to them.

Here are the points highlighted in my ethical standards prior to the investigation.

- All participants will be offered the opportunity to remain anonymous.
- All information will be treated with the strictest confidentiality.
- Interviewees will have the opportunity to verify statements when the research is in draft form.

3.14 DATA COLLECTION AND ANALYSIS

Data was collected from both primary and secondary sources. The primary data was collected through the use of questionnaires, group interviews, and face-to-face interviews, while the background information was gathered through secondary sources which included the documents obtained from the college such as the yearly Self-Assessment Reports, The Learning & Skills Council’s Regional Strategic Review

Data was also gathered from government publications such as: DfES, BECTA, BESA and the Learning and Skills Council as well as textbooks and academic journals.

A total of 100 questionnaires were sent to the teaching staff of the college. A total of 285 questionnaires were distributed to students through their personal tutors who administered the survey during tutorials. The questionnaires were designed with close ended questions to enhance quick response and time saving on the part of the students. In order to ensure the validity and reliability of the students' responses to the survey, there were group interviews comprising an average of 10 students in each group. The selections of the participants were based on criteria that each faculty and qualification levels were represented. The group interviews were administered by the researcher within the college in a quiet and conducive environment. The comments from the participants were transcribed without disclosing their true identity.

The senior manager in charge of e-Learning and the e-Learning Development Officer in the college was interviewed using face-to-face interviewing method. Questions relating to the subject of the enquiry were drawn up prior to the interview. The goal of this form of method is to have an opportunity to find out what the participants views were and why. This also allowed me to explore in detail their, attitudes, behaviour and motives. These eventually helped to gain an insight into the issues in question. It has been found that in-depth one-to-one interviews can help researchers to explore particular sensitive topics. They often allow a rapport to be built up, which enables the interviewer to probe into feelings and thoughts that someone may not reveal in a group discussion or on paper. This method was considered to be appropriate due to the busy schedule of the interviewees. It was also considered to be appropriate as the interviewer can observe the body language of the respondents and also have the opportunity to clarify ambiguous statements. It also gave the interviewees the opportunities to clarify questions which are not clear.

In the process of analysing the collected data, I hoped to take the following steps: The analysis of the face-to-face interview and group discussions were transcribed. The
transcriptions were the summary of the discussions and comments made by the participants. These comments were be used to support findings. As far as the questionnaire surveys were concerned, I tabulated the information by adding up the number of ratings for each question asked and expressed them in percentages. In doing this, comparisons were made by looking at the proportion of responses to each question.
CHAPTER 4 – CONTEXTUAL INFORMATION

4.1 INTRODUCTION

The South East Essex Sixth Form College (SEEVIC) is a large academic institution situated in Benfleet, within the Essex County. The college was established in 1972 purposely to provide educational services to the local community. Since its establishment, the college has developed to serve a wide area of Southern Essex including Basildon, Thurrock and Southend. The recent Ofsted report\(^9\) indicates that the college offers a wider range of provision than is usual for a sixth-form college, particularly for students aged 19+. The college’s student population is currently well over 3000.

The mission statement of the college is:

\[
\text{SEEVIC College will be responsive to the needs of the community working in partnership with schools, employers and other agencies to promote a high quality of teaching and learning}^{10}\.
\]

In terms of the workforce, the college currently has a total of 104 teachers, 117 support staff and 4 management executives. The college currently has five faculties namely: Faculty of Arts, Sports and Languages; Social Science and Care Studies; Humanities; Business and Faculty of Mathematics, Science and Technology.

4.2 THE COLLEGE FINANCE

In the college’s strategic development plan for 2003-2006 report, it was stated that the college currently has an ‘A’ grade financial status as defined by the Learning and Skills Council. Between 2001 and 2003, the college invested over £7 million in refurbishment and building of new accommodation for students, huge investments which led to a shortfall in the college’s cash flow. As such, the college was forced to close its out-reach centres in Canvey Island and Wickford and also made some redundancies in the main campus in the 2005/2006 academic session\(^11\).

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\(^9\) For more information on this see the SEEVIC College 2005 Ofsted Pre-Inspection Commentary.

\(^10\) This was extracted from the SEEVIC College Development Plan.

\(^11\) For more information on this, please see the Seevic College Strategic Development Plan (2003 – 2006)
The college's strategic development plan for 2003-2006 report indicated that it devoted less than 71% of its total income to staffing while it spent an average of 25% on Information and Communication Technology (ICT). This was set to continue until the end of 2006.

Figure 4.1a MAJOR DECISION MAKING: POLICIES AND STRATEGIC DEVELOPMENT

4.3 THE ORGANISATIONAL AND MANAGEMENT STRUCTURE OF THE COLLEGE

From the above diagram, there are indications that the management approaches and structures at the College are designed to promote an ethos of continuous improvement. In order to empower and enable its staff to contribute to the
development of the college, the management are of the opinion that the management style should be designed to be open, supportive, challenging and self critical.

The Senior Leadership Team is arranged in a way that would enable the Executive, Senior Curriculum and Functional Managers to meet formally each month while the Functional and Curriculum Managers each meet fortnightly.

Most importantly, it appears that the College structures are designed to promote team working with Team Leaders having identifiable line management responsibility for quality and development in their area.

Communications through the line management structure are supplemented by monthly meetings for all staff, weekly college bulletins, email and use of the college intranet.

4.4 CURRICULUM MANAGEMENT

The Subject Leaders have responsibility for the quality and development of their subject and management responsibility for their teaching team. On the other hand, Heads of Faculty manage their team of Subject Leaders and have the discretion to delegate certain financial responsibilities to them in consultation with the Director of Finance. In a number of cases, a team of Subject Leaders may report to a Head of Department. This arrangement is intended to promote team working and common approaches where there are related subject areas. The Heads of Faculty may have line management responsibility for administrative support, technical staff and learning facilitators in their area. This does not apply to the Information Technology central support team personnel who remain the responsibility of the Senior Manager, ICT and Learning together with tutors and assistants who are assigned to the Faculty of Learning Support.

The Heads of Faculty and the Head of Student Services report to the Director of Curriculum. Each faculty has an attached Senior Tutor who works closely with the Head of Faculty to identify students requiring special support / action, normally through procedures associated with the college assessment strategy.
The Director of Quality and Information Systems is responsible for Quality Systems across college and thus has a direct input into all teams through the line management structure. The Director holds responsibility for the scheduling of classes and the deployment of teaching staff and negotiates this directly with Heads of Faculty in consultation with the Director of Curriculum. The Senior Manager of ICT reports to the Director of Quality and Information Systems and holds responsibility for the provision and development of ICT / ILT systems in addition to involvement in the promotion and facilitation of curriculum use of Information and Learning Technology (ILT).

The Deputy Director of Organisational Development attends executive meetings and has overall responsibility for the Human Resource function (including Professional Development) and aspects of Quality Assurance, including internal inspections. The Deputy Director is line managed by the Principal and Chief Executive but also reports to the Director of Quality and Information Systems.

4.5 FUNCTIONAL MANAGEMENT

The Director of Finance holds responsibility for the Estates function through the Senior Manager for Facilities & Estates. This function is responsible for the development and maintenance of the estate, including making proposals for the accommodation strategy and suitable consequent design solutions. The Estates function is responsible for Health and Safety, Catering, Site Maintenance and Estate Development. A Health and Safety Report is made directly to the Human Resources Committee of the College. The maintenance and development of the college estate and the associated allocation of resources is monitored and controlled through Client Group, chaired by the Director of Quality & Information Systems.

The college considers the allocation of resources to be fundamental to the development of learning environments suitable for learning with the use of developing technologies. As such, the system is designed to ensure that users understand the rationale for decisions with respect to resource allocation and have the opportunity to influence that decision making. The Client group opens the decision
making process whilst also allowing key managers to share the issues at one time which shortens the consultation and decision making process.

The provision of Management Information is the responsibility of the Director of Quality & Information systems. Such information is made available via the administration and teaching staff networks. The Senior Manager of Marketing & Communications is responsible for the internal and external communication strategy, including the appearance and use of the Administration Intranet (AdNet). The Information Systems Manager is responsible for developing the range of reports available to meet the needs of managers.

The Senior Manager for Marketing & Communications reports directly to the Principal, and is responsible for marketing strategies and expenditure in order to ensure that the college realises its students’ recruitment targets. The role involves supporting key managers in identifying markets and liaising with key partner schools in the community.

4.6 STAFF DEVELOPMENT

The management of the college considers the area of Teaching and Learning as a key strategic objective. In the management effort to accelerate in-house Information and Learning Technology training, the college appointed a dedicated Information and Learning Technology development officer. The position was expected to support the college’s ambitious development strategy in e-learning. There was also a programme for senior and middle academic and support managers in the 2003/2004 academic session to enhance effective contributions to leadership. Also, from the development planning report, it appears that a range of strategies were put in place with a strong emphasis on in-house development activities by making use of external speakers, internal expertise, the sharing of good practice and action research approaches.

4.7 THE COLLEGE RESOURCES

The college occupies a site with well-maintained and attractive grounds. The 2005 Ofsted report noted that students valued the college accommodation and facilities.
The college has a high quality, well equipped, learning resource centre, a well stocked library, and spacious classrooms which include specialist practical classrooms. It was also reported in the 2005 Ofsted report that the college had invested hugely in the Virtual Learning Environment e-Learning Technology, which contains a very good range of course materials such as presentations, links to websites and a range of assessment materials. It is possible for the users to access the system from home. Technical support for ICT was noted to be well managed.

The college’s 2003-2006 development plans indicates that it has over 3000 computers which are available to students and staff during the college hours. Each teacher also has a well maintained personal computer (PC). Each classroom has an Interactive White Board and Data Projector which are used in classrooms as well as a Bromcom system which is used for marking students registers.

In terms of technology, the Director of e-Learning commented that the college has a positive attitude to technology culture. Hence, when the Virtual Learning Environment e-Learning technology was introduced, it fitted in well with the existing culture of the college.

4.8 PRE-VIRTUAL LEARNING ENVIRONMENT E-LEARNING TECHNOLOGY ERA

Prior to the introduction of the Virtual Learning Environment e-learning technology, there was already in place a well developed ICT system which was set up by the management with the aim of facilitating and enhancing the effective delivery of courses. The ICT system was mainly focused on the use of the intranet as a database where teachers’ resources such as lesson notes, assignment briefs were stored. Both the teachers and students had access to these resources via the college intranet when they were within the college environment. This indicates that the students were unable to access the resources on the college intranet while at home. Due to the limited access to the resources, coupled with the fact that other colleges in the area were using VLE, the college management decided to introduce the Virtual Learning Environment e-Learning technology in 2003/2004 academic session. With the Virtual Learning Environment e-Learning technology, it would be possible for the students and the
teachers to have comprehensive access to the resources outside the college due to the fact that the system was placed on the Wide Area Network. It would also improve communication between the students and teachers, since it would be possible to send and receive emails on the system.

It was also considered by the management as a means of cutting costs since the students would be able to access and print the required resources at home, without resorting to using the college facilities. The management also assumed that teachers would be able to place their resources on the system and also project their lessons in the classroom without a need for giving handouts to students. This strategy was aimed at cutting costs expended on the planning and delivery of courses.

4.9. HOW WAS THE NEW SYSTEM PLANNED FOR AND IMPLEMENTED IN THE COLLEGE?

The VLE e-Learning technology was developed and installed in the college during the summer holiday in 2003. When the college resumed for the 2003/2004 academic session, there was a memo from the Vice Principal of the college which outlined the rationale for the development of e-learning. This was immediately followed by a general meeting between the management and the college academic / support staff. The purpose of the meeting was to enable the management to inform the staff of the newly introduced VLE.

In justifying the introduction of the technology to the college, the senior management emphasised that the technology was being developed to provide additional support to the learning process. As such, it was suggested that its use should draw on best practice from existing learning strategies. In an attempt to convince the teaching staff of the significance of the technology, the Vice Principal suggested that the technology would serve as the most powerful strategy for supporting learning which would involve students having to articulate their understanding to others. He noted that it was important not to see e-learning just as a strategy to allow students to work independently, but to look for creative ways to use technology in order to facilitate student interaction.
In the process of selling the new system to staff, the management of the college emphasised that they aimed at extending the number of opportunities given to students to use the e-Learning. They also suggested that by the end of that year, e-learning should feature strongly in the learning process experienced by all students. The technology was to be used in the formative assessment of students’ progress with clear and rapid feedback to students on how to improve. In this context, it was suggested that the use of tests on the VLE could provide students with an assessment of progress which, if then linked to further material related to questions that were answered incorrectly, could provide a very powerful learning experience. Hence, it was thought that this would allow students to receive feedback in a non-threatening way. It would also allow students to repeat tests and monitor their own learning progress. Staff could also track a student’s progress.

The Vice Principal of the college also mentioned that developing independent learning packages to deliver the more information based content of a syllabus could free time to work in more creative ways with students. This could support the development of key skills both those specific to the subject and others that are more general. This statement was supported by the conclusion of a research which suggests that high performing subjects place a greater emphasis on skill development than syllabus content.\(^\text{13}\)

The teaching staff of the college were made to understand that a lot of excellent e-learning subject specific content had been produced and were being developed to provide new approaches to explaining difficult concepts in an accessible and engaging way. The management also convinced the staff that teaching materials could be manipulated and integrated into the existing schemes of work. In terms of support, the management of the college emphasised that they intended to support staff to identify sources of good quality learning materials and also hoped to create a training area where support in the development of e-learning strategies could be easily accessed.

Subsequent to this meeting, there was a brief training session which was organised by all the faculties at different times and locations within the college environment. The

\(^\text{13}\) For more on this, please see the case study college’s Vice Principal Memo to the teaching staff.
aim of the training session was to familiarise the participants with the basic functions of the new system. Each session of the training lasted for an average of one hour. There were no external consultants or other experts of the technology present who were invited to train the staff on the use of the new technology. It was apparent that, despite the fact that the management of the college perceived the significance of the technology in enhancing learning and facilitating delivery of lessons, such perceptions were not at any time communicated in a formal way to the potential users of the system when the management were planning for it. The students on the other hand were only given instructions in the form of pamphlets and a short introduction. There was no teaching staff ICT skills audit or consultations on the need for such technology and how the teaching staff would want the system to be designed.

However, despite the management’s positive comments regarding the use of the Virtual Learning Environment e-learning technology, it appears that there was a huge resistance from the teaching staff which was noted by the management in the first year of the introduction of the technology at the college. As such, in order to ensure the success of the implementation of the new system, the management resolved in setting targets for the teaching staff in the 2004/5 academic session. The targets were made official and every teaching staff was expected to meet them without any resistance.

Hence, these targets were as set out below:

1. All course administration relevant to students should be on the VLE.

2. Links on VLE to resource materials for each section of work. This should also include material available in the library.

3. Revision material on VLE.
   (Minimum- two revision exercises per course).

4. Formative assessment using an e-learning strategy (e.g. quizzes on the VLE).
   (Minimum- two approaches per course).
5. Material for independent study on VLE.
   (Minimum- two activities per course).

6. Lesson-based activities using e-learning approach. This should be more than just a PowerPoint presentation though this could form part of the activity.
   (Minimum- two activities per course)\textsuperscript{14}.

In justifying why the targets were set, the Vice Principal of the college commented that:

It is recognised that some courses make extensive use of e-learning materials which are not integral to the VLE. Where this is so, developing the use of the VLE should be used to support this activity where appropriate.

(The Vice Principal's memo to the teaching staff on the use of VLE in 2004/2005 academic session).

The targets were subsequently monitored and recorded by each faculty. Those who did not meet the targets were cautioned through memos from the Director of Curriculum. It became apparent that the teaching staff were more concerned at meeting the management targets rather than using the technology in the most effective way to enhance the effective delivery of lessons.

As part of the efforts of the management team to implement the technology successfully, there was the creation of a separate office called the e-Learning Office with three staff who possessed generic ICT skills and had a mandate to train staff on how to use the technology. They were also in charge of maintaining the software in terms of up-gradeability and up-loading of some files. They were equally involved in the monitoring of the use of the technology by the teaching staff which were recorded and passed to the management of the college for comments. They were more or less the 'police' of the system.

\textsuperscript{14} These targets are extracted from the Vice Principal's memo to the teaching staffs in the 2004/2005 academic session.
Discussion

It appears that the approach adopted by the senior management of the case study college to introduce and manage the new technology tended to have negative implications. The role which the Vice Principal of the case study college played in the process, particularly the setting of targets for the teaching staff seemed not to motivate them; instead, it led to an atmosphere of hostility. On the training issue, it was evident that the senior management did arrange training for the staff but the training session for a period of one hour. The aim of the training was to introduce the staff to the basic features of the technology. The facilitators of the training sessions were the staff from the e-learning office.

The fact that the senior management failed to identify the training needs of the staff prior to the introduction of the new system fundamentally limited the college in achieving the technological change objectives.

Moreover, it emerged from the information extracted from the college's reports that the institution has a hierarchical structure where decisions are made from the top and passed down. They also have an autocratic style of leadership. This is a sort of leadership style where the leaders tell their employees what they want done and how, without seeking the advice of their followers. In the context of the case study college, the lower levels have no say in the decision making process. The employees of the organisation were obliged to accept whatever decisions the management made whether they agree with such decisions or not. At times, failure to comply with the management decisions could have severe consequences such as staff being dismissed, demoted or queried. They just had to accept what ever the senior management decided. This type of management style can only create resistance to change.

It also emerged from the information provided by the college in different reports which suggested that the college already had an existing learning platform which enabled students to access teaching and learning resources while within the college environment as the programme was put on the intranet. The access to the system outside the institution was not possible. This was one of the reasons why the management of the college decided to implement a VLE system.
The availability of the intranet within the college prior to the implementation of the VLE technology would have eased the change process, as most of the resources needed to implement the new system were already in place. However, the negative approach adopted by the senior management in managing the change process made the whole process of the change ineffective.
CHAPTER 5 – FINDINGS

5.1 RESEARCH QUESTION 1

How effective was the case study college in managing the introduction and implementation of the technological change to enhance the use of e-learning?

In order to provide answers to this question, the researcher sought the views of the stakeholders of the new technology. As such, questionnaires were designed to gather data for analysis on the issues in question. In order to validate the responses of the students to the questionnaire survey, a group discussion was instituted. As for the senior managers’ views on the issues in question, face-to-face interviews were arranged with two of them.

What did the senior management think?

The first part of the interviews centered on what they thought about the introduction and implementation of the new technology.

The key points that emerged

- There was no proper planning for the new technology before it was introduced and implemented. They thought that the change was badly introduced and poorly managed. For instance, CJ commented on the issue as follows: “I would say that the change was badly managed.” However, JR had a contrary view on the issue, he commented that “The senior management has managed this change to a large extent, but more could have been done.”

- The senior management perceived that the college had invested in the technology because they had observed other colleges doing it.

- The introduction and implementation process was thought to be chaotic. As such, there was an element of resistance to the change process which forced
the senior management to adopt a coercive approach in the form of targets setting for the staff. This resistance had manifested itself in a reluctance to fully embrace the new technology such as failing to make their resources available on the VLE or using e learning in their classrooms.

CJ commented on the issue as follows; “It was a bit chaotic when the technology was put in place in the college. Despite the fact that the technology itself is very good for the planning and delivery of lessons, since the benefits of the technology were not communicated in an appropriate manner to the teachers, it became necessary for the teachers to partially reject the technology initially”. “Yes! I said this because when the technology was first introduced, many teachers were against it, although, their actions were not documented in the form of a letter or memo to the management but there was an element of resistance to it. Many teachers did not put their resources on the VLE and many were not using the technology in the classroom for months after it was introduced. At a later date, the management took the decision to set targets for each subject area within the college and specified dates were given for the review of these targets.”

CJ: “Teachers were mandated to put at least 25% of their resources on the VLE and there are other features of the technology which they expect teachers to have used within these periods. It is quite funny that whichever subject areas that failed to meet the targets, such area will receive a memo from the management asking them to explain why they have failed to meet their targets. As you can see, it is more or less like forcing them to embrace the new technology. In my opinion, if there had been proper planning from the beginning and the teachers had been briefed and even involved in the design and implementation of this technology, I don’t think it would have been necessary for the management to be forcing the teachers to put their resources on the VLE. The whole idea would have been easily embraced.”
- Senior managers commented that the teaching staff were not involved in the planning and designing of the new technology. JR commented on the issue as follows:

"I would expect the senior management to have informed the teaching staff prior to the introduction of the technology and also involved the teaching staff in the design and implementation of the technology, give the teaching staff the opportunity to contribute their own ideas rather than for the senior management to impose the technology on them. On this note, I think the senior management could have done more to manage the change."

- There was inadequate training provided by the senior management during the change process. CJ commented on this as follows "Many teachers were completely left out of the training and most have no idea of what the technology was all about."

- Communication with the staff about the introduction and implementation of the new technology was thought to be limited.

JR: "There is a need for us to improve the communication channels within the college. We must be able to pass on information to the right people at the right time and senior management must be able to receive information from appropriate channels at the right time. Hence, this has been one of the major problems we have in this college. However, I can confirm that the senior management are aware of these problems and we are actively working to provide solutions to them".

**What did the teachers think? (Questions 1-3)**

The questions asked centred on what the teachers thought about how the new technology was introduced and implemented by the senior management. Their views are presented below in figure 5.1a.
The key points:

- Teachers’ Awareness: Figure 5.1a shows that all the teaching staff agreed that they were aware of the use of the new technology.

- Communication with teachers: Figure 5.1a demonstrates that there was ineffective communication between the senior managers and the teaching staff during the change process. As much as 25% of the teachers thought that the senior managers did not inform them of their decision to introduce the new technology prior to its implementation.

- Training issues- Figure 5.1a also shows that a significant number of teachers thought that the senior managers did not make adequate provision for the training needed by them so as to be able to use the new technology effectively to enhance teaching and learning across the college. More than 20% of the teaching staff thought that they were not trained on how to use the new technology when it was introduced.
What did the students think? (a) (Questions 1 – 3)

The questions asked centred on what the students thought about how the new technology was introduced and implemented by the senior management. Their views are presented below in figure 5.1b. and 5.1c.

FIGURE 5.1b

The Students Views on the Awareness of the College VLE Technology

The key points:

- Students’ awareness- Figure 5.1b showed that all the students were aware of the use of the new technology. As much as 90% of them considered that they were familiar with the use of the technology and up to 50% often used the technology. This evidence was also validated during the group discussion which took place with the students. Most of them commented that they often used the new technology. For instance, Jason commented as follows: “I would say 100% of the student population use the college VLE, particularly for accessing and downloading course work/lesson materials.” This further validates the evidence shown in figure 5.1b.
**What did the students think? (b) (Questions 4 – 6)**

**The key points:**

- Access to the technology is important particularly, in achieving technological change objectives. As such, the questions asked centred on what the students thought about access to the technology at college and home. Their views are presented below in figure 5.1c

**FIGURE 5.1c**

![The Students Views on the Access to the College VLE Resources](image)

- Students’ access to the new technology- Figure 5.1c shows that most of the students thought that the college made available adequate resources that allowed them to have access to the new technology while within the college environment and at home. Up to 90% of the students thought that they had access to the new technology both at home and at college.

- It also emerged during the group discussion which I had with the students, that a significant number of them thought that the college had adequate ICT resources which they could use at any time to access the new technology. For instance, a few of them commented as follows:
Hannah: ‘If there is anything good about this college; it will have to be the computer resources they have. The computer resources we have in this college are far more than enough for the student population. I always have access to those resources whenever I want to use any of them during the college hours.

Vicky: ‘I absolutely agree with Hannah.’

Suzie: ‘Me too!’

Helen: ‘Whenever I am free, I always go to the Learning and Information Network Centre (LINC) area to use the college VLE.’

Summary

It emerged from this study that the staff of the college were of the view that the senior management of the college did not manage the change process well. As such, they thought that the whole change process was a failure.

The staff claimed that they were not given adequate training and that there was limited communication between the senior management and them during the change process. This limited communication made the staff to be unaware of the benefits of the technology particularly to teaching and learning. By coercing the staff into using the technology made the staff to resistance the change. It also created an atmosphere of hostility.

On the part of the senior management, they thought that the change was successful. They substantiated this view by making reference to the fact that as much as 95% of the staff uploaded their teaching and learning resources onto the VLE. The fact that majority of the college’s students are using the new technology was another justification for the senior management to argued that the change was successful.

5.2. RESEARCH QUESTION 2

What was the impact of the VLE e-learning on teaching across the case study college?
What did the senior managers think?

The questions asked centred on what the senior managers thought about the impact of the technology on teaching across the college. Their views are presented below:

The key points:

- They thought that the use of the technology had facilitated the sharing of good practice across the college. Teaching and learning resources are now easily shared via the VLE technology. The Director of e-Learning commented:

  "Students can now access teaching and learning resources at college and at home at their own convenient time. The teaching staff and the students can also discuss issues on one of the forums set up within the VLE technology. This is a great improvement in the students' and teachers' interactions. Another good thing about this technology is that, both the students and the teachers can even access the technology while on holiday in another country as long as they have access to the internet."

- They thought that the technology had enabled teachers to set diagnostic assessments for students online, provided links to other academic websites and allowed them to effectively monitor students' academic progress. CJ commented on this as follows:

  "Do you know that it is even possible for teachers to use the VLE to set up assessment exercises students on line?"

- They thought that the technology had served as an additional teaching resource for the teachers. Students now have access to teachers' resources such as handouts, schemes of work and past examination papers online and these could be accessed anywhere in the world. The senior management thought that all of these facilities had made teaching easier. This evidence emerged from the comment made by the e-Learning Development Officer:
“Teachers can now put their resources on the VLE and on the other hand, students have the opportunity to access these resources anywhere and at anytime.”

They thought that the technology had made teaching more interactive as the technology allowed teachers to set up discussion forums where students and teachers were interacting and exchanging views on specific academic topics. The e-Learning Development Officer commented:

“You see, there are so many things teachers could do with this technology to enhance lesson delivery and facilitate students’ learning. All we need to do in this college is to expose teachers and students extensively to the good aspects of this technology. I do not think that the senior management have really done a good job in this area.”

They thought that the technology had enabled teachers to spend less time in preparing teaching resources as they only needed to prepare one set of handout and place them online for the students to access. The senior managers thought that this had enabled the teachers to reduce the amount of time spent on photocopying teaching and learning resources. For instance, the e-Learning Development Officer commented:

“The technology has also saved the teachers’ time i.e. the time spent in preparing and photocopying handouts for students. These times can now be spent on other important things.”

What did the teachers think? (Questions 4-12)

The questions asked centred on what the teachers thought about the impact of the technology on teaching across the college. Their views are presented below in figure 5.2a.
The key points:

- Teachers’ confidence- It appears that most of the teachers were confident using the new technology. Figure 5.2a shows that up to 82% of them thought that they were confident at using the new technology. As much as 80% also thought that they were aware of the importance of the technology for planning and delivering lessons.

- The teachers’ views of the Ease of Use of the new technology- Figure 5.2a shows that more than 25% of the teachers think that they do not have the required ICT skills to be able to incorporate the new technology into their teaching strategies to enhance teaching and learning.

- The teachers’ view of the benefits of the new technology to teaching- figure 5.2a shows that a significant number of teachers did not think that the use of the new technology had made it easier to plan and deliver lessons. Up to 61% of them preferred the use of non-technological methods for planning and delivering lessons.
On the issue of the use of the new technology to meet individual student's learning needs through differentiated teaching, figure 5.3a showed that as many as 42% of the teachers did not think that the use of the technology had encouraged differentiated teaching a strategy which is designed to meet individual student's learning needs. Further evidence emerged from figure 5.3a that more than half of the teachers thought that the use of the new technology had improved the process of monitoring students' progress, such as, tracking students' work to improve grades. 53% of them thought that the new technology had helped them to monitor students' progress better.

There appears to be a general consensus among the teachers that the use of the technology had increased the amount of time spent in preparing the teaching and learning resources compared to the traditional methods. Figure 5.4a shows that, more than 70% of them thought that the use of the technology had not helped them to reduce the amount of time spent in preparing teaching and learning resources.

Summary

From all indications, the senior management of the case study college thought that the new technology had enhanced teaching across the college. They thought that the new technology had enabled the teachers to set diagnostic assessments for students on line as well as provided links to other academic websites.

On the part of the teaching staff, they thought that the use of the new technology did not enhance teaching across the college. They were of the view that the new technology did not enhance interactive learning nor serve as additional resources to support teaching. They also thought that the use of the technology had increased the amount of time spent in preparing teaching and learning resources.
5.3. RESEARCH QUESTION 3

What was the Impact on Learning?

What did the senior managers think?

The questions asked centred on what the senior managers thought about the impact of the technology on learning. Their views are presented below:

The key points:

- The senior managers thought that the technology had improved students' learning across the college. They thought that the technology had enabled students to have access to a vast amount of teaching and learning resources. They considered that this access to resources had improved students' learning. The Director of e-Learning commented on the issue, "This technology is definitely transforming teaching and learning".

- They also thought that the technology had motivated students to learn due to the fact that lessons had become more interactive. They thought that the discussion forums which the technology had enabled teachers to set up in different subject areas had improved students' / teachers interaction. They thought that this interaction had impacted positively on students' learning.\(^{15}\)

What did the teachers think? (Questions 18 -25)

The questions asked centred on what the teachers thought about the impact of the technology on learning. Their views are presented below in figure 5.3a

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\(^{15}\) This information was extracted from the transcripts of the face-to-face interviews with the Director of e-Learning and the e-Learning Development Officer of the case study college.
FIGURE 5.3a

Teachers Responses - Impact of VLE on Students' Retention & Achievements/Learning

The key points:

- The figure 5.3a suggests that a reasonable number of the teaching staff did not think that the use of the new technology had impacted positively on students’ learning. A significant number of them also did not think that the technology had enabled students to have access to more learning resources than when it was not introduced. Less than 30% of the teachers thought that students had access to more learning resources than when the technology was not in place.

- On the issue of the use of the new technology to meet individual student’s learning needs through differentiated teaching, figure 5.3a shows that as many as 42% of the teachers did not think that the use of the technology had encouraged differentiated teaching.

- More than 50% of the teachers also considered that the use of the new technology had not improved the students’ academic performance across the college.
What did the students think? (a) (Questions 7-14)

The questions asked centred on what the students thought about the impact of the technology on learning across the college. Their views are presented below in figure 5.3b.

**FIGURE 5.3b**

The Students Views on the Use of the College VLE

![Diagram showing responses to VLE use questions]

**The key points:**

- Figure 5.3b shows that a significant number of students frequently used the new technology to download information that could provide more information for their studies. More than 50% of them frequently used the technology to find information relating to their studies.

- Figure 5.3b also revealed that the extent to which the students used the technology to enhance independent learning was limited. Only 13% of them used the technology to interact with other students, 43% used the technology to do revision, when preparing for examinations and less 50% used it to access teachers’ notes.
**What did the students think? (b) (Questions 18-25)**

The questions asked centred on what the students thought about the impact of the technology on learning. Their views are presented below in figure 5.3c.

**FIGURE 5.3c**

The Students Views on the Impact of VLE on Learning

<table>
<thead>
<tr>
<th>Questions</th>
<th>% Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>I have access to more information by using the VLE</td>
<td>50</td>
</tr>
<tr>
<td>VLE enhances learning</td>
<td>60</td>
</tr>
<tr>
<td>VLE motivates me to learn more</td>
<td>40</td>
</tr>
<tr>
<td>VLE makes learning more interesting</td>
<td>30</td>
</tr>
<tr>
<td>The use of VLE has improved my performance</td>
<td>25</td>
</tr>
<tr>
<td>The use of VLE has improved my engagement in learning</td>
<td>20</td>
</tr>
<tr>
<td>The use of VLE has developed my confidence</td>
<td>15</td>
</tr>
<tr>
<td>The use of VLE has reduced my dependence on my teachers</td>
<td>10</td>
</tr>
</tbody>
</table>

**The key points:**

- The report shown in figure 5.3c suggests that more than 65% of the students thought that the new technology had enabled them to have access to more information which had improved their learning outcomes. This suggests that more than half of the students thought that the new technology had resulted in a positive impact on their learning.

- Less than 50% of the students thought that the technology had motivated them to learn. Less than 60% of them also thought that the technology had made learning more interesting. A significant number of them thought that the use of the new technology had not improved their engagement in learning or improved their academic performance and confidence.
• The 5.3c report showed that more than 50% of the students thought that the new technology had reduced their dependency on teachers and helped them to be more independent learners.

• During the group discussion, it was revealed that a significant number of students thought that the technology had neither motivated, engaged nor improved their academic performance. Below are some of the comments made by the students:

Beth: "Because there is no interaction at all. All you do is just to sit there, reading stuff from the computer screen. Even if there is any need for you to clarify certain things, you have no chance of doing that immediately except by sending an e-mail to your teacher and that might take about four days to get a response. Personally, I prefer the face-to-face instruction to this e-learning stuff".

Sophie: "I prefer teachers to all this e-learning 'crap' because I can talk to my teacher, I can ask questions and I think I understand things more when I see someone in the classroom telling me how to do things. I think communication should be a two-way process. In the classroom, the teacher will lead the lesson and students will follow. Sometimes, a teacher could introduce a role-play or group work into a lesson so as to enhance understanding. Whereas, with this e-learning stuff, you only sit in front of the computer and give instructions to the system on what to do. There is no interaction and I think it is really, really boring."

Summary

From the available evidence, it appears that the students did not feel motivated by the use of the technology. They also thought that the use of the technology did not make learning interactive and therefore did not challenge nor stretch them.
On the part of the senior management, they thought that the use of the technology had motivated students to learn. Hence the senior management views of the impact of the technology on learning were different from that of the teachers and students.

5.4. RESEARCH QUESTION 4

Did the e-Learning Technology Cut the Cost of Course Delivery?

What did the senior managers think?

The questions asked centred on what the senior managers thought about the impact of the technology on costs. Below are their views.

FIGURE 5.4a THE COSTS—THE TOTAL SPENDING BY SUBJECT AREAS 2004-2005

The key points:

- Figure 5.4a shows that, the costs expended on the teaching and learning resources during the VLE era (2003-2005), rose significantly. The spending rose by 19.3%. This again corresponds with the Director of e-Learning’s comment on the issue of costs.
"In terms of the money spent on the hardware and software putting this technology in place took almost 25% of the college gross annual income."

- It also emerged in the course of the face-to-face interviews that the senior management thought that costs were not likely to reduce in the future due to the fact that both the hardware and software resources which were required to run the technology efficiently, would need to be upgraded from time to time, which would incur further increase in costs. CJ commented on the issue:

"In the ICT world, you have to keep updating both the hardware and software from time to time in order to meet the pace at which the technology develops. In most cases, ICT technologies change every six months."

- The senior managers also thought that the fact that students were allowed to print free while within the college environment had added to the costs of running the system. CJ commented on the situation:

"Students can print as many copies of their teachers' resources at anytime and at anywhere. The situation in this college is that students are abusing the privilege of not paying for printing resources from the VLE or from the Internet. As a result of this, they waste too much print papers. The college is now spending even more in buying cartridges and papers to the printers."

What did the teachers think? (Questions 13-17)

The questions asked centred on what the teachers thought about the impact of the technology on the cost of course delivery. Their views are presented below in figure 5.4b.
The key point:

- Less than half of the teachers thought that the use of the new technology had helped to reduce the costs expended on course delivery. Figure 5.4b shows that, only 33% of them thought that the use of the new technology had helped to reduce costs.

What did the students think? (Questions 15-17)

The questions asked centred on what the students thought about the impact of the technology on costs. Their views are presented below in figure 5.4c
**The key findings:**

- Figure 5.4c suggests that a reasonable number of the students thought that the use of the new technology had helped them to reduce the costs expended on learning resources. 39% thought that by using the new technology, there had been a reduction in the money spent on photocopying handouts, textbooks and past examination papers.

**Findings - Students Group Discussion**

- In order to validate this finding, a student group discussion was instituted. From the discussion, it appears that the majority of the participants also thought that the use of the new technology had helped them to reduce their spending on learning resources. Below are comments made by some of the students:

  "To some extent, I would say yes. The reason is that I don't have to buy as many textbooks as I used to buy and I don't have to keep photocopying handouts anymore since I can easily print all these resources from the VLE as..."
many times and as many copies as possible without paying a penny. It has been a huge savings on my part as a student." (Student 1)

"I have saved so much as a result of using the VLE." (Student 2)

Summary

On the issue of cost, it appears that the students were the most beneficial stakeholder. The use of the new technology had reduced significantly reduced the money they spent on learning resources.

The college management thought that the implementation of the technology had increased costs significantly due to the costs associated with the hardware and software resources needed to run the system efficiently.

On the part of the teachers, there is no evidence to suggest that the use of the technology had reduced the costs expended on course delivery.
CHAPTER 6 – ANALYSIS, SYNTHESIS AND DISCUSSION

The key findings will address the four fundamental questions which the study aims to answer. They are as follows:

6.1. HOW EFFECTIVE WAS THE CASE STUDY COLLEGE IN MANAGING THE INTRODUCTION AND IMPLEMENTATION OF THE TECHNOLOGICAL CHANGE TO ENHANCE THE USE OF E-LEARNING?

This research question will be analysed in the context of the Davis Technology Acceptance Model (TAM). The model postulates four criteria for evaluating the success or failure of a technological change process. These criteria are: Perceived Ease of Use (EOU), Perceived Usefulness (U), Behavioural Intention Towards the Use of the Technology (BI) and Attitude Towards Using the Technology (A). These four criteria will be used as the basis for evaluating the success or failure of the introduction and implementation process of the recently introduced VLE e-Learning technology at the case study college. The diagram below shows the TAM’s Model:
Perceived Ease of Use of the New Technology (EOU)

This is the degree to which a person believes that using a particular technology would be free of effort. This will be significantly influenced by the level of training and skills that the potential users of the new technology had or will acquire prior to or after the implementation of the technological change. In a situation where the potential users of the new technology feel that they lack the required ICT skills that would build their confidence towards the use of the new technology, it is very likely that there will be an element of fear which may make the users develop negative attitude towards its use.

In the context of the case study college's scenario, evidence gathered in the course of this study indicates that, the senior management of the case study college failed to
consider what the potential users of the new technology think about its Ease of Use when implementing it. A significant number of the teaching staff thought that they lacked the required ICT skills needed to use the new technology to enhance teaching and learning. For instance, as many as 20% of the teaching staff claimed that they were not trained on how to use the new technology. Comment from the e-Learning Development Officer further validates this claim:

"...if appropriate measures had been put in place prior to the introduction of the technology, all the teachers would have been trained properly and have had the required ICT skills which would have developed their confidence towards the use of the technology in a variety of ways. Most teachers learned how to use the VLE on their own."

Although, the Director of e-Learning did mention that, when the technology was implemented, the management organised a one hour introductory training session for the teaching staff, the aim of the training session was to introduce the teaching staff to the basic features of the technology. At the end of the one hour training session, the teaching staff were meant to obtain the system’s user guide and learn how to use the more advanced features of it on their own.

The implications of this were as follows: the staff developed fear, resistance to the change process as well as a negative attitude towards the use of the new technology. Hence the Davis TAM explains reasons for these implications. The model postulates that the Perception of the potential users of a new technology regarding its Ease of Use could have an effect on the attitude of the users in two ways:

(1) Self-efficacy- this means that the more a system is easy to use, the greater will be the users’ sense of efficacy. Bandura, (1982) stressed the significance of efficacy. He posits that efficacy is one of the main factors underlying intrinsic motivation to use a new technology.

(2) Instrumentality- Bandura suggests that, the more a tool is easy to use, the more its users will feel that they have control over what they are doing, and therefore, influence them to want to use it.
One of the factors that motivates people to use a new technology is confidence which largely depends on that person's level of ICT skills. Hence, these skills could be developed through training. This is why training has been emphasised in the TAM and other models such as ADKAR to be extremely important in acceptance and use of a new technology.

In his contribution, Fullan (1998) emphasised the significance of training in managing technological change. He asserts that professional development is extremely instrumental to the confidence and ability to use new technologies. The author argued that if teachers are expected to use technology in ways that enrich and enhance student achievement, they must therefore be provided with the professional development they need to develop the confidence and skills to apply technology and an understanding of how technology supports standards-based education.

From the available evidence, it appears that the case study college did not consider this training issue as an important factor which could affect the users' perception of the ease of use of the system. This lack of consideration of the training issue had a negative impact on the staff confidence as well as the change process. It would be reasonable to suggest that there is a need for the college senior management to take note of this important aspect of technological change process in future projects.

One way to overcome this problem could be to follow the example of the American (Missouri's) eMints programme as discussed in the chapter 2 of this study. The programme ensured that users' professional development focused on instructional strategies like project-based learning, and cooperative or collaborative strategies, in addition to technology skills.

**Perceived Usefulness (U)**

In the Davis TAM, the Perceived Usefulness (U) was defined as the degree to which a person believes that by using a particular system, it would enhance their performance.
In the context of the case study college’s situation, it appears that this aspect of change was not well managed. Evidence emerged in the course of this study suggests that there was ineffective communication between the senior management and staff during the change process. As many as 25% of the staff said that they were not informed about the technology prior to its introduction and implementation. The senior management took the decision to introduce and implement the new technology. The staff were neither consulted nor involved in the planning and implementation of the new technology. For instance, the Director of e-Learning made the following comment on the issue:

"The senior management had managed this change to a large extent, but more could have been done. For instance, I would expect the senior management to have informed the teaching staff prior to the introduction of the technology and also involved them in the design and implementation of it; give them the opportunity to contribute their own ideas rather than imposing the technology on them. On this note, I think the senior management could have done more to manage the change."

Consultations with the staff prior to the introduction of the system would have given the management the opportunity to discuss the need for the system and also made the staff aware of the potential benefits of the technology, particularly to teaching and learning. Lack of this led to a situation where the staff were unaware of the benefits of the technology and the significance of it in the process of planning and delivering courses.

In the course of the study, it was revealed that as little as 18% of the staff made frequent use of the technology in the classroom and quite a significant number of them also did not consider the technology to be additional resources for enhancing teaching and learning. Despite the fact that the technology in itself is good for the planning and delivering of courses, since the benefits of it were not communicated in an appropriate manner to the teachers, some of them resisted the technological change as well as being unaware of its benefits to teaching and learning.

One way of making the potential users of the new technology aware of its usefulness could be through effective communication and users’ involvement in the planning and
designing of the new technology. The senior management could overcome this problem in future projects by putting in place a well-defined channel of communication as well as consider the significant role that users’ involvement in the planning and designing of a new technology play in its acceptance. On this note, the Davis TAM suggests that management should be focussing and acting on the factors which may influence users’ perception of the system.

In his contribution, McGill (1996) asserts that good communication is an essential component in successful change and suggests that it is important that management ensure that all the stakeholders of the proposed system understand, accept and approve it. Hence, this requires comprehensive and continuing communication to all who will be affected. In support of this suggestion, the Director of e-Learning commented on the issue as follows:

"There is a need for us to improve the communication channels within the college. We must be able to pass on information to the right people at the right time and senior management must be able to receive information from appropriate channels at the right time. Hence, this has been one of the major problems we have in this college. However, I can confirm that the senior management are aware of these problems and we are actively working to provide solutions to them."

On this note, Kearns (2004) proposed that the best way to solve the communication and users’ involvement problems during a change process could be to use the TAM’s Traffic Light analogy where the users of a proposed technology are engaged in a discussion about the existing and proposed system to know whether there is a need for it. The author used “Red light” as a decision not to go ahead with the new system and “Amber” to indicate a need for transition and lastly “Green” for a decision to implement the proposed technology as long as there are indications that the stakeholders are willing to accept the new technology. This is a logical approach which the senior management of the case study college may adopt in future projects. Unfortunately, in the current project, these suggestions were not considered in the change process and lack of these considerations made the staff resistant to the change.
Behavioural Intention (BI)

This was defined in the Davis TAM as the measure of strength of one's intention to perform a specified behaviour. Hence, this is some one's subjective probability that they will perform some behaviour and is determined by the users' attitude to the proposed system. It is this which will influence the users' decisions to use the system or not. This indicates that there may be staff with a inertia attitude who are likely to resist the change.

In the context of the case study college's situation, it appears that the senior management did not take the issue of inertia into consideration when introducing the new technology. Rather than involving and negotiating with the staff during the change process, they resorted to the use of a coercive approach to force the staff to accept the new technology. Targets were set and teachers were mandated to develop and upload resources unto the new technology within a specified period.

This approach significantly affected the change process in that the staff resisted the change and the coercive approach created an atmosphere of hostility between the staff and the senior management of the case study college. For instance, the e-Learning Development Officer commented on the issue:

CJ: "Yes, you're right because it was a bit chaotic when the technology was put in place in the college. Yes! I said this because when the technology was first introduced, many teachers were completely against it although their actions were not documented in form of a letter or memo to the management but there was an element of resistance to it. Teachers were mandated to put at least 25% of their resources on the VLE and there are other features of the technology which they expect teachers to have used within these periods. It is quite funny that whichever subject areas that failed to meet the targets, such area will receive memo from the management asking them to clarify why they have failed to meet their targets."

By ignoring the issue of inertia during a change process, Ivancevich et al (1994) suggest that it could have some serious implications such as: resistance to change,
ineffective use of the new system and above all, impede the path of change as witnessed in this study.

In order to overcome inertia during a change process, there is a need to encourage and channel the behavioural intention of the potential users of the system towards a positive direction. To do this successfully, TAM posits the use of the Lewin’s 3-step model of freezing—which potentially will overcome the habit of inertia; moving—which will make change to the new system and lastly; refreezing—which will then implement change.

In his contribution, Smiths (1995) suggests the important role which participation and involvement of employees can play in the change process. The author argued that successful change requires participation while Kanter (1983) asserts that people at all levels in the organisation must be change masters. Kanter concluded that, by allowing potential resisters to participate in designing change, they are enabled to understand it and become committed to it. The importance of participation and involvement of employees in the change process were also carefully defended by Cummings and Molloy (1971). They suggested that if people have a strong need for involvement, the very process of participation can be motivating, leading to a greater effort to make change work. In future projects, there is a need for the case study college’s management to consider these suggestions during a technological change.

If the senior management had thought this through during the change process, they would have considered how best to deal with inertia issues. Inertia could significantly affect the actualisation of technology acceptance in an organisation as there will be staff who would always want to do things in their old ways and they will resist change at all cost. If this attitude is not dealt with, it could detrimentally affect the change process.

Attitude Towards Using (A)

In the Davis TAM, this was defined as users’ positive or negative feelings about performing the target behaviour. If users have a positive attitude towards the use of a technology, it is almost certain that they would always welcome a technological
change initiative. However, if they have negative attitude towards the use of a technology, they would always resist any technological change initiative. Management must always take this into consideration during a technological change process. There are serious consequences if this is ignored. Such consequences could be: ineffective use of the new technology, lack of interest and users may change the path of the technological change process.

In the context of the case study college, it appears that the senior management failed to consider this crucial issue during the introduction of the new technology. The staff attitude towards the use of the new technology was not considered. Evidence emerged in the course of the study as presented in chapter 1 of this study that there was no staff ICT skills audit prior to the introduction of the new technology. The staff ICT skills audit would have indicated the attitude and the level of support the potential users of the new technology would need prior to its introduction. The senior management would have been able to put in place strategies that would have enabled them to deal with the issue of positive or negative attitude towards the new technology. It appears that this was not done. The evidence of this also emerged in the e-Learning Development Officer’s comment:

“If appropriate measures have been put in place prior to the introduction of the technology, all the teachers would have been trained properly and have the required ICT skills which would have given them the confidence to use the technology in variety of ways.”

It also emerged that in departments where staff had a positive attitude to the use of ICT, the use of the new technology was also popular. On the other hand, in departments where the staff had fewer ICT skills, the use of the technology was limited. The e-Learning Development Officer commented that:

“Most of the teachers in the ICT department embraced the technology and use it well. The reason for that, in my opinion, is largely based on their ICT skills. The teachers from Humanities faculty have little or no knowledge of ICT. I think it was wrong of the senior management not to have taken this factor into consideration when introducing this technology.”

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This is an indication that the users’ attitudes towards the use of technology play a vital role in the acceptance of technological change in organisations.

The implications of the lack of consideration of this crucial factor were;

- The senior management were unable to provide adequate training that would have addressed the staff training needs to enhance the effective use of the system
- The staff developed a negative attitude to the use of the new technology which led to the minimal use of it to enhance teaching across the college.
- It also significantly affected the staff confidence in the use of the new system.

In this section, there is an important issue raised: the perception of the staff regarding the management of the change process and that of the senior management of the case study college differed.

**The Staff Views of the Change Process**

From the available evidence, it appears that the staff of the case study college thought that the management of the technological change process was not successful. Their responses to the survey carried out in the course of this study suggest that the teaching staff in particular did not consider the technology to be a tool which could be used as an additional resource to further enhance teaching across the college. There seemed to be limited use made of the new technology within the organisation. The staff also developed a negative attitude towards the use of the technology. All of these were probably due to the senior management’s lack of consideration of the four fundamental factors that are responsible for the acceptance and use of new technologies in organisations as indicated in the Davis TAM. To this extent, one could conclude that the staff of the college considered the change process a failure.

**The Senior Management’s Views of the Change Process**

However, despite this revealing evidence, it appears that the senior management of the college considered the change to be successful. They were of the view that the
coercive approach adopted to coerce the staff to upload teaching and learning resources unto the technology was evidence of the acceptance and use of the technology. For instance, the Director of e-Learning commented on the change as follows:

"From the senior management point of view, I would say yes. The reason is that the senior management set targets for staff on how much of their resources has to be put on the VLE at the set time and the senior management also monitored the use of the VLE from time to time. The evaluation of this exercise by the senior management shows that the teaching staff were using the VLE as repository. The monitoring of the access to VLE also showed that more than 95% of the students’ population access the VLE at least once a week. These are indications that the technology is very popular among the teachers and students."

Hence, these are two contrasting views:

- The senior management of the case study college hailed the success of the management of the technological change.
- The staff on the other hand felt that the management of the technological change process was a failure. As such, they felt that the technological change objectives were not achieved.

These findings are often the case in many organisations. The staff have their ways of evaluating change which to some extent tend to be rational than that of the senior management evaluative criteria. The success of any technological change can only be evaluated by the users’ acceptance and use of the technology. In a situation, where the users of the technology developed negative attitudes towards its use, that in my view, is a strong evidence of failure of the management of the change process.

The senior management will always want to justify their actions and often are reluctant to accept failure. It is clear from this study that the senior management of the case study college capitalised on the fact that the students and staff had used the technology but failed to evaluate how well it had been used to enhance teaching and learning across the case study college.
The fact that the staff were coerced into using the technology was not an indication that the technology was used to its optimum level to enhance teaching and learning across the college. Hence, this level of use could have been adopted by the management to evaluate the success or failure of the technological change process.

Discussion

It is reasonable to conclude that, based on the available evidence which emerged in this study, it is important for the senior management to consider having a strategic plan which is developed in the context of the whole college policy to identify priorities, set targets and timetables and gives a framework against which to monitor and evaluate e-Learning initiative progress. Leadership and management are significant factors in the extent to which policy becomes practice and development in ICT becomes embedded into the life of college and experiences of staff and students.

There is also a need to have an e-Learning working group within the college. This could help to make a significant difference to the likelihood of any initiative becoming embedded within practice rather than the current practice where the decision regarding the introduction and implementation of technological change is made solely by the senior management.

On this issue, Condie et al., (2004; 2005) argued that the introduction of new technologies should not be down to the drive of one or more enthusiasts within an institution. He asserts that the champions who introduced new approaches to teaching and learning influenced their colleagues by example. However, the evidence also indicates that where this is the sole driver of change, whatever the initiative, it is unlikely that new practices will become embedded in the practice of the institution / authority or sustained long term.

Somekh et al., (2004) report on the ICT Test Bed project found that while champions can have some effect, this tends to be on only the one or two aspects in which the individual is particularly interested- a personal hobby-horse or specialist area. He noted that where institutions adopted a whole-institution strategy, strong mutual
support mechanisms developed, which enabled the growth of technological maturity and increased staff and pupil confidence and competence.

In his contribution, Fullan (2005) argues that where initiatives are sustained, and where they become embedded in institutional practice and culture, management and leadership are critical factors. He further argues that, where responsibility and leadership are distributed throughout an organisation, it is more likely that sustained change will be achieved. This would imply that, while an enthusiastic teacher or senior management might make some impact, unless there is a commitment throughout the institution, with accountability for progress at key points, it is unlikely to be sustained or become part of the college’s culture.

6.2. WHAT WAS THE IMPACT OF THE VLE E-LEARNING ON TEACHING ACROSS THE CASE STUDY COLLEGE?

There is sufficient evidence to suggest that the teaching staff preferred to use more of traditional methods for planning and delivering courses across the college. Evidence that emerged from this study suggests that less than 20% of the teachers used the technology for delivering lessons while over 60% of them preferred the use of the traditional methods of teaching. The issue may be due to lack of staff awareness of the benefits of the new technology to teaching.

The Davis TAM posits that the attitude of an individual is not the only factor that determines his/her use of a system, but is also based on the impact which it may have on his/her performance. Therefore, even if an employee does not welcome an information system, the probability that he/she will use it is high, if he/she perceives that the system will improve his/her performance at work.

It is therefore rational to argue that users could be made aware of the benefits of the new technology through effective communication between the senior management and the staff. Prosci, (2002) argues in his ADKAR Model that management communication is one of the change enablers and that it should be given firm consideration during a change process.
Although, it was revealed in this study that all the teachers were aware of the use of the technology at the case study college, that awareness was due to the coercive strategy adopted by the senior management in managing the technological change process. In the contextual information chapter of this study, it was revealed that there was a memo sent to all the teaching staff after the technology had been implemented. The memo highlighted the aims and objectives of the new technology and was then followed by a general staff meeting where the issue of target setting was discussed by the Vice Principal of the case study college.

This strategy further created an atmosphere of hostility between the staff and the senior management. The staff felt that they were less valued by the management. They were coerced into using the technology which detrimentally affected their attitude and willingness to use it. This may have influenced the decision of many staff to carry on using the traditional methods of teaching as opposed to using the new technology.

It also appears that the staff felt that the use of the technology did not enhance teaching across the college for the following reasons: The teaching staff were of the view that the new technology did not:

- Facilitate the effective assessment of students
- Motivate students to learn
- Make lessons more interactive
- Facilitate the sharing of good practice across the college
- Enhance differentiation in teaching
- Reduce the amount of time spent in preparing teaching resources.

These findings suggest that the technology did not have a positive impact on teaching across the college. The question that arises therefore is: Why is this so when there is empirical evidence which suggests that the technology has impacted positively on teaching in some institutions?

Studies have shown that there is empirical evidence which suggests that e-learning technologies can be used to enhance teaching. For instance, Foster (2005) confirmed
that e-Learning technology can make a significant impact on teaching and learning if properly introduced and managed. The research conducted by Becta (2005) concluded in their study of the impact of ICT on students learning that where Virtual Learning Environment e-Learning technologies are used, they allow access to on-line resources anywhere and at any point in time.

The research also showed that the communication software gives students the opportunity to express their views and post comments in discussion forums or on message boards. This allows them to discuss sensitive issues as well as allows teachers to give feedback. Somekh et al (2004) also suggest that the establishment of Virtual Learning Environments has provided a focus for collaboration between institutions where it is used as a repository of resources for sharing.

Also in America, there are studies which confirmed the positive impact of e-Learning technology on teaching. One of these studies is Wenglinsky's (1998) study, "Does it Compute?" He argues that not all uses of e-Learning technology were beneficial. The author found that using computers to teach low-order thinking skills was negatively related to academic achievement. By contrast, teachers who had students that used computers to solve simulations saw their students' mathematics scores increase significantly. As the author explored the reasons for the different ways that teachers use technology, he found that professional development was the difference between those teachers who used skill and drill software and those who used software that could create simulations. Teachers who had training and skills used technology in ways that focused students on simulations and applications that encouraged students to develop problem solving skills. Those teachers who had no training used skill and drill software (Wenglinsky, 1998).

More recently, educators in Missouri (USA) published their findings on a study of the impact of the state-wide eMints programme on academic achievement. This programme was designed as a comprehensive approach to assist teachers to integrate technology. Participating teachers received classroom equipment, and over a two-year period. In addition to traditional workshops, eMints training included peer coaching for individual teachers. The training was designed to help teachers integrate
technology so that they could use inquiry-based teaching and emphasise critical-
thinking and problem-solving skills.

The answers to this question could rationally be explained by assessing the level of 
competence of the staff in using the new technology to enhance teaching. It was 
evident in the course of this study that the staff were not adequately trained on the use 
of the new system.

On the basis of these findings, it is reasonable to say that the adoption of e-Learning 
technologies into the curriculum by any college may not be a prelude to 
improvements in the quality of teaching. It all depends on how the technologies have 
been used. The senior managers in academic institutions therefore have significant 
roles to play in achieving positive outcomes. It seems, therefore, that being 
knowledgeable about technologies and knowing how to use them is significant to 
teaching outcomes.

Becker’s (2000) research on the teacher professional engagement and constructivist-
compatible computer use adds further weight to the argument that technology is a 
particularly strong tool for supporting active, inquiry-based learning. Becker argues 
that the kind of active learning necessary to master principles and concepts and 
explain student work is easier to implement in a technology-rich environment where 
students have a rich array of information to work with rather than only pre-selected, 
quality filtered textbook content, when communication structures enable students to 
pose relevant questions to appropriate individuals and when technology-based tools 
such as databases, analytic software, and composition software help them to extract 
understanding from information.

On a positive note, there is enough evidence to suggest that the technology has 
enhanced effective communications between the teachers and students.

This was revealed during a group interview with the students. Students commented 
that they can now contact their teachers through email when there is need for 
clarifications. This in itself could help to ease teachers’ burden as individual student’s 
problems could be solved on one-to-one basis at the teacher’s convenience.
Hence, this is a huge benefit in terms of support. In addition, the fact that the teachers had uploaded their resources onto the VLE technology for students to access anytime and at any location, had eased the burden of spending hours on photocopying handouts. A single handout could now be shared to many students. It also made it possible for students to email their work to teachers as well as undertake on-line assessments, particularly when doing revision for examinations. These attributes of the system had impacted positively on teaching across the case study college. In support of the above, below are some of the comments made by students on the issues:

Beth: “Because I can access the college VLE at home, save the resources to my computer system at home for future use. There are also very useful links to educational websites outside the United Kingdom which again could provide useful information that could help me understand some difficult topics.”

Vicky: “I use this mostly for my psychology subject.”

Helen: “Using the college VLE has really helped me to get through my ICT coursework easily.”

Helen: “You know that the AS ICT project demands advanced skills which most students tend not to have. However, there are some exercises which our ICT teacher has put on the VLE for us to work through and these exercises are aimed at developing our ICT skills. Oftentimes on weekends, I would sit in front of my computer, access the college VLE at home and work through these exercises. It has helped me a lot. It has also encouraged me to learn independently.”

Suzie: “I also use it for my Art subject”

Discussion

Less than 40% of the teachers who participated in the survey agreed that the technology enhanced differentiation in teaching while over 50% agreed that the
technology had made it easier for students to have access to more information. Over 50% of the respondents agreed that the technology impacted positively on the monitoring of students. These fundamentals are the criteria for measuring effectiveness of technology in teaching. These are indications that the technology in itself is capable of enhancing teaching and learning.

However, for this to happen, there is a need for the management to encourage and channel the Behavioural Intention of the potential users of the system towards a positive direction. The potential users of the system need to be motivated and made aware of the potential benefits of the system which in turn would change their orientation of fear of failing and difficulty in learning the use of the technology.

Hence, Lewin's 3-step model of freezing- which potentially will overcome the habit of inertia; moving- which would make change to the new system and lastly; refreezing- which would then implement change- could be deployed to manage the problems identified here. So also, the process of technological change process suggested in the Kearns (2004) TAM Traffic Light Model and Prosci (2000) ADKAR model as presented in figures 2b and 2c can effectively be deployed to manage the highlighted situations.

On the issue of awareness, it was revealed that, more than 80% of the teachers considered that they had been made aware of the role the technology could play in supporting teaching and learning. The question then arises: why are they not using the technology as expected despite their awareness of the significance of it?

The Davis TAM offers an explanation for this situation. The model asserts that the degree to which users believe that using a particular system would be free of effort could be fundamental in their quest for the acceptance and use of it. This shows that EOU and U are influenced by external variables such as users' experience of the system, popular opinions of the new technology, both positive and negative as well as the users' feelings regarding their age. TAM suggests that EOU has a direct effect on U and U has a direct effect on BI which will then have a direct impact on the Actual System Use. TAM posits that these two characteristics, EOU and U will result in the potential users' attitude towards using the technology.
6.3. WHAT WAS THE IMPACT OF THE VLE E-LEARNING TECHNOLOGY ON STUDENTS’ LEARNING?

There is empirical evidence which suggests that e-learning technology could be used to enhance learning in academic institutions. For instance, evidence emerging from various research studies conducted in the UK in recent times confirms that there is a link between e-Learning and student performance and motivation. The ImpaCT2 Study into the use of Information and Communication Technology (ICT) in schools, commissioned by Becta, found that the new technologies in schools had a motivational effect on some learners, particularly on boys (Comber et al., 2002). Another report from the ImpaCT2 evaluation (Harrison et al., 2003, p. 5) found evidence of a positive relationship between ICT use and achievement in schools, although in some subjects, the effects were not statistically significant. On the issue of attainment, available evidence is somewhat inconsistent, although it does appear that, in some contexts, with some students, in some disciplines, attainment has been enhanced.

Brannigan, (2002) also found that when inquiry based learning and true technology integration are put together, they create a synergy that really boosts students' learning. The power of pairing technology with inquiry learning was said to be directly reflected in the test scores of more than 6,000 3rd and 4th grade students in eMints classrooms who scored in the proficient or advanced categories when compared with other students who took the Mathematics Assessment Programme tests (Brannigan, 2002; Evaluation Team Policy brief, 2002).

These studies highlight the importance of rethinking current perceptions of the role of technology in education. They also offer a clear direction for educators who are trying to answer the questions raised by academics. Both studies argue that improvements in students' learning occur when technology is paired with instructional strategies like project-based instruction, which actively involve students in intellectually complex work that demands higher-order thinking and problem-solving skills.

In the context of the case study college, there is no evidence to suggest that the use of the VLE e-Learning technology had motivated students to learn. It emerged from this
study that 31% of the students thought that the use of the VLE e-Learning technology had motivated them to learn and 30% thought that it had made learning more interesting. The question then arises: Why these negative results? This question could be answered by using the conclusions of studies by Coggins (1988) and Gee (1990) where they found that learners' attitude towards using technology is one of the most important factors in technology acceptance and student motivation. They also found that learners' perception about the characteristics of instructional delivery media and their ability to learn by using e-Learning approach have been shown to be the key determinants in predicting student motivation.

Learners need to be stimulated, challenged and stretched through the resources uploaded unto the technology as well as the teaching strategies adopted by their teachers. If teachers lacked the skills required to enable them to use the technology in a way that would motivate learners, they will not find the lesson interesting, much less motivated by it.

It is also evident that the students' views on the issue of motivation differed. Some thought that they had been motivated by the use of the technology and some had contrary views. This can be explained in two ways:

(a) In subject areas where the teachers had used the technology in the process of planning and delivering lessons in constructive and interesting ways, their students tended to develop interest and feel motivated by it. On the other hand, where teachers had negative attitudes towards the use of the technology, students also feel less motivated by it. The comment by the e-learning development Officer further confirmed this:

CJ: "I think the only problem here is that there are few faculties in the college that are still not using the VLE as expected". "Hmmm. I hope I'm not getting myself into trouble here! I would say Humanities and others".

Williams (2002) also emphasised the importance of pedagogy in stimulating students' learning. He suggests that there are three areas which need to be considered; Pedagogy- the materials designed and placed on the system must be capable of
addressing the needs of individual learners and generally facilitating the acquisition of knowledge. The technology must be able to develop the competence of each learner through teaching and learning strategies that build on individual needs. Hence this requires strategies that actively engage and stretch all students; creatively deploy teachers; support staff and new technologies to extend learning opportunities; and accommodate different paces and styles of learning.

(b) Styles of learning - students learn in different ways and these learning styles play significant roles in the students’ motivation as well as acceptance and use of technology. Some empirical studies have indicated an interaction between learning style and attitude towards computer technology. According to Reiff and Powell (1992), their reflective observation subjects had a negative attitude towards computers. They suggested that for students whose learning styles are concrete and experimentation-activity oriented, computer-assisted instruction would be an appropriate option. On the other hand, if reflective learners are introduced to this method of instruction, they may feel uncomfortable and frustrated. Similarly, a study by Enochs, Handley, and Wollenberg (1984) found those students with more interest in objects or things (Concrete experience) and less interest in working with people learned better by using computer-assisted instruction.

These explanations suggest that the way the technology is used, coupled with the learning materials prepared and used in conjunction with the technology, play significant roles in students’ interests in the use of the technology as well as on their learning outcomes.

One could conclude that based on the available evidence, there is a strong relationship between the teachers’ use of e-Learning and students’ motivation. In the course of this study, it appears that in the subject areas where teachers use e-Learning regularly for planning and delivering of lessons, students who took such subjects also showed positive attitudes towards the use of the technology. This emerged during the course of the students’ group discussion when few commented

Suzie: “Is it not obvious? Our teachers use this technology in the classroom to deliver lessons. They also often refer us to the VLE for downloading the resources and lesson
notes. Because of this, I do not think there is any student in the college who is not familiar with the use of the technology."

The available evidence suggests that the use of the new technology had improved communications between the teachers and the students. This was revealed during a group interview with the students. Students commented that they were able to contact their teachers through email when there was need for clarification. There were also discussions forums set up in different subject areas which gave students the opportunity to discuss issues relating to their subjects.

The fact that the college had made the resources available to students further ensured that the use of the new technology had positive impact on learning. Students had access to the teachers' handouts and other teaching and learning resources both within the college and at home. This had made learning more flexible. They also had access to information through links to other educational websites. For instance, 69% of the students who took part in the survey thought that the technology had enabled them to have access to more information and more than 60% thought that this access to information had enhanced their learning. In the course of the group interview I had with the students, some of them commented:

Suzie: "I use the system mostly to download teachers' notes, view past exam papers and mark schemes and also for discussions in one of the forums set up within the VLE."

Jason: "I use it for revision."

This according to them had impacted positively on their learning. For instance, one of the students commented that;

Beth: "Because I can access the college VLE at home, save the resources to my computer system at home for future use. There are also very useful links to educational websites outside the United Kingdom which again could provide useful information that could help me understand some difficult topics."
Access to new technology was discussed by Ellaway (2005) as one of the most important factors which could influence the success of a technological change as well as learning. It is highly significant that the technology is available to learners at any time and anywhere. The learners must also have access to the resources needed to access the system whether at home or within their institutional environments. Most of the students interviewed in the course of this study confirmed that there were adequate resources available to them to access the technology both within the college and at home.

On a more positive note, there was sufficient evidence to conclude that the use of the technology had, to some extent, reduced the students' dependency on their teachers and encouraged independent learning. More than 59% of the students interviewed thought that they were now less dependent on their teachers as a result of the use of the technology. They attributed this to the fact that they were able to use the technology for research as well as for revision during examination periods. These findings were also apparent during the group interview which I had with the students in the course of the study. Most of the students commented that the technology had the facilities which enabled them to download resources and encouraged independent learning. This was evident in some of the students' comments;

Beth: "Because I can access the college VLE at home, save the resources to my computer system at home for future use. There are also very useful links to educational websites outside the United Kingdom which again could provide useful information that could help me understand some difficult topics."

Vicky: "I use this mostly for my psychology subject."

Helen: "You know that the AS ICT project demands advanced skills which most students tend not to have. However, there are some exercises which our ICT teacher has put on the VLE for us to work through and these exercises are aimed at developing our ICT skills. Oftentimes on weekends, I would sit in front of my computer, access the college VLE at home and work through these exercises. It has helped me a lot. It has also encouraged me to learn independently."

Suzie: "I also use it for my Art subject."
Moderator: Has the use of the college VLE reduced your dependence on teachers?

Vicky, Suzie, Helen, Jason, Hannah and Garreth: “Yes!”

Discussion

If only 38% of the students interviewed thought that the technology had improved their performance and 40% thought that it engaged them, one could argue therefore that the use of the technology had not made a positive impact on students’ learning. Again these findings could be seen as a result of the teachers’ lack of the ICT skills needed to use the technology in effective and productive ways. This again is synonymous with the Wenglinsky’s (1998) study; “Does it Compute?” where it was argued that not all uses of e-Learning technology were beneficial. Wenglinsky found that by using computers to teach low order thinking skills was negatively related to academic achievement.

By contrast, teachers who had students who used computers to solve simulations saw their students’ mathematics scores increased significantly. As he explored the reasons for the different ways that teachers use technology, Wenglinsky found that professional development was the difference between those teachers who used skill and drill software and those who used software that could create simulations. Teachers who had training and skills used technology in ways that focused students on simulations and applications that encouraged them to develop problem solving skills. In contrast, those teachers who had no training used skill and drill software.

To enhance students’ learning through the use of e-learning technology, teachers must be able to develop e-Learning resources that would meet the needs of individual learners because studies have confirmed that students learn in different ways as discussed in the Kolb’s Learning Style Inventory.16

16 Kolb’s (1984) experimental learning theory conceives learning as a four-state cycle starting with concrete experience, which forms the basis for observation and reflection upon experiences. These observations are assimilated into concepts and generalisations about experiences, which in turn, guide new experiences and interactions with the world. This model reflects two independent dimensions:
These learning styles were confirmed to play significant roles in students’ acceptance of technology for learning in that learners’ perception about the characteristics of instructional delivery media and their ability to learn by using e-Learning approach have been shown to be the key determinants in predicting student motivation and success in traditional classroom (Coggins, 1988; Gee, 1990).

These perceptions are equally important when implementing computer technologies as the major source of information transfer to students in Virtual Learning Environment. Some empirical studies have indicated an interaction between learning style and attitude toward computer technology. According to Reiff and Powell (1992), their reflective observation subjects had a negative attitude toward computers. They suggested that for students whose learning styles are concrete and experimentation-activity oriented, computer-assisted instruction would be an appropriate option. On the other hand, if reflective learners are introduced to this method of instruction, they may feel uncomfortable and frustrated.

Similarly, a study by Enochs, Handley, and Wollenberg (1984) found that those students with more interest in objects or things (Concrete experience) and less interest in working with people, learned better by using computer-assisted instruction. Furthermore, Smith’s (1982) Learning-How-To-Learn (LHTL) theory suggests that learners rely on a “bag of tricks” which includes prior learning strategies and tactics, as well as things that work in other situations to make sense of a new environment. To meet these needs, there is a need for teachers to have the required skills to manipulate teaching and learning resources to enhance learning which requires extensive professional development. Hence, this was not the case at the case study college.

Concrete experience (CE), Abstract Conceptualisation (AC); and Active Experimentation (AE). Reflective Observation (RO). These two dimensions form quadrants reflecting four learning styles; Accommodator, Diverger, Assimilator, and Converger. Active experimentation with concrete experience comprises the Accommodator learning style.

Accommodators have the ability to learn primarily from “hands on” experience. Reflective observation with concrete experience comprises the Diverger learning style, which view concrete situations from many different perspectives. The Assimilator learning style is comprised of reflective observation with abstract conceptualization. Assimilators are good at understanding a wide range of information and putting it into concise, logical form. Active experimentation with abstract conceptualization describes the Converger learner, who tends to find practical uses for ideas and theories.
6.4. DID THE VLE E-LEARNING TECHNOLOGY CUT THE COSTS OF COURSE DELIVERY?

This section of the study investigated the impact of the new technology in three areas namely?

There is empirical evidence which suggests that the use of e-Learning technology in academic institutions could help to reduce costs expended on course delivery. For instance, MacLeod’s study (2000) claimed that the launch of the Phoenix e-University in the USA had generated $12,800,000 from on-line and distance learning courses in the last few years. To this extent, this section of the study will evaluate the impact of the recently introduced VLE e-Learning technology at the case study college against MacLeod’s claim.

In the course of this study, it was revealed that the use of VLE e-Learning technology at the case study college did not reduce the costs expended on teaching and learning resources during the studied period. There was a significant increase in the cost of delivering courses when the new technology was introduced. From the available data, the costs expended on teaching and learning resources rose from £96,000 in 2004 to £119,000 in 2005, a 19.33% increase. Further evidence emerged from the comments made by the Director of e-Learning and the e-Learning Development Officer when they commented that the college’s average spending on teaching and learning resources increased to 25% of their gross annual income as a result of the implementation of the e-Learning technology. These costs were claimed to be associated with the purchase of hardware / software needed for the technology, coupled with the costs of employing qualified network system administrators who were responsible for monitoring and maintaining the technology.

17 For more on this, please see the face-to-face interviews with the case study’s college Director of e Learning and the e Learning Development Officer.
When the views of teachers were sought on the issue of costs of delivering courses, 33% thought that the use of the new technology had cut the cost of delivering courses, while only 17% thought that the technology had reduced costs significantly. Beside the direct costs incurred in the installation of the new technology, the amount of time that teachers claimed to have spent in developing and uploading teaching and learning resources unto the technology was enormous.

If this time is quantified in monetary terms, it would have added to these costs. On this finding, Marcus, (2000) also discovered that many American universities have started to realise that the anticipated financial returns may have been exaggerated. Professor O’ Shea, Provost of Gresham College, also highlighted the nature of the task and the implications for academics of changing to an e-learning delivery mode. He found that it could take up to 200 hours to design a one-hour-long learning experience on the web (MacLeod, 2000).

On the part of the students, it appears that the technology had reduced the costs expended on learning resources. It appears that the students had shifted the costs of printing resources such as handouts, past examination papers and assignment briefs to the college. Many of them think that the technology had reduced costs on learning resources.

What about the future?

In the information technology world, it is almost certain that the costs will continue to rise because both the hardware and software needed to run the system efficiently need constant upgrading and maintenance from time to time. Experts are also needed on a permanent basis to run and manage the system performance. All these costs will not go away; rather, they will remain as long as the system is in place.

The comments made by both the e-Learning Development Officer and the Director of e-Learning of the college further confirmed the above:

JR “We have spent an average of 25% of the college gross income on this technology and this will continue as long as we want to keep up with the pace of the
technological developments. Again, one thing I would like to tell you is that it is true that if teachers are putting their resources i.e. lesson notes, lesson plans, schemes of work, revision pack, solutions to questions, assessment materials on VLE for students to access and use at their own convenient time, one would want to believe that it would reduce the cost of photocopying these resources in the college and shift the burden on the students. But it doesn't work that way. In reality, the students prefer to print these resources within the college environment and that has further increased the amount of money which the college is spending in buying printing papers and toners.”

CJ was of the opinion that “In the ICT world, you keep updating both the hardware and software from time to time in order to meet the pace at which the technology develops. In most cases, ICT technologies change every six months. So, on this note, there will not be much reduction in the cost of having this technology in the long run.”

These findings are contrary to MacLeod’s (2000) claim that the use of the online technology had enabled the Phoenix University to make much money within a short time. What this tells us is that the introduction of e-Learning in an organisation will not automatically reduce costs and should not be seen as such by managers in academic institutions. It also needs to be recognised that e-Learning may not be the cheap, efficient cash cow some senior academic managers may have hoped. In support of this conclusion, the Deputy Principal of Stirling University commented that, ‘the notion that new technologies allowed teaching to be improved more cheaply was fundamentally misconceived’ (Woljas, 2000: p.1).

On a note of caution, there is no evidence to suggest that the use of e-Learning technology in academic institutions can not help to reduce costs on course delivery. The Phoenix e-University’s experience is empirical evidence which suggests that the use of e-Learning in academic institutions could help to reduce costs on course delivery but on condition that the technological change was effectively introduced and managed.
6.5. THE RESEARCH METHODOLOGY USED

It is fair to say that, the findings of this study can to some extent be considered valid and confirmable. The research was conducted by using a triangulation technique which draws conclusions from various research instruments such as questionnaires, group discussion, face-to-face interviews and the use of documentary evidence. The validity of the claims was achieved by triangulating between different research instruments.

However, there appears to be some drawbacks in the research instruments used. In some areas, there was inadequate data for analysis. For instance, more data would have thrown more light on the financial aspects of the college. Also more teachers could have been engaged in group discussions to validate their responses and give them the opportunity to explain some of the ambiguities in their responses to the questions in the questionnaire.

Furthermore, the case study research methodology which was adopted in this study has its limitations. It is highly unlikely that the findings of this study can be generalised as the focus of the research was on a single case. Different institutions do things in different ways. The fact that the e-Learning initiative introduced and implemented in a particular institution, failed to achieve its technological objective, does not necessarily indicate that such initiative can not be successful in another institution.

Essentially, I still consider a case study approach to be a valuable method of research due to its distinctive characteristics that make it ideal for many types of investigations. It can also be used in combination with other methods. Its use and reliability makes it a more widely used methodology, once its features are better understood by potential researchers. In his contribution Adelman (1977) describes a case study as an umbrella term for a family of research methods having in common the decision to focus on inquiry around an instance. The author asserts that case-study approach is particularly appropriate for individual researchers because it gives an opportunity for one aspect of a problem to be studied in some depth within a limited time scale. It is a research method, which aims at providing answers to a particular problem in a particular
setting at a particular time, just as it is in the case of this study. My focus was on a single case which needs to be studied over a short period of time.

Merriam (1988) also describes case study as an exploration of a ‘bounded system’ or a case over time through detailed, in-depth data collection involving multiple sources of information rich in context.

On the issue of generalisability of case study research method, Merriam (1998) argued that although, little can be done to combat challenges concerning the generalisability of case studies, the researcher asserts that qualitative research should be judged as credible and confirmable as opposed to valid and reliable. Merriam further argued that, rather than transplanting statistical, quantitative notions of generalisability and thus finding qualitative research inadequate, it will make more sense to develop an understanding of generalisation that is congruent with the basic characteristics of qualitative inquiry. At this point, it is wise to conclude this section that through the use of a case study approach to investigate the research questions, I have been able to gain an insight into the working relationships which exist between the staff and senior management of the case study college. Using another research methodology would not have revealed all the evidence which emerged in the course of the study. Overall, the instruments used can to a reasonable extent be relied upon as valid and reliable.
CHAPTER 7 – CONCLUSIONS AND RECOMMENDATIONS

7.1 CONCLUSION

It is reasonable at this point to conclude that this study has provided answers to the four fundamental questions raised at the beginning of the study:

- How effective was the case study college in managing the introduction and implementation of the technological change to enhance the use of e-learning?
- What was the impact of the VLE e-learning on teaching across the case study college?
- What was the impact of the VLE e-learning technology on students' learning?
- Did the VLE e-learning technology cut the costs of course delivery?

The focus of the first question centred on the important roles that effective introduction and implementation of a technological change play in the users’ acceptance and use of new e-Learning technology. Users of new technologies sometimes exhibit ineffective acceptance and usage behaviour which are often due to how the technology was introduced and implemented. Based on the evidence which has emerged in the course of this study, it may be suggested that there are two possible explanations why users of new technologies may resist them.

Firstly, decisions about the adoption of new e-learning technologies are often made by top executives as observed in the case study college. Such decisions often do not sufficiently involve the individual end users in the process. Having being left out of the decision-making process, users are often not personally interested in the use of the new e-learning technology.

Secondly, the users may also lack an in-depth understanding of the capabilities of the new e-Learning technology as revealed in the course of this study, thus resulting in less than optimal utilisation of the functions of the new technology. In this scenario, users often act in compliance with the senior managers’ instructions, which often result in them developing a negative attitude towards the use of the new technology. The users’ personal investment in use of the new system and their better appreciation
of the capabilities of the system could have a positive effect on their attitude towards the system’s use.

These explanations coincide with the issues raised in the Davis Technology Acceptance Model. The users’ acceptance of technology is extremely important in the actualisation of technological objectives. If a technology is not accepted by the people it is intended to support in meeting organisational objectives, this suggests that the system may not be fit for purpose.

Hence, the introduction and implementation of the VLE e-Learning technology at the case study college is not in any way different from the above quoted conclusion. It is evident from the results of the survey conducted in the course of this research that the senior management of the case study college did not effectively introduce and manage the technological change within the organisation as well as considering the Technology Acceptance Model in the process.

The noted acceptance variables; Perceived Acceptance, Perceived Ease of Use, Perceived Use and Behavioural Intention were not considered by the management in managing the change process. However, these elements were considered in the Davis TAM to play an important role in the acceptance of technological initiative in organisations.

It also emerged from this study that the management of the college was trying to change too much at once, a strategy that has been identified by scholars as a step to disaster. Change cannot be successfully managed by imposing it on a reluctant organisation as the case study college has done. By using the Davis Technology Acceptance Model, one of the most important strategies which organisations could adopt when introducing technology is to involve all the potential users of the new technology.

They must also be included in consultations. Ideas and misgivings should have been listened to and the proposed change should have been explained to all the stakeholders. The benefits of the new technology should have been explained but not
It is alarming to note from the results of the survey carried out that these suggestions were not considered by the senior management which clearly explains why the introduction of the e-learning technology to the college failed to achieve its objectives. It will be fair at this point to suggest that, it is the responsibility of the senior management of the case study college to ensure that all the major stakeholders of the organisation are encouraged and prepared well in advance for the challenges ahead. This was not done in the case study college's situation. Rather than encouraging the teachers in the use of the technology, the senior management resorted to setting targets and exerting a degree of force. This strategy further discouraged the teachers from developing positive attitudes towards the use of the technology.

One of the fundamental factors identified in the TAM as responsible for resistance to technological change was communication. Users resist change because they fear the unknown. TAM posits that communication from the start of the change process can help to reduce fear. It emerged from this study that there was limited communication between the staff of the college and the senior management when the technology was introduced and implemented. Hence, this goes against the TAM model.

Moreover, the culture of the case study college appears to be too rigid and highly controlled from the top. This type of culture will not enhance the smooth introduction and management of technological change. The success of an e-Learning initiative depends as much on the people and culture of the organisation as it does on the technology used.

For instance, studies have confirmed that organisational culture is critical to the fruitful inception, growth and success of e-Learning in any organisation. Kotter and Hesket (1992) related that it is helpful to think of organisational culture as having two levels that differ in terms of their visibility and their resistance to change. At the deeper and less visible level, Kotter and Hesket refer to culture as the values that are shared by people in a group which tend to persist over time, even when group membership changes. At the more visible level, culture represents the behaviour...
patterns or style of an organisation that employees are automatically encouraged to follow by their fellow employees. Notions, then, of what is important in organisations varies; Kotter and Hesket identified money, technological innovation and employee well-being as being possible values that may underline organisations.

Nahavandi and Malekzadeh (1993) discussed assumptions as being the third level of culture. This, they said, is composed of basic assumptions resulting from an organisation’s success and failures in dealing with the environment. These assumptions encompass an organisation’s basic philosophy and world view, and they shape the way the environment and all other events are perceived and interpreted. Values, behaviour and assumptions combined with organisational leadership nurture the bond and identity that unites the members of organisations.

However, an e-Learning strategic plan that has not addressed its organisational culture as the case study college has done has little viability. Harreld (1998) commented that by imposing new technologies and management processes on a culture that is not prepared to embrace them is futile as knowledge management requires people to behave in some fair counter cultural ways such as, sharing information and good practice across an organisation.

It appears from the study that the case study college culture is a hostile one where the staff are being treated as second class citizens. The type of relationship between the senior management and staff can only be described as master and servant. This is evident when the VLE e-Learning technology was introduced and as part of the change process, the senior management started setting targets for staff. Humphery (1996) commented that imposing change on employees in organisations will only make them resist it. Hence, this again, has been revealed in the course of this study.

From the available evidence, the introduction and management of the VLE e-Learning technology at the case study college was fundamentally flawed due to the fact that all the factors noted in the TAM as responsible for the acceptance of technological change in organisations were completely ignored by the management of the case study college.
On the issue of the impact of the technology on teaching across the case study college, it is reasonable to conclude that, on the basis of the evidence available in the course of the study, the majority of the teachers thought that the use of the technology had not improved teaching across the college. Most of them also thought that the use of the technology had not helped to reduce the amount of time spent in preparing teaching and learning resources as well as made teaching more interactive. Overall, they had the view that the technology did not have any positive impact on teaching across the college. They thought that the use of the technology had added to their work load due to more time spent in preparing resources to be uploaded unto it.

The failure of the management to ensure that adequate training was given to the potential users of the new technology to some extent limited the interest of the users in it. This also had a significant effect on the impact of the technology on teaching across the college. Fullan (1998) emphasised the role of professional development in the actualisation of technological change objective. He stressed that if teachers are expected to use technology in ways that enrich and enhance student achievement, they must be provided with the professional development they need to develop the confidence and skills to apply technology and an understanding of how technology supports standards-based education.

On a positive note, there is evidence to suggest that the technology can play a positive role in enhancing teaching and learning but the technology needs to be deployed appropriately and the users' ICT skills need to be developed to enhance their confidence in terms of use. The Missouri's case mentioned in Chapter 2 of this study is clear evidence that technology can be used to enhance teaching and learning.

On the issue of the impact of the technology on students' learning, most of the students thought that the VLE e-Learning technology had enabled them to have access to information since it is an internet based technology which enables users to have access to information beyond one's geographical location. This attribute of the software facilitates an unending access to information across the world. Students confirmed that they frequently use the technology to download information from various educational websites and at the same time used it as means of interacting with their teachers particularly in subject forums.
The fact that the technology makes it possible to upload resources such as teachers' lesson notes, examination revision packs, and handouts which can then be accessed anywhere in the world have made it possible for students to learn outside college. However, one of the issues of concern raised by some students was the fact that the technology does not facilitate interaction which made some students view the use of the technology for learning as boring. Those students who have a positive attitude towards the use of technology feel motivated by it.

It was revealed in this study that the students' attitude towards the use of the new technology may be influenced by their learning styles. Different people learn in different ways. The Kolb's Learning Style Inventory comprehensively discussed this issue. The learners' perception about the characteristics of instructional delivery media and their ability to learn by using e-Learning approach have been shown to be the key determinants in predicting student motivation and success in traditional classrooms. (Coggins, 1988; Gee, 1990). These perceptions are equally important when implementing computer technologies as the major source of information transfer to students in Virtual Learning Environment.

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18 One of the students interviewed commented: "the technology is boring because there is no interaction at all when using the technology. All you do is just to sit there reading stuff from the computer screen. When there is a need for you to clarify certain things, there is no chance except by sending email to your teacher which might take days. As such, I prefer the face-to-face instruction than this e-learning stuff" (Beth).

19 Kolb's (1984) experimental learning theory conceives learning as a four-state cycle starting with concrete experience, which forms the basis for observation and reflection upon experiences. These observations are assimilated into concepts and generalisations about experiences, which in turn, guide new experiences and interactions with the world. This model reflects two independent dimensions: Concrete experience (CE), Abstract Conceptualisation (AC); and Active Experimentation (AE). Reflective Observation (RO). These two dimensions form quadrants reflecting four learning styles; Accommodator, Diverger, Assimilator, and Converger. Active experimentation with concrete experience comprises the Accommodator learning style.

Accommodators have the ability to learn primarily from "hands on" experience. Reflective observation with concrete experience comprises the Diverger learning style, which view concrete situations from many different perspectives. The Assimilator learning style is comprised of reflective observation with abstract conceptualization. Assimilators are good at understanding a wide range of information and putting it into concise, logical form. Active experimentation with abstract conceptualization describes the Converger learner, who tends to find practical uses for ideas and theories.
Some empirical studies have indicated an interaction between learning style and attitude toward computer technology. According to Reiff and Powell (1992), their reflective observation subjects had a negative attitude toward computers. They suggested that for students whose learning styles are concrete and experimentation-activity oriented, computer-assisted instruction would be an appropriate option. On the other hand, if reflective learners are introduced to this method of instruction, they may feel uncomfortable and frustrated. Similarly, a study by Enochs, Handley, and Wollenberg (1984) found those students with more interest in objects or things (Concrete experience) and less interest in working with people learned better by using computer-assisted instruction. It is therefore essential for institutions to be aware of the composition of the learning styles of their learners before implementing an e-learning technology.

As far as the impact of the technology on costs is concerned, it appears from the available data that the technology failed to reduce the costs on teaching and learning in the short run.

During the period under investigation, there was an increase of over 19% on costs expended on teaching and learning. The rise in the costs of delivering courses at the case study college during the studied periods coincided with the fact that the initial costs of both the hardware and software, coupled with installation costs would have increased the costs significantly. On the other hand, it appears that the students were equally not helping matters as they wasted too many print-outs. The costs of hiring system administrators and other staff who were needed to run the programme efficiently further increased the costs. Whether the costs would reduce in future remains an issue of debate.

7.2 THE IMPLICATIONS FOR THE SENIOR MANAGEMENT

These findings indicate a range of implications which the senior management of the case study college and other policy makers in other academic institutions may wish to consider:

- The case study college senior management’s perception of the relationship between the Virtual Learning Environment e-Learning Technology and
students' motivation suggests that if appropriate and adequate support is provided on a continuous and rigorous manner to the teachers, the technology will be of good value.

- The emergence of the fact that there is a relationship between teachers' confidence and having a proactive attitude, and their experience of using e-learning, indicate that there is a value in enabling teachers to experience the effects of e-learning to encourage its take up. A strategy for sharing good practice could usefully support the capacity for teachers to learn from others' experience.

7.3. THE IMPLICATIONS FOR PRACTICE

The implications for institutional leaders are that they could usefully consider:

- Ensuring that access to e-Learning resources is focussed specifically in the classroom, so that they can be used more at the teaching and learning interface.

- Providing protected time for teachers to develop their use of e-learning and embed it into their everyday teaching and learning practice.

- Engender an ethos within the college through which students can be encouraged to experience the potential for e-learning, will enable them to adopt a pro-active and develop a positive approach to the technology which will then develop and build their confidence in the use of e-learning.

- As far as the issue of costs reduction is concerned, it appears that the large percentage of the increase in expenditure stemmed from the amount of printing by the students within the college environment. The senior management of the case study college could introduce pay as you print scheme for the students. This would cushion the increase in the costs of buying print papers and toners.

- Take into consideration differences in experience and use of e-learning in different subjects and any differences in attitude and confidence when targeting support to further develop e-learning use. One way of providing this support would be to have staff ICT skills audit on a regular basis. Through this strategy, individual ICT needs could then be identified and developed.
On the issue of change management, the guidelines and the Davis technology acceptance model discussed in chapter two of this study on the responses to resistance to change (as repeated below) could be used.
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E-learning

Can I remind you about the information circulated last year outlining the general context for the development of e-learning. The targets build on those circulated last year and seek to extend the number of opportunities given to students to use e-learning. By the end of the year, e-learning should feature strongly in the learning process experienced by all students.

E-learning includes any activity using digital technology to support learning. It should not be seen as something separate from teaching and learning, but something that provides an additional tool to support the learning process. As such, its use should draw on best practice from existing learning strategies.

Research suggests the most powerful strategy supporting learning involves students having to articulate their understanding to others. It is therefore important not to see e-learning as just a strategy to allow students to work independently, important as that is, but to look for creative ways to use technology in order to facilitate student interaction.

The assessment of student progress with clear and rapid feedback to students on how to improve is also recognised by research as a very effective strategy in promoting learning. In this context the use of tests on the VLE could provide students with an assessment of progress which if then linked to further material related to questions that were answered incorrectly could provide a very powerful learning experience. This allows students to get feedback in a non-threatening way. It also allows students to repeat tests and monitor their own learning progress. Staff could also track a students’ progress.

Developing independent learning packages to deliver the more information based content of a syllabus could free time to work in more creative ways with students. This could support the development of key skills both specific to the subject and those that are more general. Evidence suggests that high performing subjects place a greater emphasis on skill development than syllabus content.

A lot of excellent e-learning subject specific content has been produced and is being developed that provide new approaches to explaining difficult concepts in an accessible and engaging way. Often the material can be manipulated to enable teachers to take ownership and integrate it into existing schemes of work. The College intends to support staff in identifying sources of good quality learning materials. We are also hoping to create a training area where support in the development of e-learning strategies can be easily accessed.

Targets

1. All course administration relevant to students should be on the VLE

2. Links on VLE to resource materials for each section of work. This should also include material available in the library.

3. Revision material on VLE
4. Formative assessment using an e-learning strategy (e.g. quizzes on the VLE)  
   (Minimum – two approaches per course)

5. Material for independent study on VLE  
   (Minimum – two activities per course)

6. Lesson based activities using e-learning approach. This should be more than  
   just a powerpoint presentation though this could form part of the activity.  
   (Minimum – two activities per course)

   It is recognised that some courses make extensive use of e-learning materials  
   which are not integral to the VLE. Where this is so, developing the use of the  
   VLE should be used to support this activity where appropriate.

John Driver
Understanding Quality Management Systems: Provide feedback loop for Management of Learning & Cohort Change

- Strategic: Increased learning & development
- Teaching: Accommodation of LT progress
- Learning: Feedback of LT progress
- Curriculum: Student feedback

- BTEC Vocational Curriculum
- Learning Environment: World Class
- Student Support: World Class
- Assessment: World Class
- Student Support: World Class
- Teaching: World Class
- Learning: World Class
- Curriculum: World Class

- Identifying new issues & ICT issues
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- Board's Strategic Decision
- School Fees Exam
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- School Fees Exam

Appendix 4: 2 - The SEVIEC College Development Strategy 2001 - 2005

SEVIEC College

Incorporation: Foundation in South Essex 16-19 Development Strategy 2001 - 2005
Appendix: 5.1

UNIVERSITY OF LEICESTER
SCHOOL OF EDUCATION

VLE e-Learning Technology Questionnaire for SEEVIC Teachers

Dear colleague,
I am currently doing a research project at the University of Leicester. As part of the research, I need to investigate the extent to which the South East Essex Sixth Form College teachers have benefited from the recently introduced Virtual Learning Environment e-Learning technology. I would appreciate it if you could take a few minutes to complete the questions below.

Instruction:
For each of the 25 questions below, select 1, 2, 3, 4, or 5 to indicate your answer.

1 - Totally Agree
2 - Partially Agree
3 - Neither Agree or Disagree
4 - Partially Disagree
5 - Totally Disagree

Please choose only one answer for each question (✓). When you have finished, please kindly return the completed questionnaire via my pigeon-hole marked TO.

Thank you.

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<tr>
<th>QUESTION</th>
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<tr>
<td>1. I am aware of the existence of the VLE e-learning technology at SEEVIC.</td>
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<td>2. Prior to the introduction of VLE, I was fully informed of the technology by the management.</td>
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<td>3. I have been well trained on how to use the SEEVIC College VLE.</td>
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<td>4. I know the importance of VLE e-learning technology particularly in the planning &amp; delivery of lessons.</td>
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<td>5. I feel confident using the SEEVIC College VLE.</td>
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<td>6. I know how to use the college VLE e-learning technology to plan and deliver lesson effectively.</td>
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<td>7. I am actively using the college VLE e-learning technology for planning and delivering my lessons.</td>
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<td>8. I could easily incorporate e-learning resources into my current teaching methods.</td>
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<td>9. The introduction of the VLE e-learning technology to SEEVIC college has made it easier to plan and deliver my lessons</td>
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<td>10. I am able to edit the college VLE to match my exact requirements.</td>
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<td>11. I prefer the use of VLE e-learning technology in planning and delivering lessons in the classroom as opposed to the conventional methods of teaching</td>
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<td>12. The introduction of the VLE e-learning technology has improved the performance of my students.</td>
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<td>13. It is relatively cheaper to deliver courses using the college VLE e-learning technology.</td>
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<td>14. I now spend less time preparing resources since the introduction of the college VLE e-learning technology.</td>
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<td>15. The costs of producing the teaching and learning resources have reduced drastically since the introduction of the college VLE e-learning technology.</td>
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<td>16. Since the introduction of the VLE e-learning technology, the students' retention and achievements figures have increased significantly.</td>
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<td>17. Since the introduction of the VLE e-learning technology, costs expended on the planning and delivery of courses have reduced significantly.</td>
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<td>18. The costs expended on the teaching and learning resources have been reduced by almost 50%</td>
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<td>19. The costs expended on developing teaching and learning resources since the introduction of VLE e-learning technology have reduced but less than 50%</td>
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<td>20. Students now have access to more learning resources due to the introduction of the VLE e-learning technology.</td>
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<td>21. Students find it easier to learn by using the VLE e-learning technology.</td>
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<td>22. Using the VLE e-learning technology encourages differentiation teaching.</td>
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<tr>
<td>23. The students' learning can be effectively monitored by using the VLE e-learning technology.</td>
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<tr>
<td>24. My lessons can be delivered to different students at different times and locations by using the VLE e-learning technology.</td>
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<tr>
<td>25. My courses have attracted more students since the introduction of the VLE e-learning technology.</td>
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</table>
Teacherviews on the Impact of VLE on Students' Retention and Achievements

Question

Does VLE Reduce Costs but Less than 50%?
Yes
No

Does VLE Reduce Costs by 50%?
Yes
No

Does VLE Reduce Costs by 75%?
Yes
No

Does VLE Reduce Costs by 90%?
Yes
No

Does VLE Reduce Costs by 100%?
Yes
No

The use of VLE has improved students' performance.
I prefer to use VLE for planning and delivering lessons.
I have the ability to use VLE effectively.
VLE has made it easier to plan and deliver lessons.
I can incorporate VLE into my teaching methods.
I am aware of the importance of VLE.
I am confident in using the VLE.
I am competent in using the VLE.
I am aware of the importance of VLE.

Training
Informed
VLE Awareness

Appendix: 5.2
Appendix: 5.3

UNIVERSITY OF LEICESTER
SCHOOL OF EDUCATION

VLE e-Learning Technology Questionnaire for SEEVIC Students

Dear student,
I am currently doing a research project at the University of Leicester. As part of the research, I need to investigate the extent to which the South East Essex Sixth Form College students have benefited from the recently introduced Virtual Learning Environment e-Learning technology. I would appreciate it if you could take a few minutes to complete the questions below.

Instruction:
For each of the 25 questions below, select 1, 2, 3, 4, or 5 to indicate your answer.

1 – Totally Agree
2 – Partially Agree
3 – Neither Agree or Disagree
4 – Partially Disagree
5 - Totally Disagree

Please choose only one answer for each question (✔). When you have finished, please kindly return the completed questionnaire to your personal tutor.

Thank you.
<table>
<thead>
<tr>
<th>QUESTION</th>
<th>1</th>
<th>2</th>
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</thead>
<tbody>
<tr>
<td>1. I know what Virtual Learning Environment Technology is.</td>
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<td>2. I am familiar with the use of VLE in my courses.</td>
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<td>3. I use the college VLE often at college.</td>
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<td>4. I have access to computer resources whenever I need to access the college VLE while within the college premises.</td>
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<td>5. I have a computer and internet facilities to be able to access the college VLE at home.</td>
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<td>6. I can access the college VLE from home.</td>
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<td>7. I use the college VLE often at home.</td>
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<td>8. I use the college VLE mostly to do my homework at home.</td>
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<td>9. I use the college VLE mostly to do research about my studies.</td>
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<td>10. I frequently use the college VLE to research my work.</td>
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<td>11. I frequently use the college VLE to post questions for clarifications from my subject teachers.</td>
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<td>12. I frequently use the college VLE to discuss with other students about any topics where I have problems.</td>
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<td>13. I frequently use the college VLE to do revision for examinations.</td>
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<td>14. I frequently use the college VLE to access the teachers' notes.</td>
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<td>15. The use of the college VLE reduced the money I spend on photocopying handouts and past examination papers.</td>
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<td>16. The college VLE reduced the money I spend on buying text books.</td>
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<td>17. The use of the college VLE reduced the time I spend on research.</td>
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<td>18. I have access to more information by using the college VLE.</td>
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<td>19. I feel that the college VLE enhances students' learning.</td>
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<td>20. I feel that the college VLE motivates me to learn more.</td>
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<td>21. The college VLE makes learning more interesting.</td>
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<td>22. The use of the college VLE has improved my performance.</td>
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<td>23. The use of the college VLE has improved my engagement in learning.</td>
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<td>24. The use of the college VLE has developed my confidence.</td>
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<td>25. Has the use of the college VLE reduced your dependence on my teachers?</td>
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<tr>
<td>Students' Views on the Impact of ALE on Learning</td>
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<tr>
<td>The use of ALE has reduced the time I spend on research.</td>
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<td>The use of ALE has reduced the money I spend on textbooks.</td>
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<td>The use of ALE has reduced my costs of learning.</td>
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<td>I frequently use ALE to access textbook notes.</td>
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<td>I frequently use ALE for revision for my examinations.</td>
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<tr>
<td>I frequently use ALE to discuss with other students.</td>
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<tr>
<td>I frequently use ALE to post assignments.</td>
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<tr>
<td>I use ALE at home to research my work.</td>
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<tr>
<td>I use ALE at home to do research just to my studies.</td>
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<tr>
<td>I mostly use ALE at home to do my homework.</td>
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<td>I often use ALE at home.</td>
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<table>
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<th>Students' Views on the Use of ALE Technology</th>
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<tr>
<td>I have both a computer and ALE.</td>
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<tr>
<td>I have access to ALE resources at college.</td>
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<table>
<thead>
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<th>Students' Views on the Access to College Resources</th>
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<td>I often use ALE at college.</td>
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<tr>
<td>I am limited with the use of ALE in my course.</td>
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<td>I know what ALE is.</td>
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<table>
<thead>
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<th>Students' Views on the Awareness of the College ALE Technology</th>
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<tr>
<td>STUDENTS QUESTIONNAIRE DATA</td>
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</table>
Appendix: 5.5

UNIVERSITY OF LEICESTER
SCHOOL OF EDUCATION

STUDENTS GROUP INTERVIEW QUESTIONNAIRE

1. Do you know what Virtual Learning Environment Technology is? If yes, what is it?

2. Are you familiar with the use of VLE in your courses? If yes, where do you mostly use the college VLE- Home or college? Please give reasons for your choice.

3. Do you have access to computer resources whenever you need to access the college VLE while within the college premises? How often do you use the college VLE while in college and what do you use it for?

4. Do you have computers and internet facilities to be able to access the college VLE at home? How easy is it to access this technology at home?

5. Has the use of the college VLE reduced the money you spend on photocopying handouts, past examination papers and text books? If yes, to what extent? If No, why?

6. Do you feel that the college VLE enhances students' learning? Give reasons for your answer.

7. Has the use of the college VLE reduced your dependence on teachers? If yes, how? If No, why?

8. Does the college VLE make learning more interesting? If yes, how? If No, why?

9. During your induction at college, were you well informed and trained on how to use the college VLE? If yes, how good was the training? If No, how did you learn how to use the college VLE?

10. What would you say about the future of this technology in education?
Hi Tim,

In regard to your request for an interview, I am available for 20 minutes any time after 2pm either Monday or Wednesday of next week.

The training room is free if you would like to come over at any time on either afternoon.

I hope this helps

Thanks

Claire

E-Learning Development Officer

ext 228
Appendix: 5.7

UNIVERSITY OF LEICESTER
SCHOOL OF EDUCATION

THE E-LEARNING DEVELOPMENT OFFICER'S QUESTIONNAIRE FOR FACE-TO-FACE INTERVIEW

1. To what extent are you aware of the existence of the VLE e-learning technology at SEEVIC?

2. Why did management take the decision to invest in this technology?

3. Would you consider the investment in this technology as reasonable or expensive?

4. To what extent has this technology benefited the college?

5. Comparing the amount invested in this technology and the benefits your college have derived from its use, would you consider the investment to be justified?

6. In comparison to 5 years ago when the college has no VLE, would you say that it is relatively cheaper to deliver courses now using the college VLE e-learning technology?

7. To what extent has the VLE e-learning technology improved the students' retention and achievements figures since the technology was introduced in the college?

8. Would you say that the costs of producing the teaching and learning resources have reduced drastically since the introduction of the college VLE e-learning technology? If yes, how?

9. Would you say that the costs expended on the teaching and learning resources have been reduced by almost 50%?

10. Would you say that the costs expended on developing teaching and learning resources since the introduction of VLE e-learning technology have reduced but less than 40%?

11. Would you say that students now have access to more learning resources due to the introduction of the VLE e-learning technology?

12. Would you say that the courses offered at the college have attracted more students since the introduction of the VLE e-learning technology?

13. Would you say that the introduction of the VLE e-learning technology in the college has been well received by the teachers and the students?
14. Would you say that, the introduction of the technology to the college systems fits in well to the existing college culture?

15. To what extent do you feel that VLE technology benefits teachers?

16. Are the teachers in your college familiar with the use of VLE in planning and delivering lessons?

17. Prior to the introduction of VLE, were the teachers in your college fully informed and trained in the use of the technology?

18. How well do you feel you have managed this change?

19. Are there any foreseeable obstacles to the future of this technology in your college?

20. If yes, what are they? If no, why?
To: John Revil (Senior Manager- ICT)
From: Tim Osadiya
Date: 6/03/2006

Re: Face-to-Face Interview Request

I am currently doing a research project at the University of Leicester. I am investigating the extent to which VLE e-Learning technology can cut costs and enhance learning in an academic institution by using the SEEVIC College as a case study.

I would appreciate it if you could grant me an interview to discuss the attached questionnaire. It is envisaged that the interview will take approximately one hour. I would also like to stress that the view expressed during the interview will be confidential and at no time will such be disclosed to a third party.

Could you please confirm your availability by phone? My extension number is 123.

Many thanks for your anticipated interest.

Tim Osadiya
THE SENIOR MANAGEMENT QUESTIONNAIRE FOR FACE-TO-FACE INTERVIEW

1. To what extent are you aware of the existence of the VLE e-learning technology at SEEVIC?

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<td>Computer/ICT</td>
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<td>Chemistry</td>
<td>12.0%</td>
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<tr>
<td>Biology</td>
<td>9.9%</td>
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<td>Applied NVG Lab Tec</td>
<td>9.2%</td>
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<tr>
<td>Philosophy</td>
<td>9.0%</td>
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<tr>
<td>Law</td>
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<tr>
<td>Languages</td>
<td>8.2%</td>
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<tr>
<td>History</td>
<td>7.3%</td>
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<td>Geosciences</td>
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<tr>
<td>English</td>
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<td>Classical Civilization</td>
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<td>Music</td>
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<td>Media etc</td>
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<td>Dance</td>
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<td>Art</td>
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Grand Total: E3.119.565.10

Confiningty: 28.4%

10.8%

2.6%
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Additional notes and details here if needed.
Appendix: 5.12 - The SEEVIC College Planning Cycle – Funding; Planning; Generating the College Budget; Staffing

Planning Cycle
Funding; Planning; Generating The College Budget; Staffing

MARKETING: main marketing period for 16-19 recruitment following year

REVIEW
Recruitment 16-19 [adult ongoing] > income vs target

SAR
Develop and agree action plan

CURRICULUM PLAN
Finalise Voluntary

STAFFING
Estimated requirements

BUDGET and 3 yr FINANCIAL FORECASTS with Final Strategy & Risk
Analysis to Board

The Planning Cycle is summarised here. The boxes represent key events in the cycle. The process is iterative and, particularly in the case of adult targets and collaborative activity involving challenge funding, may fall outside the stages indicated here. All progress is monitored by the Finance & Estates Committee, which reports to the full Board at regular intervals.

Any new project will form the focus of particular attention by Finance & Estates and Client Services [QA] Committees.

Progress with the Operating Plan is monitored through a range of Pls. Full reporting of Strategic plan progress takes place at the Governors Conference. The Autumn Conference focuses on REVIEW & the SAR, The Spring Conference on Strategy Development.

FUNDING MEETING I

APPOINT STAFF I

APPLICATIONS ANALYSIS

Funding Allocation known
Finalise 3yr strategy & detail for next yr > operating plan
Finalise 16-19 Curriculum Offer next yr + 1

Agree budget targets with Board for next year

Client Group Capital Bids > resource allocation

Mid Year Budget Update if Required

Feb

MARKETING
Adult & Top Up target specified areas / courses

Any new project will form the focus of particular attention by Finance & Estates and Client Services [QA] Committees.

Final monitored through a range of Pls. Full reporting of Strategic plan progress takes place at the Governors Conference. The Autumn Conference focuses on REVIEW & the SAR, The Spring Conference on Strategy Development.

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FUNDING MEETING I
### Course Income for different Period

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<th>income/period/student</th>
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If BTEC First courses become load banded then the following rates apply

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### Proposed BTEC periods

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<tr>
<td>First</td>
<td>14</td>
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### Load banded rates

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Appendix: 5.14 - STUDENTS GROUP INTERVIEW

DATE: 29/03/06  
TIME: 12:00 - 13:00  
STUDENTS' NAMES: Beth, Vicky, Sophie, Jason Briggs, Gareth, Suzie, Hannah, Emily, Jason Lamont and Helen.

Moderator: Good afternoon, everyone. The first question I would like to ask is to find out if you all know what Virtual Learning Environment Technology is.

Beth: Of course, yes. We have this technology here in the college, don’t we?

Vicky: Yes, we have. In fact, I have just finished using the college VLE in my last lesson.

Suzie: Any idiot in the college will be aware of the technology.

Moderator: Any idiot? Why did you say that?

Suzie: Is it not obvious? Our teachers use this technology in the classroom to deliver lessons. They also often refer us to the VLE for downloading the resources and lesson notes. Because of this, I do not think there is any student in the college who is not familiar with the use of the technology.

Moderator: Okay. So would you say that more than 98% of the students in this college use VLE?

Jason: I would say 100% of the student population use the college VLE, particularly for accessing and downloading course work/lesson materials.

Moderator: So, would you say then that you use this technology more in the college than at home?

Suzie: I would say I use it more in the college than at home.

Moderator: Why?

Suzie: The reason is that I don’t have to use my own paper and my ink to print all these materials from home. I can just sit in the college and use the college resources in order for me to save money.

Vicky: I do not think that there will be any student in the college who would attempt to print notes, handouts and assessment resources from home. If I do, I think I will be spending all my Educational Maintenance Allowance (EMA) on cartridges/printing papers.

Emily: I don’t even have Internet access at home, so my best option is to use the resources while in the college.

Moderator: Why is it that you do not have Internet access?

Emily: I can’t afford the monthly charges from the Internet Service Provider, so I decided not to have it.

1 Please note that the students’ names have been changed to protect their identities.
**Moderator:** Since most of you use the college VLE during the college hours, do you have access to computer resources whenever you need to access the college VLE while within the college premises?

**Hannah:** On that note, I think the answer is yes. If there is anything good about this college, it will have to be the computer resources they have. The computer resources we have in this college are far more than enough for the student population. I always have access to those resources whenever I want to use any of them during the college hours.

**Vicky:** I absolutely agree with Hannah.

**Suzie:** Me too!

**Helen:** Whenever I am free, I always go to the Learning and Information Network Centre (LINC) area to use the college VLE.

**Moderator:** How often do you use the college VLE?

**Suzie:** On average one hour everyday.

**Hannah:** I would say two hours per day.

**Jason:** Mine is about two hours per week.

**Moderator:** So what do you use the VLE for?

**Suzie:** To download teachers’ notes, view past exam papers and mark schemes and also for discussions in one of the forums set up within the VLE.

**Jason:** I only use it for revision.

**Moderator:** How easy was it for you to access this college VLE at home?

**Beth:** Very, very easy most of the time. It’s like accessing any website.

**Moderator:** Has the use of the college VLE reduced the money you use in photocopying handouts, past exam papers and textbooks?

**Beth:** To some extent, I would say yes. The reason is that I don’t have to buy as many textbooks as I used to buy and I don’t have to keep photocopying handouts anymore since I can easily print all these resources from the VLE as many times and as many copies as possible without paying a penny. It has been a huge savings on my part as a student.

**Vicky:** I have saved so much as a result of using the VLE.

**Moderator:** So, do you feel that the college VLE enhances students’ learning?

**Beth:** Yes.
Moderator: How?

Beth: Because I can access the college VLE at home, save the resources to my computer system at home for future use. There are also very useful links to educational websites outside the United Kingdom which again could provide useful information that could help me understand some difficult topics.

Vicky: I use this mostly for my psychology subject.

Helen: Using the college VLE has really helped me to get through my ICT coursework easily.

Moderator: How?

Helen: You know that the AS ICT project demands advanced skills which most students tend not to have. However, there are some exercises which our ICT teacher has put on the VLE for us to work through and these exercises are aimed at developing our ICT skills. Oftentimes on weekends, I would sit in front of my computer, access the college VLE at home and work through these exercises. It has helped me a lot. It has also encouraged me to learn independently.

Suzie: I also use it for my Art subject.

Jason: We do not use it much in the Mathematics department, anyway.

Moderator: Why?

Jason: I don't know. I think we have a specific website where we access all the Mathematics resources, but that is not linked to the college VLE.

Moderator: Has the use of the college VLE reduced your dependence on teachers?

Vicky, Suzie, Helen, Jason, Hannah and Garreth: Yes!

Beth: But it is boring.

Moderator: Why did you say that?

Beth: Because there is no interaction at all. All you do is just to sit there, reading stuff from the computer screen. Even if there is any need for you to clarify certain things, you have no chance of doing that immediately except by sending e-mail to your teacher and that might take about four days to get a response. Personally, I prefer the face-to-face instruction to this e-learning stuff.

Sophie: I prefer teachers to all this e-learning crap because I can talk to my teacher. I can ask questions and I think I understand things more when I see someone in the classroom telling me how to do things. I think communication should be a two-way process. In the classroom, the teacher will lead the lesson and students will follow. Sometimes, a teacher could introduce a role-play or group work into a lesson so as to enhance understanding. Whereas, with this e-learning stuff, you only sit in front of the computer and give instructions to the system on what to do. There is no interaction and I think it is really, really boring.
**Moderator:** Where did you learn how to use the college VLE?

**All:** It was part of our induction programme when we came in to college in September. We were told what VLE is and we were trained on how to use it. Since we all have basic knowledge of ICT, it was not difficult for us to know how to use the system.

**Hannah:** Accessing this VLE is not different from accessing any website.

**Moderator:** What would you say about the future of this technology in education?

**Beth:** It's a good technology to have within the academic community, but I do not think that all these technologies can ever replace teachers in the classroom. They can only be used to complement teaching and learning.

**Vicky:** No technology, no matter how good that technology is, can ever replace teachers in the classroom.

**Jason:** That is very true.

**Moderator:** Thank you very much for your contributions.
Introduction
Due to lack of time on the part of the e-Learning Development Officer of the case study college, it was agreed that a face-to-face interview will be appropriate in this regard. This interview method will also enable me to clarify some issues which might be difficult to note if using questionnaire. This same research method was also used for the senior management interviewed. The participants were informed prior to the interviews, times and places were also agreed upon. The results of both interviews are as below.

Interviewer: Thank you for your time particularly at this busy period. As we have discussed earlier on phone, I will ensure that I stick to the arranged duration. My first question is: Why did the management take the decision to invest in the Virtual Learning Environment e-learning technology at South East Essex Sixth Form College?

CJ: Right! From my own perspective, the management invested in this technology not because they thought of it or had a long term planning for it. It was more of a following-the-lead strategy.

Interviewer: Following the lead? Can you explain what you mean by this?

CJ: What I meant is that the management invested in the technology because they saw other colleges, those we considered to be our competitors investing in the technology. As a result of this, the management felt that they too have to do the same.

Interviewer: No planning or preparation or whatever for this technology?

CJ: I very much believe so.

Interviewer: If management did not plan for it, I would presume that it will be very difficult to implement such idea.

CJ: Yes, you’re right because it was a bit chaotic when the technology was put in place in the college. Many teachers were completely left out of training and most have no idea of what the technology was all about. Despite the fact that the technology itself is very good for the planning and delivery of lessons, since the benefits of the technology were not communicated in an appropriate manner to the teachers, it became necessary for the teachers to partially reject the technology initially.

Interviewer: Initially?

2 Please note that the e-Learning Development Officer’s name has been presented as CJ to protect her identity.
CJ: Yes! I said this because when the technology was first introduced, many teachers were completely against it although their actions were not documented in form of a letter or memo to the management but there was an element of resistance to it. Many teachers did not put their resources on the VLE and many were not using the technology in the classroom for months after it was introduced. At a later date, the management took the decision to set targets for each subject area within the college and specified date was given for the review of these targets.

Interviewer: Targets? What are the things contained in the targets?

CJ: Teachers were mandated to put at least 25% of their resources on the VLE and there are other features of the technology which they expect teachers to have used within these periods. It is quite funny that whichever subject areas that failed to meet the targets, such area will receive memo from the management asking them to clarify why they have failed to meet their targets. As you can see, it is more or less like forcing them to embrace the new technology. In my opinion, if there had been proper planning from the beginning and the teachers have been briefed and even involved in the design and implementation of this technology, I don't think it would have been necessary for the management to be forcing the teachers to put their resources on the VLE. The whole idea would have been easily embraced.

Interviewer: Would you then consider the investment in this technology as reasonable or expensive?

CJ: In terms of the benefits of the technology to teaching and learning, I would think it is reasonable. However, as far as the money being spent on the hardware and software needed to make the technology function, well, I think it is expensive.

Interviewer: Expensive? Do you mean that the hardware and software needed to set up the technology cost a lot?

CJ: Yes! It is not just the cost of buying the hardware and software. The costs that are equally associated with the process of setting up the technology also made it to be very, very expensive. For instance, my office was set up as a result of introducing the technology. Currently, we have six full time staff in this office. In my opinion, all these extra costs add to the cost of setting up the technology.

Interviewer: Would you not consider this cost to be high in the short- term and reduced drastically in the long run?

CJ: Yes! In an ideal world, that is what one should expect. But unfortunately in the ICT world, it is the contrary.

Interviewer: Why?

CJ: This is because in the ICT world, you keep updating both the hardware and software from time to time in order to meet the pace at which the technology develops. In most cases, ICT technologies change every six months. If you want to remain vibrant in this technological age, you must be prepared to spend so as to keep up with the pace of technological developments. Otherwise you will be left behind. So, on this note, there will not be much reduction in the cost of having this technology in the long run. People in my office for instance, must constantly be upgrading their skills through trainings which have to be done externally. One thing you have to understand is that these external training providers will not do trainings for free.
Interviewer: Comparing the amount invested in this technology and the benefits your college have derived from its use, would you consider the investment to be justified?

CJ: Yes! In terms of the benefits of the technology to teaching and learning, I would say that it is worth it.

Interviewer: How?

CJ: Teachers can now deposit their resources on the VLE and on the other hand students have the opportunity to access these resources anywhere and at anytime. The students can as well print as many copies as they want from these resources anywhere and at anytime. The technology has also saved the teachers’ time i.e. the time spent in preparing and photocopying handouts for students. These times can now be spent on other important things. Do you know that it is even possible for teachers to set up assessment exercises on the VLE for the students?

Interviewer: No.

CJ: You see, there are so many things teachers could do with this technology to enhance lesson delivery and facilitate students’ learning. All we need to do in this college is to expose teachers and students extensively to the good aspects of this technology. I do not think that the senior management have really done a good job in this area.

Interviewer: In comparison to five years ago when the college had no VLE, would you say that it is cheaper to deliver courses now using the college VLE e-learning technology?

CJ: I will answer this question this way. If the VLE is used appropriately, yes I would say that it will reduce costs on the part of the students but it will not necessarily reduce the college expenditure.

Interviewer: Why would it reduce costs on the part of the students?

CJ: The reason why I said that is because if students are using the VLE regularly, they could easily print all the resources for free in the college and also access important websites anywhere in the world because there are educational websites linked to the college VLE. Using the VLE would save the students money on photocopying and buying textbooks.

Interviewer: If the technology would cut costs on the part of the students, why should it be expensive?

CJ: You see, I said earlier that if the students use the VLE appropriately, they can print as many copies of their teachers’ resources at anytime and at anywhere. The situation in this college is that students are abusing the privilege of not paying for printing resources from the VLE or from the Internet. As a result of this, they waste too much print papers. The college is now spending even more in buying cartridges and papers to the printers.

Interviewer: Is there any other way the college could reduce these costs?

CJ: Well! There is only one way and that is by asking the students to pay for whatever they have printed. Through that the college will be able to use the money to buy cartridges and printing papers we are talking about.
Interviewer: Would you say that students now have access to more learning resources due to the introduction of the VLE e-learning technology?

CJ: Yes.

Interviewer: How?

CJ: Since teachers are depositing their resources on the VLE which also has links to other educational websites. I think the students now have more opportunities of accessing resources from many places.

Interviewer: Would you say that the courses offered at the college have attracted more students since the introduction of the VLE e-learning technology?

CJ: I do not think so. The reason is that VLE technology has become a norm within the academic community in this particular area. I do not think that it will make a big difference in the recruitment and retention of students in the college.

Interviewer: Would you say that the introduction of the technology to the college system fits in well with the existing college culture?

CJ: I would say to some extent yes. The reason is that prior to the introduction of the VLE to the college, we have a department which was directly in charge of ICT resources in the college. So, the introduction of the VLE was more or less a sort of add on. Although as the college is expanding, there are few things which need to be changed and I am sure that the management are very much aware of those things. I would not like to comment on those things as I am not part of the management.

Interviewer: To what extent do you feel that this VLE technology benefits teachers?

CJ: I would say very well. I think the only problem here is that there are few faculties in the college that are still not using the VLE as expected.

Interviewer: Can you tell me one of these faculties?

CJ: Hmmm. I hope I'm not getting myself into trouble here! I would say Humanities and others.

Interviewer: Who are the others?

CJ: I would like to keep that to myself.

Interviewer: So despite the fact that the senior management is setting targets for the teachers to use the VLE, are you saying that there are still some teachers who are resisting this change?

CJ: I would think so. I can't blame those teachers who are not using the technology the way it should be used because the senior management got it wrong right from the beginning.

Interviewer: Got it wrong?
CJ: Yes! If appropriate measures have been put in place prior to the introduction of the technology to the college, all the teachers would have been trained properly and have the required ICT skills that will give them the confidence to use the technology in a variety of ways. Most teachers learned how to use the VLE on their own. In my opinion, this is absolutely wrong. For instance, most of the teachers in the ICT department embraced the technology and use it well. The reason for that, in my opinion, is largely based on their ICT skills. The teachers from Humanities faculty have little or no knowledge of ICT. I think it was wrong of the senior management not to have taken this factor into consideration when introducing this technology in the college. A lot more could have been done by the management to motivate teachers in using the technology.

Interviewer: How well do you think the college has managed this change?

CJ: I would say the change has been badly managed due to the reasons which I have enumerated earlier.

Interviewer: Are there any foreseeable obstacles to the future of this technology in your college?

CJ: If the management could get their acts together and recognise all the problems associated with the way the technology has been introduced and managed, and if they are ready to solve these problems, then VLE technology will be very, very popular among the teachers and the students. However, this technology will continue to develop and also be used in the academic institutions. Although, there are few teachers who have the belief that the introduction of the technology was mainly to be used to substitute teachers in the classroom and this has created fears among some teachers. Again this is the fault of the senior management for not communicating the reasons for this technology and convincing the teachers that the technology is there to enhance lesson delivery and not to be used as a substitute to them. Not until when these issues are fully addressed, the use of the technology in this college will continue to have problems.

Interviewer: Thank you very much for sharing this with me.
Interviewer: Good afternoon. Thank you so much for finding time out of your busy schedule to have this interview done. I will assure you that the whole discussion will not take longer that the duration we have agreed on. The first question is: why did the senior management take the decision to invest in the Virtual Learning environment e-Learning Technology in this College?

JR: Well... the management took the decision to invest on the VLE purposely to provide extra tools for teaching and learning and most importantly to enhance students' access to more of the college learning resources at college and at home. The VLE is more of student-centred- resources.

Interviewer: But you said earlier on that the technology was introduced at your college to enhance teaching and learning. Are you now saying that the teaching part of it is secondary?

JR: No, no, no, no. What I'm saying is that the senior management are more concerned with the student retention and achievement and we believe that if these resources are in place to help students achieve their academic goals, teachers will as well benefit immensely from the use of the technology for planning and delivery of lessons.

Interviewer: Does it mean that this technology could easily replace teachers, then?

JR: Oh, no! You see, this has always been the argument from the teachers' point of view. I have had many teachers saying that to me. You see, I do not think that technology, no matter how advanced the technology is, it will never replace the teachers in the classroom. Students prefer more of face-to-face learning than the virtual one. Students could easily interact with their teachers in the classroom and have the opportunity to clarify or ask questions when there is a need to do so. In the virtual learning environment technology, there is no such interaction. On this note, I strongly believe that technology can only aid teaching and learning, it will never replace the human inputs particularly in the planning and delivery of lessons in the classroom.

Interviewer: These points that you have just clarified in my opinion are negative elements which have to be managed right from the inception of this technology in any academic setting. What have been the senior management efforts in communicating this to the teaching staffs?

JR: Well, the senior management managed to communicate with the teaching staffs when the technology was introduced to the college and there were training workshops set up purposely to train staff on the use of the technology in the classroom. However, I personally felt this change was not properly managed. There are many things we have done to assure the teaching staff that the technology will not replace them.

Interviewer: Like what?

JR: For instance, the teaching staffs were not involved in the designing of this system. I think the teaching staff should have been given the chance to contribute to the design and development of the technology since they are the people that will be using it in the classroom. The management don't use this technology in the

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3 The senior management executive's name has been represented as JR to protect his identity
classroom. To a large extent, the senior management have not done enough. But you see, we learn from our mistakes and always willing to learn from those mistakes so as to move forward.

**Interviewer**: Thank you. Would you consider the investment in this technology as reasonable or expensive?

**JR**: In terms of the money spent on the hardware and software while putting this technology in place took almost 25% of the college gross annual income. We are talking of about £280,000.00. This is a lot of money. On this note, one could be forced to say that it is an expensive investment. However, considering the benefits that the teaching staff and the students have derived from the technology, one could then say that the investment is worth it. Students can now access teaching and learning resources at college and at home at their own convenient time. The teaching staff and the students can also discuss issues on one of the forums set up within the VLE technology. This is a great improvement in the students' and teachers' interactions. Another good thing about this technology is that, both the students and the teachers can even access the technology while on holiday in another country as long as they have access to the internet. This technology is definitely transforming teaching and learning.

**Interviewer**: In comparison to five years ago when the college has no VLE, would you say that it is cheaper to deliver courses now using the college VLE e-learning technology?

**JR**: I will not say that. The reason is that when the technology was introduced into the college system, the aim was to encourage independent learning and enhance teaching and learning environment. The issue of money was not considered. In a way, one could argue that if such technology is introduced into any academic environment that it should cut costs. In reality, it doesn’t work that way. Like I said earlier, we are spending an average of 25% of the college gross income on this technology and this will continue as long as we want to keep up with the pace of the technological developments. Again, one thing I would like to tell you is that it is true that if teachers are putting their resources i.e. lesson notes, lesson plans, schemes of work, revision pack, solutions to questions, assessment materials on VLE for students to access and use at their own convenient time, one would want to believe that it would reduce the cost of photocopying these resources in the college and shift the burden on the students. But it doesn’t work that way. In reality, the students prefer to print these resources within the college environment and that has further increased the amount of money which the college is spending in buying printing papers and toners. As I have said, we are really not worried about these extra costs as the aim of the technology was not about costs cutting but to enhance teaching and learning.

**Interviewer**: Would you say that the courses offered at the college have attracted more students since the introduction of the VLE technology?

**JR**: This is difficult to say because this College is not the only college using VLE in this area. Most schools and colleges in this area are equally investing heavily on the VLE and we do not put it as part of our recruitment campaign. You must understand that technology has become a norm within the academic community in our area. There is no evidence which suggests that the introduction of the VLE has increased or decreased the recruitment and retention of students since the technology was introduced. I would say that we have not actually looked into that.

**Interviewer**: Would you say that the introduction of the VLE e-learning technology in the college has been well received by the teachers and the students?

**JR**: From the senior management point of view, I would say yes.
Interviewer: Why yes?

JR: The reason is that the senior management set targets for teachers on how much of their resources has to be put on the VLE at the set time and the senior management also monitored the use of the VLE from time to time. The evaluation of this exercise by the senior management shows that the teaching staff from all faculties are using the VLE as a depository and monitoring of the access to VLE also shows that more than 95% of the student population access the VLE at least once a week. These are indication that the technology is very popular among the students and the teaching staffs.

Interviewer: If the technology has been fully embraced by the teaching staffs as you have suggested, why then should the senior management be setting targets for the teaching staff. I believe that as a human being, if you love something, you will always be willing to use that thing voluntarily without anyone forcing you.

JR: Yes, you are right. As part of the senior management strategy, we always want to evaluate the effectiveness of our strategic moves from time to time and the best way to do this is by evaluating our activities from time to time. The senior management will have to report on their activities annually to the Board of Governors. At least we should be able to justify the 25% of the college annual gross income invested in the technology.

Interviewer: Would you say that the introduction of the technology to the college system fits in well with the existing college culture?

JR: I would say yes in the sense that we have been using computers in the college and the electronic whiteboard for delivering lessons in the classrooms prior to the introduction of the VLE. So, VLE is a sort of add-on to the existing technology we have in place. The fact that we have an office set up purposely to be in charge of all these technologies in the college made it very easy to incorporate VLE to the existing system easily. However, there are certain things we need to change in our culture to make these technologies work to our own advantage.

Interviewer: Such as what?

JR: There is a need for us to improve the communication channels within the college. We must be able to pass on information to the right people at the right time and senior management must be able to receive information from appropriate channels at the right time. Hence, this has been one of the major problems we have in this college. However, I can confirm that the senior management are aware of these problems and we are actively working to provide solutions to them.

Interviewer: Are all the teachers in your college familiar with the use of VLE in planning and delivering lessons?

JR: From my experience as the director of e-learning in the college. I would say that more than 95% of the teaching staffs have put their resources on the VLE and a very large number of the teaching staff are actively using the technology in the classroom for delivering lessons. This indicates that they know how to use the technology. We also have training workshops set up purposely to upgrade the teaching staffs’ skills in this particular area. There are stand-by technical support staffs to help solve problems from time to time.

Interviewer: How well do you feel the senior management have managed this change?
JR: The senior management have managed this change to a large extent but more could have been done. For instance, I would expect the senior management to have informed the teaching staff prior to the introduction of the technology and also involved the teaching staff in the design and implementation of the technology, give the teaching staffs the opportunity to contribute their own ideas rather than for the senior management to impose the technology on them. On this note, I think the senior management could have done more to manage the change.

Interviewer: Are there any foreseeable obstacles to the future of this technology in your college?

JR: No!

Interviewer: Why?

JR: This is a good technology which has more merits than demerits. Teachers and students appreciate these benefits. In as much as the teaching staffs do not see the technology as something that would replace them in the future, I do not think there will be any problem with the technology. However, one major foreseeable problem will be money because the technology needs to be constantly updated which would entail the purchase of hardware and software from time to time. All these things cost money. As far as money is concerned, since the government is embracing the use of technology in the classroom, that would help to solve this money problem in the long run.

Interviewer: Thank you so much for your time and comments.

JR: Thank you and good luck in your studies.