

**FROM DISTANCE LEARNING TO BLENDED LEARNING:
THE DEVELOPMENT OF E-LEARNING APPROACHES AND METHODOLOGIES
TO ADDRESS THE EDUCATIONAL NEEDS OF DISPERSED RURAL GROUPS AND
THEIR EDUCATORS: A CASE STUDY OF V-LEARN.IE - THE VIRTUAL CENTRE
OF ACADEMIC EXCELLENCE IN RURAL DEVELOPMENT**

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Abstract

Technology has revolutionised the way people live and learn. It is also beginning to impact on university education. There are now no valid reasons why a significant amount of education cannot be delivered using modern technologies. The advantages are numerous, the availability of cohesive learning materials, flexibility of learning, the removal of distance as a major entry barrier and time saving, once courses are developed are all major attractions. Four major universities in Ireland have worked together over the last ten years in developing a blended learning system for rural development activists. Over 300 adult learners have availed of this system of learning and their performance is on par and in many cases better than that achieved with traditional learning systems. Key components of this system include specifically developed interactive text materials, Powerpoint slides with voice over, MP3 voice CDs and a well developed tutoring system. V-learn.ie is innovative in structure, in its blended learning model and in the extent of expertise that it can present to rural people.

Introduction

The knowledge economy in which rural populations operate is becoming increasingly globalised and highly competitive. The survival of these economies and rural communities will depend to a great extent on the flexibility of the workforce to move from that of a low skilled agricultural workforce to a technologically proficient one. Consequently, many national governments see an increase in the quality and quantity of adult and continuing education programmes as a priority and educational institutions are charged with the task of designing programme curricula to achieve these policy aims.

Higher education institutions have also changed significantly, they are much more conscious of the market place. The product they sell is knowledge. The principles that underpinned these Ivory Towers have weakened. Excellence, efficiency, customer base, international linkages, unit costs, interdisciplinary research, fulltime teacher equivalents (FTE's) and quality are the new drivers as universities position themselves in the increasingly competitive business of education. Like any business universities are not immune to the impact of technological developments and it is in this area that the most profound changes may yet

occur. The “Virtual Classroom” is now a reality and universities are gearing themselves for this new challenge.

Purpose and Objectives

The purpose of this paper is to outline the changing nature of university education and in particular to detail the current situation regarding e-learning. It will draw on experiences gained over a ten-year period and describe a model of “Blended Learning” which can challenge traditional curricula in terms of its pedagogy, its educational outcomes and particularly its accessibility.

The paper will describe and analyse one innovative approach to delivering professional development and third level education to a dispersed rural population. The paper introduces ‘V-learn.ie’, a Virtual Learning Centre (VLC) delivering two-year diplomas and three-year degree programmes in Rural Development. The delivery mechanism incorporates a blended learning approach to facilitate distance learners on an e-Learning basis. The VLC is managed collaboratively by the four constituent universities of the National University of Ireland (NUI): University College Dublin (UCD); University College Cork (UCC); NUI Galway and NUI Maynooth.

The programmes are targeted at mature students, in particular those actively involved in agriculture and rural development. The curriculum design incorporates learning tools such as video and audio presentations, animations and interactive learning objects. Students access the learning materials via the internet using Blackboard © as a virtual learning environment and are supplied with a CD Rom to enable easy access by dial-up users.

Methods and Data Sources

The paper draws on a significant body of literature in reviewing the development of distance learning over the past three decades. It also draws on the findings of a LEONARDO funded project coordinated by University College Dublin as well as experiences and evaluations of both the Diploma and BSc in Rural Development coordinated by V-learn.ie. The evaluations were carried out by external evaluators, by external examiners and by questionnaires to students participating in the programmes.

Theoretical Orientation

Globalisation and advancement in electronic communication has created a new environment for the delivery of educational products. These changes are occurring at a rapid rate and as is the case with all technology, young people gain proficiency at a faster pace. Most faculty in universities were hired and have operated for a considerable number of years before the advent of the world wide web (1992) and thus may find it difficult to embrace its implications. This fact is clearly noted by Caplan (2004). However, in spite of reluctance at the beginning, academic staff and institutions are slowly beginning to appreciate the opportunities presented by these new technologies. According to Elloumi (2004) however, a vision of excellence for online learning in academic institutions “is not a choice, but a market reality”.

Considerable philosophical change has also occurred in approaches to teaching and learning. The learning system of the past has been characterised as a teacher centred top down learning system. Today there is a significant move from traditional lecturing to approaches that are much more student centred. Cooperative learning, participative learning, reflective learning and experiential learning are terms that appear with greater regularity in almost all curricula.

There is also a move away from the traditional approach of universities focusing on knowledge to one where knowledge, knowledge application and skills are more prevalent.

The change in philosophy has meant a greater focus on students. This has also been necessitated by a significant change in the student base. Students now come to university with a great diversity in background, ability and interest. Many must work to be able to attend college and increased opportunities in the work place have meant that work is more available. Also there is greater emphasis on life long learning and while traditional undergraduate areas may contract, this area presents great opportunities for expansion. This is particularly important given the rapid changes in Irish society over the past two decades. Many adults are returning to the workplace while many others are availing of educational opportunities, which were not available to them two decades earlier. While most students in Ireland still enter university mainly through the Central Applications Office (CAO), increasing numbers are entering from linked programmes where students obtain credit for work done in a previous programme. There are also increasing numbers of certificate, diploma and taught masters programmes, as the focus on life long learning increases. In addition there is increasing mobility of students across Europe and this is strongly supported by the European Union (EU) ERASMUS Programme.

Theories of Learning

Blooms taxonomy has long been used as a guiding influence in educational development. The competences to be developed are: *knowledge, understanding, application, analysis, synthesis and evaluation* (Bloom 1956).

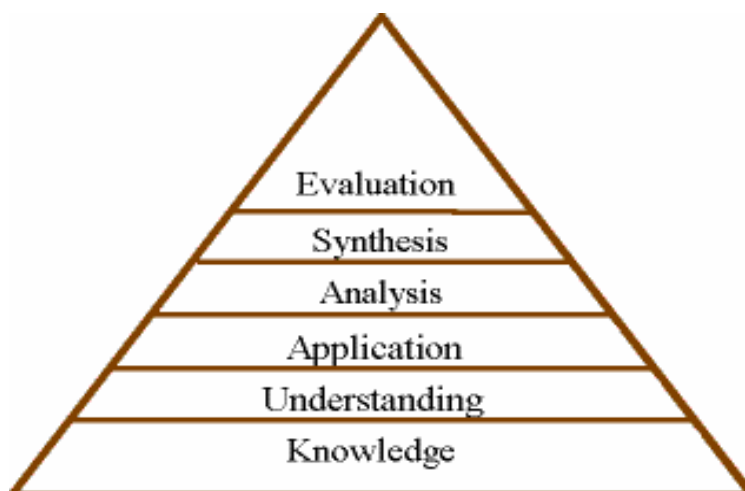


Figure 1. Bloom's Taxonomy of Educational Objectives

Later the *Affective* and *Psychomotor* domains were added. Similar type models were developed by Chickering and Gamson (1987) and by Fleming (1987) with these latter models focussing more on feedback. Traditionally Blooms taxonomy and its derivatives were used in a top down manner, with little participative involvement in the development of curricula. While Blooms taxonomy and its additions are still very relevant today, modern curricula are more student centred and focus more on learning outcomes. These are clear statements of what the student will be able to do after completing the learning activity. A focus on learning outcomes should help the teacher or tutor to select the most appropriate learning activity. Learning

outcomes focus on knowledge, cognitive skills, subject specific skills and transferable skills. This approach has in many ways been driven in Europe by the Bologna process, which seeks to harmonise curricula design across Europe, in order to create greater transfer of students. It is also driven by a greater focus on “*employability*” of students emerging from the educational process. In addition, the focus on learning outcomes provides a better framework for the evaluation of courses, as learning outcomes are more easily assessed than learning objectives.

The Evolution of Distance/E-Learning

The term distance learning has been applied to a great variety of programmes, providers, audiences and media. Its hallmarks, as recognised by many researchers, are the separation of teacher and learner in space and/or time (Perraton 1988). The earliest form (Generation 1) of distance learning took place through correspondence courses. Here the main focus was on providing learners with text, which they could study at home. However, studying alone can be a very lonely experience and only the highly motivated succeed. Thus the early years were characterised by significant drop out as the systems were not able to create favourable conditions except for the most ardent learners. Distance learning received a significant boost with the founding of The Open University in the 60’s in the belief that it could, using modern communications, create greater access to education. This institution has continued to embrace new technologies as they have come on stream and is now a very significant supplier of adult learning courses. It also provides a framework for public private partnerships in the delivery and accreditation of learning.

The next generation (Generation 2) saw the introduction of television and videocassettes to compliment the written word. However, very often one found that academics, who were expert in the subject matter area were not the best communicators. In addition early systems provided little opportunity for feedback leaving the learner isolated. The material was also very often not user friendly and again only the most ardent persisted to the end. Videocassettes were also costly to produce and very quickly became outdated. Similar to correspondence courses, there was limited feedback and learning remained largely a top down process.

Generation 3 with the advent of the computer began to show real opportunities for distance education. However, it also introduced a new set of learning experiences for students, that of learning the new technology as well as the subject matter. The combination of these two factors combined with limited access meant that progress was not as fast as anticipated and fall out rates were still high. All courses suffered from the lack of access to material, other than what was provided directly as course materials and these were often not specifically prepared for electronic delivery. There was also a lack of critical mass and thus no or little opportunity for contact between learners.

The greatest leap in the development of distance learning (Generation 4) has come with the advent of the World Wide Web (WWW). Developments in computer technology and the advent of the WWW have created new and challenging opportunities for both traditional and distance learning education. This and the reduction in cost combined with the enhanced capacity of computers has meant that many homes now have access to computers. The Wall Street Journal of February 4, 2004 for example quoted that 54 percent of US adults use the web on a regular basis, while 90 percent of 15-17 year olds are regular web users. Where computers are not in homes, they are available in schools, local training centres and more recently in rapidly expanding internet cafés. For educators the WWW. provides exciting new opportunities for teaching and learning. In contrast with traditional distance learning systems it provides an

opportunity for feed back and brings to life the concept of the “virtual classroom”. The main advantages put forward for learning through the use of on-line systems are that it enables a large audience to be reached without the limits of geographic location. It is accessible at any time so students can learn at their own pace. It reduces the workload on the lecturer, once the courses have been developed. It allows students the opportunity to explore a wide variety of knowledge and can link students to a catalogue of libraries as more and more articles are being published on the web. Many agencies that collect statistics are making those statistics available on the web. Students can contact each other via the web, which can greatly increase collaboration between students thus negating the sense of isolation that many distance learning students experience.

Commercial companies have seen the opportunities for e-learning and we now have a number of well-developed learning platforms. Although technology is an integral part of distance learning, any successful programme must focus on the instructional needs of the students rather than on the technology itself (Sherry 1996). Saettler (1990) quoted in Sherry (1996) found that the mental effort a learner will invest in learning depends on his or her perception of two factors. Firstly the relevance of the medium and the message which it contains and secondly the ability of the learner to make something meaningful out of the material presented. Inquiry learning which is a critical component of what is involved in web based distance-learning means that the teacher is no longer the “sage on the stage” but is the facilitator of discovery learning.

Phelan (2002) has classified e-learning approaches into three categories as follows:

1. “Dumping model” Lecturers simply dump their traditional lecture notes or handouts on the web, thus providing students with access. No effort is made to adapt them for electronic learning. It does, however, facilitate access, although some argue that it transfers the cost of photocopying to the student.
2. “Home video model” Course materials are designed especially for e-learning. Efforts are made to incorporate sound pedagogic principles, thus it is learner centred. Efforts are also made to use modern technologies, however, these are limited to what is locally available. Approaches have been made towards using the “virtual classroom”, but due to lack of finance and support, the attractiveness of the material is limited.
3. “Hollywood model” This model employs all the latest communication technologies and expertise to make the materials and the system fully interactive. It first requires a content review and development to ensure that content delivery can take full advantage of the new technologies. It also requires intellectual and technical investment to ensure high quality learning methods as well as a framework to support the learner.

The same author also notes that first efforts with the new media were minimal and largely involved placing traditional lecture notes etc on the web. This to some degree explains the slow take up of e-learning. He also notes that many institutions have moved beyond the dumping model and that courses are now beginning to be specifically written based on self learning principles, incorporating practical examples that link theory with practice and that provide a range of learning stimuli (text, audio, visual etc.). One of these examples are courses developed by V-learn.ie, a virtual learning centre of the National University of Ireland (NUI) involving a partnership of four universities in Ireland, UCD, Dublin, University College Cork, The National University of Ireland, Galway (NUIG) and The National University of Ireland Maynooth (NUIM).

Blended Learning - the V-learn Model

The constituent colleges of the NUI have worked together over a ten-year period to create a Diploma and Degree in Rural Development using distance learning methodologies. These programmes are aimed at adult rural people who are involved with local communities and who have a track record of activity in this area. The programme is delivered jointly by the four colleges, with approximately 20 students registering at each college for the diploma and a similar intake on the BSc. Early efforts focused mainly on bringing the learners to the tutor rather than the tutor to the learners. The development was informed by a LEONARDO supported pilot project, which evaluated the use of e-learning methodologies to deliver a short course in project management to participants in Ireland, Greece and the UK. The project used the Blackboard platform and the only physical contact with learners was a one-day introductory workshop. All other support was provided electronically. The project was evaluated externally by an independent evaluator and internally by the core partners, by the tutors and by the course participants. The method of on-line learning was endorsed by all evaluators. It was a valuable experience and much was learned by all involved. The conclusion was that e-learning represented a very real alternative to conventional learning methods, particularly for adult professional training. All evaluations, however, stressed that the system had difficulties in terms of gaining access to blackboard online, moving through some areas of the course and use of the virtual classroom. However, these were viewed as problems that could quite quickly be solved, thus opening the way for e-learning. Of the 52 participants that registered, 23 received certificates. Lack of time, difficulty with accessing the course, and general technical difficulties were the main reasons for non-completion. The outcome of this programme was similar to that found with many distance learning courses in that less than 50 percent reached the desired outcome. The failure to create a supportive learning environment and sufficient contact between students and between staff and students has been identified in the literature as the main cause for non-completion of courses. The results of the LEONARDO project fully supported these conclusions.

The project provided a number of important pointers. Firstly the cost of developing top quality courses is very demanding in terms of academic and technical time and substantial investment is required to create good courses. Because of lack of mass in any one university, this demanding technical input is most likely to be met through collaboration. Secondly, learners need support in terms of real contact with tutors and with one another. This enhances the learning process and provides the necessary body contact and support to retain learners.

Supported with this knowledge and experiences gained from implementing a diploma the four NUI colleges agreed to collaboratively develop and deliver a BSc in Rural Development using a specifically designed e-learning model and the Blackboard platform. The model is built around: 1) Development of a text document oriented towards distance/electronic learning; 2) Development of a set of interactive slides with voice over as an additional learning tool; 3) Provision of voice over in MP3 format (which can be played on car CD players or on MP3 players; 4). Use of strategically placed tutors as learning facilitators for the learners; 5) Encouragement of local learning cells; 6) A programme coordinator at each institution; and 7) An academic management team consisting of key academics from each institution. Because of difficulty and slowness in using the Internet in some areas, all learning materials are made available through CD. An audio (MP3 voice) CD was also supplied to each student. The model developed is based on the “Blended Learning” principle, which uses electronic methods, but also draws on good learning principles from more traditional teaching methods. The model also

incorporates critical interactions as outlined by Laird (2003), learner-learner interaction; learner-tutor interaction; and learner-content interaction. The model is presented diagrammatically in Figure 2.

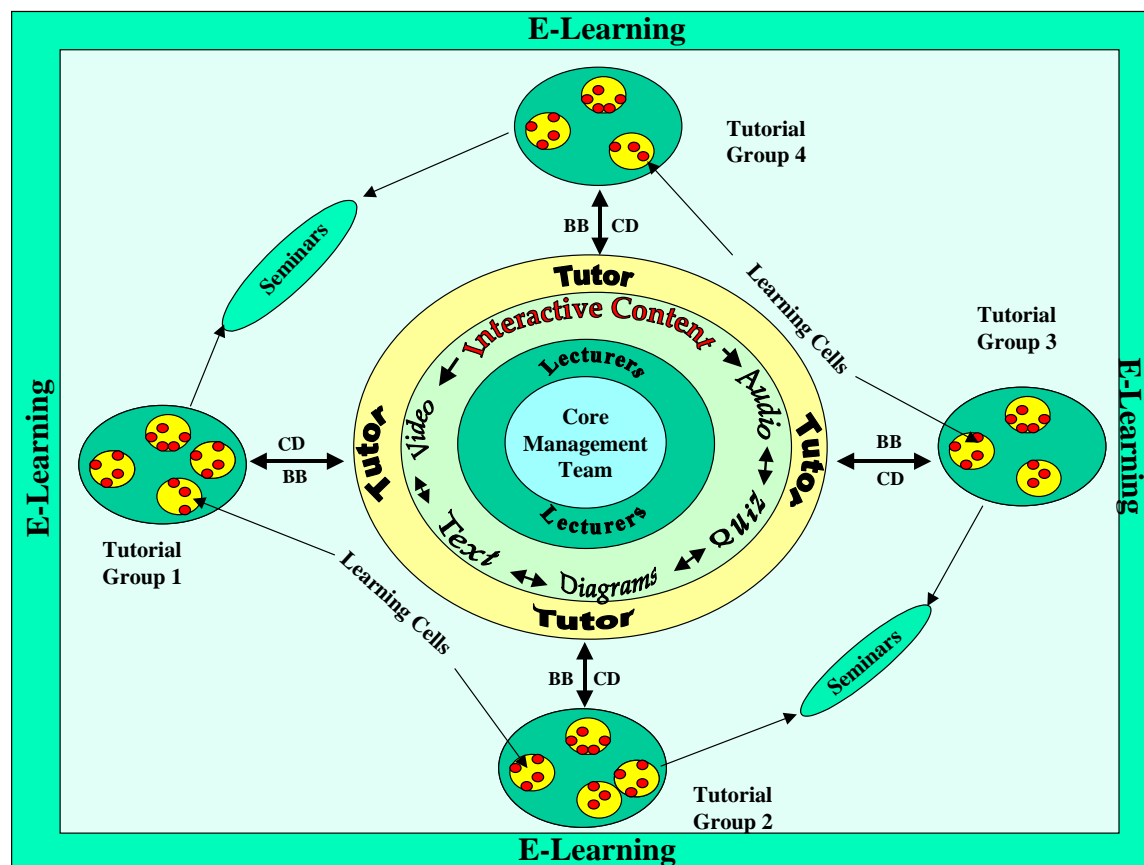


Figure 2. NUI (V-learn.ie) Blended Learning Model

A key aspect of the model is contact with and between students. This contact is provided through the encouragement of local learning cells, where students learn together and through the provision of a tutoring system at the local level. Opportunities are provided for all students in an area to come together for a number of one-day seminars, which are provided throughout the year. The model fulfils three important principles put forward by Garrison, Anderson and Archer (2000). These are that a learning model should display a “cognitive presence”, a “social presence”, and a “teaching presence”. The cognitive presence and the teaching presence are supplied through using specifically developed e-learning texts supported by voice over PowerPoint type presentations, which incorporate video clips, animations, interactive learning objects and self correcting quizzes. The social presence is provided through an active tutoring system, the use of seminars and the use of projects, which encourage the formation of local learning cells that involve both a physical and electronic presence. A typical local learning cell would involve 4 to 5 people.

The model also fulfils the requirements of an effective learning environment as put forward by Bransford, Brown and Cocking (1999). They state that an effective learning environment is learner centred, knowledge centred, assessment centred and community centred.

There is a very strong sense of community within the programme. This is developed by having an open access system to tutors, lecturers and the core management team. It is also supported by seminars, which are attended by both staff and students. Thus the model strongly values interaction, the importance of which has been highlighted by many authors (Anderson 2003, Wenger 2001)

The model is referred to as a “blended learning” model as it incorporates both face to face and electronic contact. Blended learning (Rovai and Jordan 2004) is a hybrid of classroom and online learning and they contend that blended learning creates a stronger sense of community than either traditional classroom learning or e-learning.

Of primary concern for any learning model is its affect on the learning process. There is considerable debate in the literature about the value of e-learning and regarding what actually contributes to improved outcomes, is it the technology or the content? One school of thought is that technology is only the vehicle (Clarke 1983, Schram 1997) and it is the improved content that is the main causal factor (Bonk and Reynolds 1997). Several others have listed the advantages of online learning over traditional methods (Landau 2001, Cole 2000). In reality improved outcomes are probably a combination of both. The fact that students can learn at their own pace and are not time bound as well as the possibility of viewing lectures a number of times seems to present logical advantages. In addition, because universities are based in cities and many students live off campus; time saved travelling can be enormous, thus allowing more time for productive work. Moreover e-learning content, when developed properly, presents coherent well-linked material, which often is not the case with traditional curricula.

Evaluating the Model

The first group of students on the BSc programme are now well into their second year and a number of observations can be made. Forty six percent of respondents were aged between 41 and 50, while 24 percent were younger and 30 percent older. Sixty six percent stated that they were familiar with IT from their work experiences, while the remainder were not. Only 2 percent had completed a degree already, thus for the vast majority it was a return to education and their first venture into 3rd level.

The first important point to note is that there has been minimal dropout from the programme and much less than with the pilot project, which was delivered almost totally through e-learning. A small number of people who were interested at the beginning did not pursue the programme, but of the 55 students who registered for the programme only 2 have dropped out. These results are similar to that reported by Carr (2000), who states that online courses experience higher attrition rates than blended learning courses. It is important to remember that blended learning can fit almost anywhere on the continuum of classroom based learning with a small amount of e-learning to courses that are almost all e-learning with a small amount of face to face contact. In the V-learn model face-to-face contact is provided mainly by tutors and involves 6 hrs of face-to-face contact per 5 ECTS credit module (60 hours contact per year).

A detailed evaluation of one module (module 25) was undertaken in November 2005. The purpose of this evaluation was to support further development of the programme as well as to assess learner’s views on the current system. Fifty respondents completed a detailed on-line questionnaire. While it is not the intention here to present the findings of this study, a number of points are relevant.

Module 25 dealt with socio-economic research methods, as well as research approaches and encompassed components on statistics and SPSS, areas that students often find difficult.

However, as Figure 3 shows very few students had difficulty in understanding the learning materials provided

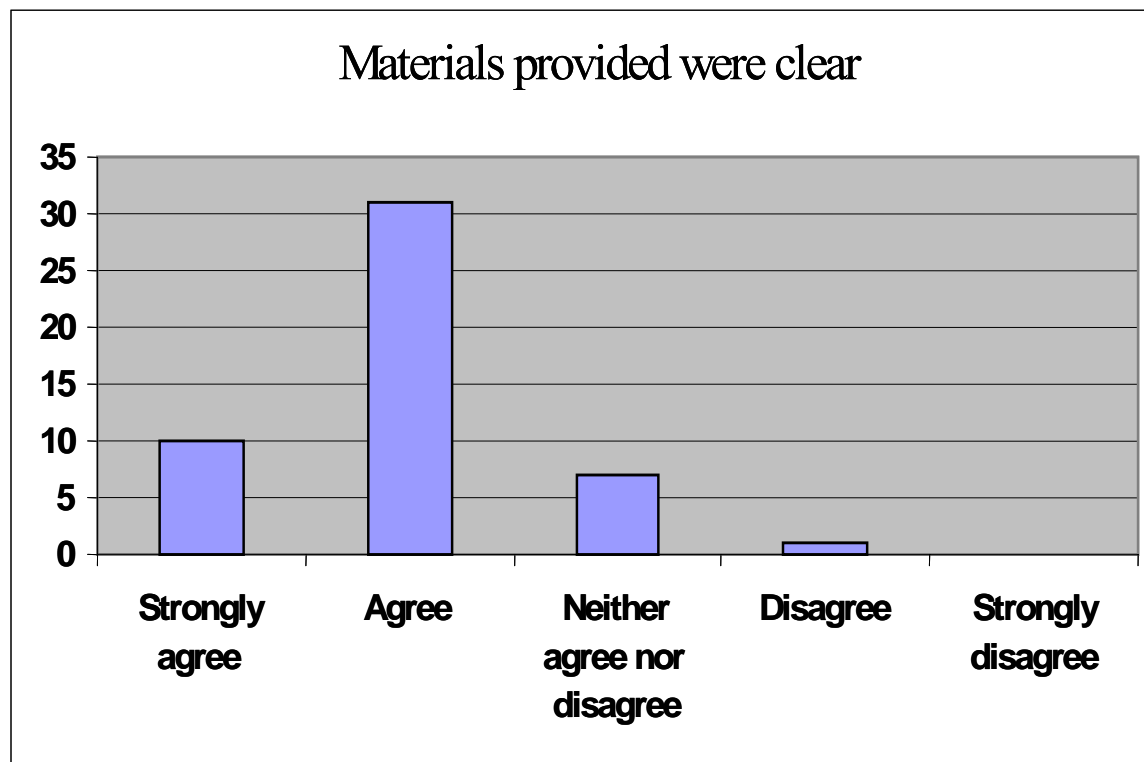


Figure 3. Clarity of Materials Provided

As mentioned earlier a key principle of the V-learn model is to provide as many learning stimuli as possible, in particular text, PowerPoint slides with voice over, diagrams and MP3 voice files. In addition module 25 used interactive clips, video clips and quizzes at the end of each unit. Student's perception of these items as learning supports is presented in Figure 4.

The first point that can be made is that all methods contributed substantially to learning. A critical outcome of the analysis is a clear recognition that students learn in different ways. Some for example rated the text very highly and relied on it as the main learning method, while others rated it more poorly in comparison to other methods. The same in fact was found for all methods. It is also clear from Figure 4 that text, diagrams and the slides with voice over were the most successful learning methods. What was somewhat surprising was the value given to the text, but it does clearly show that a text prepared specifically for a topic, incorporating good pedagogic learning practices that are specifically developed for electronic learning is an extremely useful learning tool.

Rating of Different Learning Methods (1 low, 10 High)

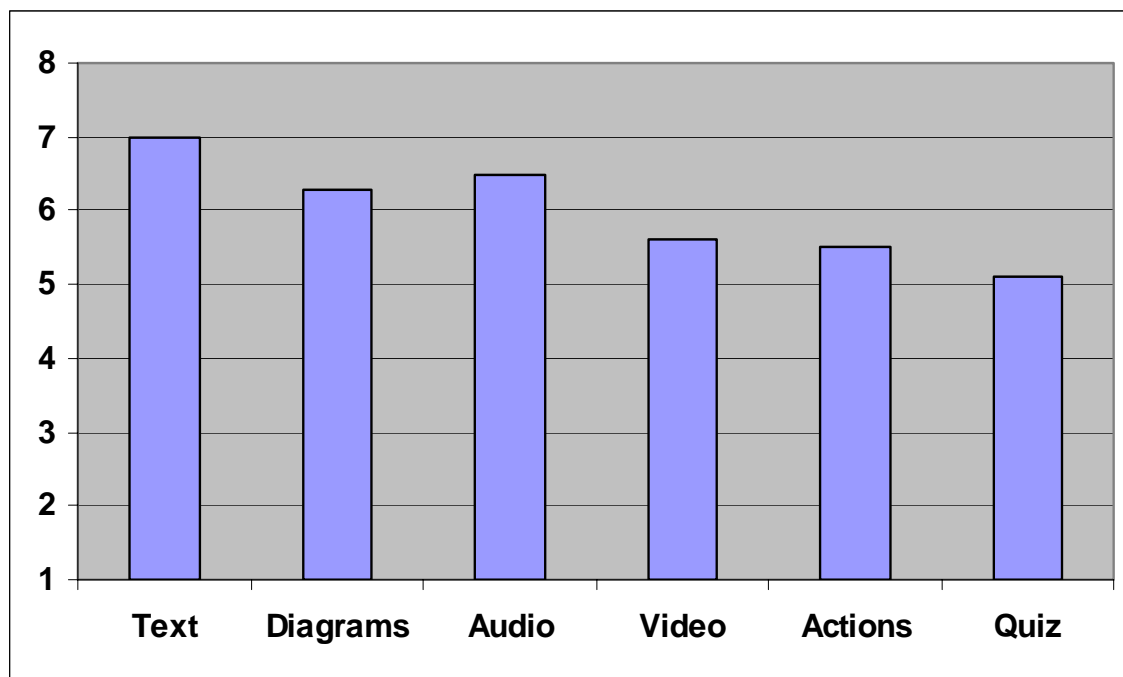


Figure 4. Students Rating of Different Learning Methods

On the other hand, it was somewhat surprising that the self correcting quiz received the lowest rating as this was developed as a summary mechanism for each unit and as a means through which students could self test their knowledge.

Finally, students were asked if they felt hindered in any way through having to learn on-line and what they liked best and least about the module. Sikora and Carroll (2002) reported that on line higher education students tend to be less satisfied with on-line courses than with traditional methods. In this survey 29 students stated that they were in no way hindered by having to learn on-line, while 13 stated that they were. Most comments regarding what students liked best were related to content being relevant and well presented, however, a number did mention the usefulness of mixed learning methods. Again the greatest dislikes also related to content and particularly unit 7, which dealt with quantitative data analysis. Other comments related to language and emphasised that some areas should be treated in greater depth. There were no criticisms of the methodology other than respondents wanting more time to complete the module, while some felt it might be better as two 5 credit modules rather than the 10 credit module which it was.

Conclusions and Recommendations

Distance learning has advanced significantly over the past 20 years and real alternatives to traditional learning systems are now beginning to emerge. High quality e-learning systems are expensive to develop and top quality systems can best be developed through institutional collaboration rather than each institution repeating the process. Well developed e-learning models will challenge traditional systems, while poorly developed systems contribute little to the learning process and are more likely to damage the reputations of institutions than enhance them. The Distance/e-learning model developed by the NUI universities provides real learning

opportunities for distance students and for campus-based students. It has overcome the major problem of many other models i.e. that of significant student drop out. The local support networks and the tutors are critical factors in this regard (each 5 credit module received 6 hours of direct tutor support as well as electronic support). The incorporation of a number of different learning methods reinforces learning and is particularly important as different students learn in different ways. The preparation of material incorporating sound pedagogic principals and geared specifically to e-learning (as demonstrated by the evaluation of module 25) can achieve outcomes which are superior to traditional learning systems. The cost of delivering courses in this manner (once developed) is much lower than in traditional systems, while the advantages for the student in terms of flexibility of learning, access to materials and time saved in commuting is significant. The time is approaching when there are no logical reasons for totally campus-based courses. Internationally competitive universities will be those that invest in and support the e-learning process. They will also be the universities, which are in themselves big enough to support these developments or who through strategic partnerships can amass the necessary expertise and resources. Universities must also question their current investment strategies where investment in buildings and concrete is more important than investment in pedagogy and new methods. While universities will still need facilities, future demands may differ significantly from past and current experiences.

Universities are not the only institutions that need to embrace these new technologies. Government Ministries that support education need to take cognisance of these changes and develop appropriate support systems for students, which are course based rather than campus based. Courses nowadays are constructed based on learning outcomes, which require an amount of student work time, not on where and how they are delivered. More and more businesses are following the e-learning route. Universities should be leaders not laggards in this regard. This however, will not happen without significant financial support and without a real commitment to the development of e-learning both on and off campuses.

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