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Research and innovation in teaching and learning are prime topics for the *Journal of Instructional Technology and Distance Learning* (ISSN 1550-6908). The Journal was initiated in January 2004 to facilitate communication and collaboration among researchers, innovators, practitioners, and administrators of education and training involving innovative technologies and/or distance learning.

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Table of Contents – January 2011

Editorial

The Golden Spike

Donald G. Perrin

In 1869, the Golden Spike was driven to join the railroads from East Coast and West Coast of the United States. In a productive union, the result is much greater than the sum of the parts. In information technology, we continue to celebrate union of divergent and related technologies into a single application. We have seen integration of word processing, database, and spreadsheets into *Office* programs. These elements are seamlessly interwoven and add: dictionary, thesaurus, and grammar checker; graphics, PowerPoint, and MovieMaker; Internet, email, and HTML; scanning, touch screen, and voice input; and interpreters for print to voice, print to text file, voice-to-text, and a host of other features too numerous to mention. Artificial intelligence is just a few years away. The golden spike to integrate these functions has been driven thousands of times.

In this never ending advancement of innovative technologies, there is always more to be done. For educators, the new frontier is learning management systems that are ubiquitous and efficient. Currently we have included key functions in a single program, but like the TFX military airplane of the 1960's, the technology is complex where it needs to be simple. Let me give you some examples. When I open up Moodle, Blackboard, or WebTycho (LMSs I happen to be familiar with) I have to search through dozens of "containers" for newly completed work. After scores of menu clicks, waiting for files and screens to load, I take time to analyze and comment on student work, enter grades, attach model answers, etc. Almost 50% of my time is spent locating materials and there is not sufficient time to solve in-depth learning problems and provide a detailed response. Instead, I send a copy of the answer sheet and invite the student to call me if he or she cannot work it out for themselves.

There should be a single display panel where I can see work ***not started***, ***in progress***, ***completed***, and ***graded***. If a student has to fix graded work, it returns to ***completed***. Every item on the screen should be one click away – and accessible in a fraction of a second. A double click could select all students for that activity so they can be compared or corrected in the same time frame. Looking at the number of data points for my most recent classes, I see up to 30 students (rows) and up to 50 check points and scored items for my average 10 week course – that's 1500 data points per course – 1500 items that need to be linked to the control panel.

I work mostly with mid-career professionals – busy people who travel a lot, have compelling work commitments, family emergencies, and other responsibilities. Distance learning gives them the flexibility to learn and to do well if given the opportunity. Arcane rules about attendance and late work are inappropriate for mid-career professionals. I believe education should serve the students and not the other way around. In my classes, each student controls his or her schedule and most finish on time at the end of the term. I offer tutorial assistance for student having difficulties with the subject matter, or catching up after an extended absence. Students can redo assignments or do additional work to maintain their grade. The latter makes sense because the course is criterion based and collaborative. Students must reach a level consistent with their professional goals and needs. This is why I need to access the whole course and have an instant display of progress. And this is why searching through all forums, assignments, projects, group and individual activities, tests, etc. and continually opening and closing files is unacceptable overhead and a waste of time.

Give me a 30 X 50 grid with labeled rows and columns and 1500 radio buttons in 4 colors hyperlinked to each specific item. If you have been in underground parking with a green LED over every parking space that turns red when occupied, you will know what I am talking about. Even with 1500 parking spaces, you can instantly find a green light to park your car.

Editor's Note: Language teachers are often early adopters of new technologies. They have also been at the forefront in testing, adopting and integrating new learning theories and praxis. Since language learning can be demonstrated by actual performance it is a fertile discipline for research and measurement.

Computer Assisted Language Learning (CALL)

Massoud Rahimpour

Australia and Iran

Abstract.

In recent years computer assisted language learning has attracted both the attention and criticism of many language teachers. The computer revolution is believed to be more than just a technological development and may change society as radically as did the Industrial Revolution (Ahmad, Corbett, Rogers and Sussex, 1985). As a result, computer literacy and utilizing the computer in teaching language has established itself as an important feature of language teaching profession in modern education.

Computer, indeed, offers many advantages both for teachers and learners. That is why many language institutions, schools, language centers and departments now utilize computers in various ways. But the point is that computer literacy has benefited mainly younger generation and older members of society show less enthusiasm to use computers in teaching and consequently remain unaware of its potential. Most often, computer and teacher are considered to be as rivals, while they should be seen as compliments to each other (Kenning & Kenning, 1984). Therefore despite the advantages and its potentials, there are some problems associated with using CALL (Kaliski, 1992).

The aim of this paper is thus twofold: The paper first starts with a discussion of various aspects of computer assisted language learning (CALL), with a particular reference to the role of computer in learning language. The advantages and disadvantages of computers are then presented. The pper concludes with a brief summary of what teachers should know in order to use CALL.

Keywords: computer assisted language learning (CALL); distance learning; computer revolution; networked communication; multimedia, E-mail; internet; computer literacy; technological development;

Introduction

Recent years have witnessed an explosion of interest in using computers for teaching and learning English as a second language language. A couple of years ago, the use of computers in language teaching and learning language was of the concern only to a small number of language teachers who were familiar with computers. But recently, computer assisted language learning (CALL) has received a great deal of attention of many English and foreign language instructors and SLA researchers (Kawase 2005; Beauvois, 1992; Chapelle, 2001; Chun, 1994; Dhaif,1989; Kern, 1998; Kern & Warschauer, 2000; Loewen & Erlam, 2006; Sauro, 2009; Smith, 2003; Smith, 2004; Sullivan, & Pratt, 1996; Warschauer, 1996a and 1996b; Warschauer, 1997; Razagifard & Rahimpour, 2010) . Consequently, every year an increasing number of teachers are using computers in teaching English as a second language (L2) and foreign language instruction in high school, language centers and universities. Particularly, this significant importance of computer assisted language teaching and learning is more obvious in a distance leaning

In fact, Computers, which entered school life in the late 1950s in developed countries, are still increasing in number day by day throughout the world. Today, they have become more powerful, faster, easier to use, more convenient and cheaper, and they can process and store much more data, as well (Gunduz, 2005).

Furthermore, with the technological development and with the advent of multimedia computing, the E-mail, and Internet, the role of computers in language instruction has become an important issue for language teachers throughout the world. Indeed technological developments have been welcomed with open arms by all sections of society such as banking, traffic, word-processing, computer games, student registration, office management, and 21st century language teachers are no exception to this issue. (Levy, 1999; Nunan, 1999; Vanparys, 1999, Whistle, 1999; Warschauer and Healey, 1998; Kalisky, 1992; Roach, 1992; Gitsaki, 1999; Kubota, 1999). As Ahmad, Corbett, Rogers and Sussex (1985) claim the computer revolution can be considered more than just a technological development and it may change society as radically as did the Industrial Revolution. It is also claimed that Computer Assisted Language Learning and Teaching approach in language classes represents new ways of language teaching and learning which has a great impact on the learning of foreign language and consequently creates an ideal condition and environment which will facilitate learning (Hoven, 1999; Harrison, 1998; Holmes, 1998).

The History of CALL

Warschauer and Healey (1998) report that computers have been utilized in language teaching since 1960s. They then divide these longer years is into three main stages:

1. Behavioristic CALL
2. Communicative CALL
3. Integrative CALL

Behavioristic CALL, conceived in the 1950s and implemented in the 1960s and 1970s could be considered a sub-component of the broader field of computer-assisted instruction. This mode of CALL featured repetitive language drills, referred to as drill-and-practice. In this paradigm which is popular in the United States, the computer was regarded as a mechanical tutor which never grew tired or judgmental and allowed students to work at an individual pace. Behavioristic CALL was first designed and implemented in the era of the mainframe, but eventually modified and implemented to the personal computer. According to Ahmad, Corbett, Rogers and Sussex, 1985) PLATO was the best system which ran on its own special hardware consisting of a central computer and terminals and featured extensive drills, grammatical explanations, and translation tests at various intervals.

Communicative CALL emerged in the late 1970s and early 1980s when behavioristic approaches to language teaching were being rejected at both the theoretical and pedagogic level, and when new personal computers were creating greater possibilities for individual work. Proponents of communicative CALL stressed that computer-based activities should focus more on using form than on the forms themselves, teach grammar implicitly rather than explicitly, allow and encourage students to generate original utterances rather than just manipulate prefabricated language and use the target language predominantly or even exclusively (Jones & Fortescue, 1987; Phillips, 1987; Underwood, 1984) . Warschauer and Healey also argue that communicative CALL corresponded to cognitive theories which empathize that learning was a process of discovery, expression, and development. Popular CALL software which was developed in this period included text reconstruction programs (which allowed students working alone or in groups to rearrange words and texts to discover patterns of language and meaning)and stimulation (which stimulated discussion and discovery among students working in pairs or groups). Many of the proponents of the communicative CALL did not focus on what students did with the machine, but rather what they with each other while working at the computer.

Though communicative CALL was considered as an advance over behavioristic CALL, it also came under criticism. By the late 1980s and early 1990s, critics pointed out that the computer was

still being used in an *ad hoc* and disconnected fashion and thus 'finds itself making a greater contribution marginal rather than central elements' of language learning process (Kenning & Kenning, 1990: 90). Warschauer (1996b) discusses that many teachers were moving away from a cognitive view of communicative teaching to a more social or socio-cognitive view, which placed greater emphasis on language use in authentic social context. Warschauer then adds that task-based, project, and content-based approaches all sought to integrate learners in authentic environment, and also to integrate the various skills of language learning and use which led to a new perspective on technology and language learning which has been termed integrative CALL.

Integrative CALL, a perspective which seeks both to integrate various skills . (e.g. listening, speaking, reading , and writing) and also integrate technology more fully into the language learning process. In integrative approaches, students learn to use a variety of technological tools as an ongoing process of language learning to use, rather than visiting the computer lab on a once a week basis isolated exercises (whether the exercises are behavioristic or communicative).

While the mainframe was the technology of behavioristic CALL, and the PC the technology of communicative CALL, the multimedia networked computer is the technology of integrative CALL. The multimedia networked computer is now available for almost majority of the students in the developed countries and provides possibilities for more integrated uses of technology as learning to read, write, and communicate via computer which has become and essential feature of modern life in the third millennium in the developed world.

It is obvious that many of the changes in CALL paradigms have resulted from economic and social changes. As Warschauer and Healey (1998) argue, the shift to global information-based economies has meant a dramatic increase in the need to deal with large amount of information and to communicate across language and cultures. Consequently, teacher's roles have also changed with times and teachers are not the only sources of language information in the age of information. Warschauer and Healey also believe that as a result of the recent rapid political, social, and educational changes in the world, the teacher has become a facilitator of learning rather than the font of wisdom, and will find, select, and offer information in a variety of ways on the basis of what the students must learn in order to meet diverse needs.

The Current Role of the Computers in EFL

The Advantages of the Computer in Language Learning

Ahmad et al. (1985) divide the advantages of computer into three types:

1. Those which are part of its inherent nature
2. Those which benefit the teacher.
3. Those which benefit the learner.

They argue that the computer can offer interactive learning which means that like a two-way task, it can conduct a two-way learning session with students which will improve the students' performance in language acquisition. It is indeed more than a mere programmed textbook. The computer can assess the student's response. It can give messages, check the student's subsequent responses to the questions, give positive and negative scores to correct and wrong answers and finally corrects the errors made by the users and give the appropriate feedback. All of these activities can be repeated easily and without mistakes by the computer which easily arise from repetition by human beings. It sometimes happens that due to the illness, timetable clashes or other family and personal problems, students are absent from classes and cannot attend the course and accordingly miss the lessons and related points covered in the class. These kind of problems present no difficulty for the computer and consequently for CALL programs. The reason is clear, if a computer is available, the student can later use the computer and spend as long as he/she

wants to get full benefit from the call program. It can also accommodate different speeds of learning and alternatively time limits can be allocated for answering questions. This is specifically helpful and valuable for testing purposes. From the teacher's point of view, the computer offers a lot of help. The big help is its versatility in handling different kinds of material in short time. But the simplest is the one-way presentation of information in different forms such as tables, graphics, audio and video and text. The computer can also present games, questions and answers, dialogues and many different activities and exercises which will certainly facilitate learning and create a favorable condition for teaching and learning purposes too.

The computer also offers many advantages and help for students. The first one is accessibility. If computers are available, student can work with them ass long as they desire. As a result of the computer's flexibility of time students thus can get most of the benefit from their time. This factor makes most of the courses accessible to students who would otherwise miss the classes. Distance teaching is nowadays practicable by the utilization of the computer. This also makes the courses available on a distance mode for part-time students too. Technological developments have made it possible to link the computer by telephone line (modem) which has consequently made it feasible for the users to use the E-mail and Internet to learn language too. Graduate and postgraduate students can benefit more from computer too. They can get in touch and communicate with their supervisors whenever they want even out of office hours and get feedback on their assignments and thesis from their supervisors.

Finally "computer can be a powerful motivating force (Ahmad et al. 1985: 6). As Kaliski (1992) points out, the computer has a positive and key role in productive language instruction provided that its possibilities and limitations are recognized. However CALL deserves a special and serious consideration and attention

The Disadvantages of the Computer in Language Learning

It is argued that the fact that Call was viewed with certain hostility by language teachers goes beyond mere objections to methodological considerations. One problem is that early CALL was designed to be used for self study and most of the input was designed by people other than language teachers, in particular psychologists and computer industry itself. As a result one of the fears within the teaching profession at that time was that the computer would alter the nature of student/teacher relationship. Most of teacher also thought that they might be replaced by the computers too.

Referring to the above mentioned problems, Kaliski (1992) then points out that there are a number of reasons for the under-utilization of computers in language teaching. While the young generations are often computer literate, older members of society express a certain reluctance to embrace the computer and remain unaware of its potential and advantages in language learning. It is also argued that an association in the early days of CALL with behaviorist language learning theory, based on rote learning and drilling of language items, known to language teachers as 'drill and kill' has given CALL a bad image. On the other hand language teaching has now mowed into a 'cognitive', 'communicative' phase, leading some learners and teachers to think that CALL has nothing new to offer to its users. Another reason might be the poorly produced software or the cost of the software which most of the users cannot afford to buy. While much CALL software may still be in the Iron Age, in Kaliski's terms, in pedagogical terms, there are suggestions of new roles for call. Leech and Candlin (1986: XI) also refer to this software problem that "CALL is still in an experimental stage, when the potentiality of medium is still being explored, and software (particularly good software) is in short supply." However different ways of utilizing the computer and reassessing its role, new ideas about programming and technological developments are beginning to open up new possibilities.

Conclusion

The role of computers in language teaching has changed significantly in the last 30 years. We have come a long way. There is still a long way a head to go. In the past, utilization of computers were limited to text and only simple simulations and exercises, primarily gap-filling and multiple choice drills were used. Technological and pedagogical developments now allow us to more fully integrate computer technology into the language learning process. Multimedia programs, such as speech-recognition software, concordance software and moreover Internet provide us opportunities and create an ideal environment to communicate in the target language and accordingly facilitate learning a foreign language in an ESL situation in general and for EFL situation in particular.

As Warschauer and Healey (1998) also predicts, more developments in networked communication, multimedia and artificial intelligence will certainly create a potentially crucial role for the computer for language exploration and use in the second language classroom. Meanwhile as our focus of attention shifts from the computer itself to the natural integration of computers in the language learning process, it will be realized that computer technology has taken its rightful place as an important element of language learning and teaching. However it is necessary to evaluate the present position and future possibilities, the achievement of CALL which depends on software and hardware availability and also on the orientation of computer-assisted curriculum. By this careful evaluation, the shortcoming and limitations would be recognized and necessary steps would be taken to cure the remedies and strengthen the positive points.

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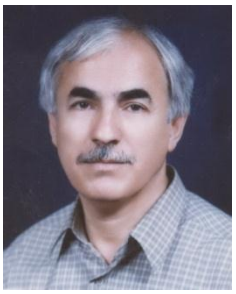

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Editor's Note: Podcasting for asynchronous delivery of current audio and video information (files) is a potential enhancement to any teaching and learning program.

Rolling out Podcasting to Enhance Teaching and Learning: A Case of the University of the Western Cape

Juliet Stoltenkamp, Jephias Mapuva, Yoliswa Khumalo & Carolynne Kies
South Africa

Abstract

Tool-use extends our sense of self-identity, social identity, and our experiences of social relationships within particular places. Education professionals use specific kinds of technologies (analogue and digital) and are influenced by particular characteristics of the technologies they use (Watson, 2001). Our social and cultural understanding of *tools* and complex digital technologies affect our ability to use them for learning (Pierson, 2001). The context and conditions of these understandings affect how we know when, where, and why ICT belongs in our educational practices. A number of advantages of using blogs, wikis and podcasts have been identified which translates to the fact that technology has brought with it more convenience, independence to students learning and enable students to reveal their natural propensity to show their creativity. This paper reports on the eLearning institutional podcast project that was undertaken at the University of the Western Cape (UWC). This large scale podcast project targeted both lecturers and students and aimed to enable learners to create podcasts; edit the recording via open source software - Audacity; export the podcast as an MP3 file; and upload it into the online environment. These eTools skills training processes are directly linked to the students' fieldwork within their respective disciplines. The authors highlight the practical benefits of the project in various disciplines.

Keywords: podcast, eTools, eLearning, training; teaching-and-learning

Introduction

Digital technology plays a significant role in shaping the teaching and learning landscape in higher education. Indeed, it is expected that digital technology will play an increasingly significant role in higher education as members of the millennial and digital generations enter college, bringing with them new approaches to learning and consequent expectations of the classroom instructor (Caruso & Kvavik, 2005; Caruso & Salaway, 2007; Howe & Strauss, 2003; Oblinger & Oblinger, 2005; Prensky, 2001). The vast array of digital technologies with the potential to impact the teaching/learning process includes learning management systems, personal response system technologies, discussion boards, blogs, wikis, social networking sites, podcasts, and a plethora of web-based tools. The pervasiveness of information technology in today's world complicates the multiple demands on faculty by adding expectations of technological proficiency that far exceed the days of index card library catalogs that more senior faculty experienced as undergraduates. For example, many faculty grapple with the demands of learning new software to prepare digital course materials (Hanna, 1998; Twigg, 2003). The temptation for higher education faculty who must struggle to satisfy the customary triple requirements of research, teaching, and service is to relieve the pressure on themselves in the teaching area by teaching in a manner that reflects both their own learning experiences and preferences. Thereby, they give themselves more intellectual space for the research endeavour (Ouellett, 2004) but arguably fail to keep their teaching abreast of current understandings of what constitutes pedagogical best practice for their students.

Higher education institutions (HEIs) worldwide have joined the bandwagon of those that are integrating technology into their courses, the University of the Western Cape (UWC) is among those institutions who have adopted this trend in applying various technologies to supplement face-to-face or traditional mode of instruction. Recently, the UWC through an initiative by its eLearning Development and Support Unit (EDSU) has via a number of pilot projects to large and small classrooms of a total number of 595 students explored the utilisation of podcasting as a medium to supplement the traditional mode of teaching-and-learning. This paper presents a unique case study of a podcast pilot project implementation at UWC, a historically disadvantaged institution with various resource backlogs. The reception of the tool by both learner and lecturer vis-à-vis learner and learner interaction; learner and lecturer interaction; impact on learning outcomes is presented through the results of the case study. The successful completion of the project at UWC presents a number of lessons of experience relevant to the implementation of pilot podcast project within a higher education context.

Literature Review

Studies in ICT in education are plentiful and often include models of evaluating ICT (Mandinach, 2005). Concerns include the complexity of the 'interaction between disciplinary content, learning outcomes and online, computer-based learning environments' (Sims, Dobbs & Hand, 2002: 137). This interaction is also illustrated in Muwanga-Zake (2007: 31), indicating an intercourse between curriculum, ICT and subject matter components. The curriculum dimension considers student learning styles, needs and preferences; provision of quality learning as perceived by stakeholders in an institution; enabling interactivity between participants in a course; and opportunities for assessment and feedback. ICT specifically has potential towards student-centred learning and research (Sims, 2006: Richardson, 2004). However, successful practical pedagogical applications beyond communication of information are scarce, particularly in specific educational contexts. One reason for scarcity is that the ICT industry rarely designs tools for specific pedagogical applications. There is a dearth of critical analyses of praxis beyond rhetorical ICT potentials. However, there is a need for research in ICT-supported pedagogy to keep pace with developments in ICT.

In supporting students, lecturers are encouraged to use ICT to create constructivist environments built upon constructivist learning principles through the use of tools such as forums, chat rooms, wikis and blogs, many of which form part of the Learning Management Systems such as Sakai and Blackboard. Therefore, staff at universities must be professionally developed in ICT skills, and in the pedagogical use of ICT to ensure that the affordances offered by these tools can be realised. Furthermore, professional development must be continuous because ICT is ever changing. In response, a number of projects have been implemented at UNE with the aim of: identifying the challenges debilitating staff and students against pedagogical ICT use, formulating frameworks for staff professional development and enhancing student active learning through the use of ICT.

Critically, universities often expect lecturers to use ICT in education without allocating enough time for continuous professional development. Thus, ICT are acquired and implemented without the adequate training of staff (Sims *et al.*, 2007: 136). In many HEIs, events involving the use of ICTs are motivated by the premise that the application of blogs and other e-tools within these institutions can be adopted without a clearly pre-determined pedagogical framework or any appropriate level of professional development of staff.

The emergence of the internet came with it numerous advantages to the enhancement of learning deliverances within the education, communication and marketing realms. In addition to pave the way to the creation of virtual learning environments, these e-tools have shown the propensity of technology to change the face of learning deliverables and deliverances. However by introducing

new technology advancements and applying them within the education sector, this does not imply replacing traditional modes of classroom instructional methods. Research has indicated that no one way can be viewed as the best. Consequently educationists has realised that merging traditional and modern technology-propelled pedagogical methods have produced effective results. Blogs, wikis, podcasts, chat-rooms and other etools have proved not only effective and convenient, but has proved that technology can make learning a lot of fun as students and academics experiment with various tools.

Reardon (2008) refers to, "Tools such as community networks, social book-marking, wikis and blogs, podcasting, digital story-telling, project based learning initiatives, video blogging and other new technologies, as enablers of people to be producers of information" (Anderson & Weert, 2002). The National Centre for Education Statistics from the U.S. Department of Education titled its statistical analyst report (2000), "Teachers' Tools for the 21st Century: A Report on Teachers' Use of Technology" (*Teachers' tools for the 21st century: A report on teachers' use of technology*, 2000). In much of review of literature, it has been found, for the most part, an unquestioning and over-use of *tool* in reference to digital technologies and ICT. Consequently, the use of e-tools has reached unprecedented levels from the end to the 20th century and is even gaining more ground as more tools and applications are being invented.

The Emergence of Podcasting in Higher Education

Online-learning has become increasingly diverse in course content delivery through various audio and visual modes (Liu, 2004). These multimedia realities provide significant potential and possibility for students to come closer to the fundamental reality of their subject matter and thus learn in a practical and experience-centered perspective (Peters & Collis, 2000).

Coined by Adam Curry in 2004 the term podcast (Mark, Lee, McLoughlin & Chan, 2008), originated from blending the words iPod and broadcast (Hargis & Wilson, 2007:3). Roberts (2008:585) states that 'podcasting represents not so much a new and innovative technology as it does a new and innovative combination of existing technologies'. By definition podcasting is a digital recording of a radio broadcast or a comparable programme made accessible on the Web for downloading to a personal audio player (Mark, et al, 2005:1. Morris (2006) further defines podcasting as the formation of audio or video files for use on iPods and other MP3 players that allows for the user to view or listen to downloadable files. Suffice to state that podcasting is a new twenty first century technological medium initially used to transfer audio and has grown rapidly in popularity since it emerged in the market particularly in the educational domain (Ractham & Zhang 2006). Benno (2006) outlines that 'Google search results for the word "podcast" in 2004 would have received 24 hits'. While (Harrison, Thornton & Yeats 2008) outline that Google search results in 2008 generated more than 115 million hits.

Carswell, Thomas, Petre, Price & Richards (1999) in a paper titled 'Understanding the 'Electronic' Student: analysis of functional requirements for distributed education' elude that regardless of the prompt innovation and increase in popularity of eTools, it is still paramount for academics in educational institutions to understand the primary aim of an eTool when integrating it into their courses. The very nature of electronic tools bares a number of obstacles. Hence, the potential of any electronic tool gets affected even before utilization and thus makes it even more essential for academics to consolidate the positive aspects of the eTool to ensure efficiency in instruction delivery (Wachter, Gupta & Quaddus, 2000).

Use of Podcasts as a Learning Tool

This section of the paper looks at how podcasts could be used for learning purposes in various subjects' areas and disciplines. In addition to enhancing practical experience and skill in using

technological gadgets, the podcasts enable students to develop independent learning skills. There are six different models for using podcasts within th education domain. These are lecture support where the lecturer identifies a select group with which to work. The lecture support uses screen-casts, short summaries and video podcasting. Secondly, podcasts can be used to supplement field work during which the learners are based at a specific location from where they can hold interviews with an identified population of respondents. Thirdly podcasts can be used for practical lessons where visual guides to GIS software can be used in place of written instruction, video cast for specimens' examination. Topical issues can also be taught through podcasts such as the prevalence and prevention of the HIV/AIDS pandemic within a specific community. Podcasts can also be used as a means of assessment where students podcasts instead of fieldwork reports. Podcasts can even be utilised when providing feedback to student assignments or assessments.

The impact of podcasts on teaching/learning has been overwhelming. On learning the impact has been identified as providing flexibility and easier learner control where students are able to look at podcasts at their own time convenient to them and be able to do their work gradually and piece-by-piece thereby creating freedom of learning. Podcasts also provide a new and convenient way of assessing students. Additionally, podcasts enhance comprehension of subject matter and enable students to re-visit matter already learnt. Through the use of podcasts students are able to capture informal knowledge, thereby helping cover knowledge gaps and missed material. It also promotes personalised learning experience of learners thereby inculcating an enriching learning environment. A virtue of the podcast system is that it is, to some extent at least, a push technology, contrasting with the pull technology that is characteristic of many internet applications. The podcasts are automatically delivered to the student; the student does not have to remember to fetch them each week.

There are several lessons to be learned about the pedagogy of using podcasts. First, a podcast is (currently at least) an audio event only. It lacks the impact of an audio visual presentation. This means that podcasts should be *short*, and should contain material that is *vivid* and *arresting*, and supplementary to what has been covered in class. Secondly, the material delivered in a podcast should be *provocative* and should aim to make students *think.* Thirdly, it should be remembered that, immediately after listening to a podcast, the student will most likely listen to music. This means that thinking time needs to be included within the podcast itself. Do not be afraid to leave gaps of silence embedded in your podcasts. If you want your listeners to think about a question, give them time *within* the podcast to do so - they won't do it afterwards. Fourthly, the podcasts should be *embedded* in the curriculum; students should see that there is advantage to them in listening. In my course, this advantage was apparent in that assessment was by way of a learning journal, and students knew they could get ideas for this journal by following thinking leads given in the podcasts.

Relevance of podcasting to the syllabus of an HEI

The core principle of teaching-and-learning is good practice; good practice allows for the advancement of teaching-and-learning processes (Chickering & Gamson, 1987). Derived from this principle, it can be espoused that introducing new and innovative mediums to educational institutions for the purposes of transferring knowledge is equal to good practice as it allows for advancement of teaching-and-learning processes. Thus, the purpose of any technological tool introduced to an educational institution must be to advance learning outcomes as stated in that particular institution's syllabus (O'Bryan & Hegelheimer, 2007). Students generally portray a passive role in most classes, this emphasises the need for more student centred learning strategies (McGarr, 2009). As defined earlier by Hargis, Wilson (2007:3) podcasting is a new and innovative medium used to transfer information. The relevance of this medium in education is depicted to us by (Nathan & Chan, 2007) the authors state that the purpose of podcasting is to

improve flexibility in learning, develop current learning experiences and increase the availability and accessibility of learning information.

One of the primary goals of education is to equip students with knowledge, attention to the attainment of learning outcomes should be essential to these efforts. The responsibility for instructional quality and control, the improvement of learning and the collective effectiveness of education still predominantly rests with the person transferring the knowledge (Olcott & Wright, 1995). Although there is a syllabus in place to guide an educational program, measures still have to be implemented to ensure that the teaching-and-learning outcomes of the syllabus ultimately come to fruitation (O'Bryan & Hegelheimer, 2007). It is imperative for academics to be aware of diverse technologies introduced to their institution, understand the potential of the medium and then determine whether it will bring about the desired result in terms of the syllabus (Olcott and Wright 1995).

Does podcasting create interaction among students and lecturers?

Learner interaction is one of the critical ingredients in ensuring effective learner instruction (Moore, 1989). As emerging technologies are implemented to support instruction the role of the instructor is gradually developing from monitoring and facilitating towards a mandate of assisting in the exchange of knowledge by creating a mode of interaction among learners (Beldarrain, 2006). The beckoning question would therefore be: does podcasting create interaction among learners and lecturers?

Critics are of the opinion that podcasting limits interaction between educators and students; their concerns on this concept is that it escalates the factors that comes along with any online learning tool where students for some reason limit their class attendance in cases where the tool provides them the necessary information (Harrison, Thornton & Yates, 2008). Some are of the opinion that podcasting merely spoon-feeds education to a generation that has grown dependent on entertainment-driven gadgets at the expense of reasoning, creativity, and problem solving (Lum, 2006). A number of educators and parents still believe in the traditional manner of instruction delivery and find it difficult to believe that podcast lectures can reap the same fruits as face to face instruction and provide the standard of interaction required to deliver instruction successfully (Tyre, 2005). However, proponents are of the opinion that podcasting as an emerging technological tool facilitates the integration of student interaction in education (Beldarrian, 2006). According to (Kearsley & Shneiderman, 1999:149) 'it is the responsibility of the instructor to maximize on student interaction'. It is the role of the instructor to include monitoring and interaction in the teaching processes as well as actively partaking in the interaction platforms provided by him/herself for the class (Beldarrian, 2006). Ultimately collaborative teaching-and-learning practices allows for authentic teaching-and-learning processes (Shneiderman & Kearsly, 1999).

Implementing Podcasting in an Educational Environment

Beldarrian, (2006:249) argues that 'proactive implementation of emerging technologies is dependent on comfort levels, monetary resources and visionary leadership'. The podcasting project must foster an atmosphere where students are motivated to take initiative and assist in the development of the podcast content; such platform not only motivates but assists students in active participation (Alpay & Gulati, 2009). The authors further lay down a workflow for the implementation of podcasting projects at comprising of six phases: recruitment needs analysis, pilot studies, operation, management & guidelines and site finalization.

Recruitment: participants must be elected the method employed will be determined by the objective of the project, where technology in general is a complex concept, familiarization is required; {basic computer literacy training would be an advantage}

Needs analysis: An examination of needs to determine the scope and objective of the podcasting program. Exploring views and desires of the group and academic staff on podcasting. Identifying the resource and technology needs for podcast creation, website management and development.

Pilot studies: allowing students and academic staff to practically experience the podcast tool. Once several podcasts on a variety of topics have been prepared they are to be made available to the participants for their reviews and feedback based on their experience with the tool.

Operations and management: focal point at this stage involves a resource analysis for the ongoing delivery of podcasts in the specific faculty, department or institutional environment.

Guidelines and site finalisation: Based on the findings and recommendations of the team, the production of guidelines, remits and resource requirements for the ongoing management and running of a student-led podcasting unit.

Beldarrian (2006) articulates that new technologies come with both responsibilities and opportunities both lecturer and students have the responsibility to contribute in knowledge construction and the opportunity to learn via such contribution. The author further pronounces that educational institutions must reflect on the use of technology within their institution as well as the potential of the tool in terms of enhancing teaching-and-learning practices. Chickering and Ehrmann (1996:5) present us with seven principles for implementing innovative technologies in educational institutions the authors mention that these principles can be integrated regardless of delivery method utilised. The purpose of the technological tool must be to:

> *Encourage contact between students and faculty; develop reciprocity and cooperation among students; use active learning techniques; give prompt feedback; emphasize on time and task; communicate high expectations; and respect diverse talents and ways of learning. These principles will help establish the purpose and rationale of integrating the particular technology, and uncover whether such tool is beneficial to the learner*

Pilot the podcast before rollout

Pilot studies are referred to as the minute version of a full-scale study (Van Teijlingen & Hundley, 2005). The authors also outline that conducting a pilot study increases the chances of success in the main study as the primary objective of pilot studies is to evaluate feasibility in order to evade probable catastrophic consequences of embarking on large studies. Inserting information about a particular pilot study in a publication or report arising from the main study is not only constructive but can form as a model for others to follow (Altman, Burton, Festing, Hutton, Playle & Cuthill, 2006). A successful study requires detailed research that indicates whether the ground is ready for implementation (Thabane, Ma, Giangregorio, Goldsmith, Rios, Reid, Chu, Ismallia, & Cheng, 2010). The podcast eTool is a fairly new phenomenon that comes across as quite complex to new users it is thus recommended that institutions make a pilot project mandatory before suggesting that the specific tool or method of study be integrated into its curriculum (Harrison, Thornton & Yeats, 2008).

Methodology

The study primarily took a qualitative approach although certain aspects of quantitative analysis were applied. From the podcast pilot project roll-out at the University of the Western Cape a purposive sample from the largest classroom (330 EED Law students) and the smallest (70 Social Work students) were selected as participants in the study. The sample drew from 10% of each group and a total of 40 students were interviewed telephonically. The questionnaire focused on the following elements:

Impact on learning outcomes

Interaction between learner and lecturer as well as learner to learner

Both the above EED Law and Social Work class lecturers were also interviewed via an online survey. The questionnaire focused on:

Curriculum Delivery

Interaction between lecturer and student and amongst students

Student responses were codified and themes derived as per above elements of the questionnaire. Furthermore, the case study method was significantly applied with UWC's podcast pilot project roll-out being the unit of analysis. The case study method provides the 'strengths of experimental research within natural settings' and is recognised as the 'social research equivalent of the spotlight or microscope: its value depends crucially on how well the study is focused' (Hakim, 2000:59). The authors' also applied extensive documentary analysis of various literatures relevant to this exploration.

Case Study: Podcast Pilot Roll Out

It is imperative for EDSU as part of its mandate to keep abreast of emerging technologies in order to enhance the teaching-and-learning experience for both lecturers and students at UWC. The eLearning unit embarked on a podcast pilot project to observe whether this will have any learning benefits for the learners. As eLearning at UWC is a growing phenomenon the aim is always to broaden the scope for teaching-and-learning as well as assist in current unavailability of labs. The team thus engaged in basic research around podcasting, the tool and how it could be used within the teaching methods at the institution. 'Podcasting at UWC' can be defined as the process whereby students record audio using an MP3 player. The recorded audio is then edited using the Open Source Software Audacity and exported as an MP3 file. The MP3 file (podcast) is then uploaded into the home grown UWC learning management system (LMS) and submitted as an online assessment.

As this was a new pilot project that was introduced to academic staff at the University in 2007, it was decided to engage with lecturers that have adopted eLearning methods to enhance their teaching exercises prior to 2007. The lecturers who were selected to participate in the pilot projects were avid users of eLearning who are innovative in their teaching; and willing to face the challenges in order to enhance their teaching-and-learning practices. The lecturers willing to participate in the multiple pilots were from different departments and can be listed as the following: Pharmacy; Medical Biosciences; Social Work; Library Information Science; English; Arts; and Nursing.

The training methodology for the podcast projects were targeted at both lecturers and students. Endowed by a team possessing the expertise in multimedia training and workshop facilitation for pedagogical purposes EDSU aligned itself to the notion that lecturers and students need not depend on professionals to develop multimedia materials. Instead, they can develop their own digital video and audio files to incorporate them in teaching-and-learning with ease (Liu, 2004). Hence, an important aspect in the training method applied was to allow the students and lecturer to exercise their independent use of the tools after demonstrations in each respective session, whilst leaving them with the comfort that EDSU shall continuously provide them with support at their request after the sessions.

Implementation and Training

When lecturers decide to embark on their podcast journey the eLearning facilitators had to assume a number of duties channeled from EDSU's overall project management role. The team had to ensure that each new MP3 player allocated to the project was fully operational: this aspect required a great deal of time. A folder was then placed on the MP3 player which included a

presentation on how to use the device. The Audacity presentation as well as the installation files was included in this folder which allowed students to install the software on their personal computers.

All students and lecturers participating in the podcast project engaged in training sessions designed and conducted in a uniform structure across the various departments. Each training session was divided into 4 sections/compartments which started off with all the students completing a standard loan agreement form. The loan agreement form stipulated that students receive the MP3 players on loan for the duration of the project and should return it after the completion of the process. Students were made aware of the process to follow should they break or loose the borrowed equipment. After the form and its content was discussed and signed by the students, the students were issued with the MP3 players.

The three part training session was kept to a maximum of three hours each part included a step-by-step guided process each followed by an opportunity for the learners to practice what was taught. Focus was placed on engaging students in the use of the MP3 player, editing of the recorded audio using Audacity Software; lastly submitting the recorded audio file into the eLearning system as an assignment. An overhead projection on screen recordings demonstrated to the students how to install and use Audacity, as well as how to upload the specific file onto the eLearning system aiding instructions by the facilitator. The use of the MP3 player encompassed recording and saving the audio using the MP3 player. The recorded audio file was then transferred onto the computer desktop where it was edited using the Open Source Software Audacity. After the editing process has been complete students were shown how to export the audio recording as an MP3 file which represents the podcast. Students then followed the steps to upload and submit their podcasts onto the eLearning system. The training was an interactive '*show, tell and do*' session, which allowed students to do the activities during training. The eLearning facilitators conducted the training in a professional but relaxed manner to ensure that students remain comfortable, while introduced to a new eTool. The aim was to create an atmosphere of trust where students felt motivated to learn about the new technology whilst engaging in the podcast training.

The training was scheduled during different times to accommodate the users/learners needs and also based on the availability of the computer labs. As lecture slots could not be made available for students to engage in podcast training. The training slots varied from afternoon, after-hours and weekend sessions. This required the eLearning facilitators to be more flexible and dedicated to go the 'extra mile' in delivering on the project. This necessitates the careful planning of resources and human capacity. Training for larger classes (>75) demanded that facilitators and assistants inspect and prepare the venues at least two days in advance. The venue equipment was tested for sound and internet connection. The Audacity Software package was downloaded on the desktops of each computer for editing purposes. The completion of each training session was concluded with evaluation sheets developed to assess the training sessions.

The implementation of the project was not devoid of various challenges. Amongst the challenges faced included technical aspects vis-à-vis compatibility between MP3 files and the UWC LMS. This led to an arduous situation were the students had to personally hand-deliver their podcasts to their respective lecturers. Fortunately, the UWC team of developers came to aid in configuring the LMS for MP3 compatibility allowing for successful upload and downloading of files. From time to time the eLearning system also experienced 'load error' notification and could not handle the loads of students trying to submit their podcast assessments online at the same time.

As a historically disadvantaged institutions faced with resource backlogs and a large number of students from disadvantaged backgrounds, a number of students especially the first year group had minimal computer literacy skills. They were introduced to various new technologies over a

short period of time, making it very difficult for them to acquire the skill of podcasting. Proving that a single training session would not suffice for novice first-year users, necessitating two sessions at times for these users.

Results

The results from the case study are highlighted through responses from interviews conducted with the earlier outlined sample of both lecturers and learners for the purpose of this study. As indicated earlier responses of the learners were codified according to emerging themes within the following elements: impact on learning outcomes; interaction between learner and lecturer; and interaction between learner and learner. Interviews were also conducted with the lecturers of the two class groups purposively chosen as the representative sample for the study where the following elements were covered: course curriculum delivery objectives and; lecturer and learner interaction

Impact on learning outcomes

Sixty five percent (26/40) of the respondents explicitly submit that the podcast pilot has enhanced their understanding of the topics covered during lectures. A total of twenty out of these twenty six attributed the above factor to the avenue of repetition the tool provides as it allows them to reflect back on their lecturer afterwards in a private setting of their choice. This group also conveyed that being able to repeat the lecture as frequently as desired significantly assisted their analysis of their work or subject under exploration. Twenty five percent (10/40) of the respondents stated that the training on the use of the tool and the application thereof has provided them with a number of soft skills namely communication, interviewing and recording. Another ten percent (4/40) of the respondents stated that podcasting is a new and innovative way of learning; a respondent noted that it is "learning by recording yourself and teaching yourself….made learning interesting".

Interaction between learner and lecturer

Sixty two and a half percent (25/40) of the respondents indicated that the podcast created interaction among them and their lecturer. Of the 62.5%, 37.5% indicated that podcasting is a new and innovative avenue of interaction between lecturer and learner. One of the respondents stated 'we did not have interaction problems with our lecturer in the first place but the podcast somehow brought new ways to interact with her especially in cases where you cannot do it in person.' A further 25% (10/40) of the respondents indicated that the podcasting pilot broke the limiting barriers of interaction between learner and lecture one respondent noted that 'it took away the fear of posing questions in front of a whole class.' However another 12% (5/40) of the respondents indicated that the podcast did not enhance interaction between them and their lecturer. This group noted that the lecturer did not provide them with further support in the use of the tool when required from them.

Interaction between learner and learner

Thirty two and a half percent (13/40) of the respondents indicated that the podcast pilot was fun and interactive. These respondents stated that listening to their peers' recordings' created team work or a sense of collaboration, promoted engagement between learners on the subject matter and broadened the sharing of views. However, 10% (4/40) of the respondents indicated that the podcast did not assist or improved their interaction amongst one another; they viewed the pilot as extra work and stated that it clashed with their academic work.

Course curriculum delivery objectives: Department of Social Work

The lecturer expressed the view that the podcast pilot proved podcasting to be a progressive supplement to traditional 'chalk and talk' methods it has demonstrated positive aspects in terms of course curriculum delivery and has enhanced the teaching, learning and assessment outcomes

of this particular module. It has also afforded the lecturer greater insights into student's fieldwork experiences by having a more 'first-hand' account of how students were applying relevant social work skills, techniques, roles and values/principles this has proven invaluable for the module. The lecturer pointed out that podcasting also grants the lecturer the opportunity to provide students with more insightful feedback that has the potential to further enhance the student's academic and professional development. Furthermore the podcast pilot has afforded the lecturer a better perspective into how students are learning and understanding the theory related to social work practise. The negative aspect mentioned by the lecturer was that the technical challenges of the use of podcasts impacted on the quality of their Podcasts. He however stated that podcasting is definitely one of the avenues to be considered in reaching the course objectives of a particular course.

Course curriculum delivery objectives: Nursing

According to the lecturer the incorporation of podcasting into the nursing module proved to be an innovation in meeting the course objectives with regards to the skills development of students vis-à-vis patient learner interaction. The podcast was specifically used to assess 3 critical communication skills namely the use of empathy, adherence counseling and HIV pre-test counseling. The lecturer states that the classroom environment does not provide sufficient time to ensure that each student clearly understands and is capable of instituting and articulating the task appropriately, the podcast is therefore an ideal tool to assess students' communication skills.

Lecturer and learner interaction: Deptartment of Social Work

The lecturer indicates that the podcasting tool has brought to bear a number of positives in terms of student and lecturer interaction. The eTool has ensured that interactions are not merely confined to class times but that the teaching, learning and assessment can occur beyond the designated class times. He further notes that podcasts affords the student to be more creative in the presentation of their assessment tasks with the inclusion of additional audio tracks such as community voices and music. Podcasts also allowed the lecturer and student to listen jointly to the audio assignment and then discuss the positives and the areas that would have enhanced the quality of the task.

Lecturer and learner interaction: Nursing

The lecturer notes that students are highly appreciative of the use of the podcast tool for a number of reasons viz. the innovative nature of the assignment instead of 'more and more writing of assignments'; the use of technology which is congruent with their age and lifestyles; and the sense of an assignment having a practical, real-world feel. The lecturer notes that 'the most important issue regarding enhanced interaction between myself and my students has been, from their perspective, a bridging of the age gap.'

Discussion

The birth of the podcasting initiative at UWC was brought about by the earlier mentioned mandate assumed by EDSU to keep abreast of emerging technologies to supplement and enhance teaching-and-learning. As implementers of the project EDSU concurred with Ractham & Zhang (2006), and Benno (2006) earlier postulations recognising the growing momentum of podcasting within the educational domain. Nonetheless, it is the implementation of the relevant technologies that has proven time and time again to be the most critical part of innovation in any institution hence we concur with Beldarrian (2006: 249) who states that integrating or incorporating of knew technologies within a HEI is a delicate procedure and demands various processes to be followed to ensure implementation becomes a reality. Alpay & Gulati (2006) further concurs with Beldarrian (2006) and presents us with a workflow structure that can assist in such an initiative. The authors state that needs analysis; pilot studies; recruitment; operations and management; and

guidelines and site finalisation are key elements to be covered in ensuring effective implementation. As mentioned earlier prior to project implementation EDSU researched and uncovered that podcasting would not only supplement in breaching the communication barriers between lecturers but will also aid the lack of technological infrastructure at the institution-giving relevance to the needs analysis element. The needs analysis was followed by the rolling out of the podcast pilot to large and smaller classes by EDSU (i.e. pilot studies). Lecturers were selected based on prior eLearning experience along with their respective class both of whom were familirised with the tool through training provided (i.e. recruitment). Recruitment as outlined by Alpay & Gulati (2006) was further given credence as EDSU selected team members endowed with expertise in multimedia training and workshop facilitation as part of meeting the project objectives. Operations and management (Alpay & Gulati, 2006) for EDSU entailed quite a number of administrative and technical tasks as earlier highlighted on such as the loan agreements and ensuring that the MP3 devices were fully operation before the roll-out.

The results of the case study indicate that the majority of the students are of the opinion that the podcast eTools has provided a progressive step towards meeting their learning outcomes. The learners submitted that the repetition element of podcasting enhances their understanding of the subject matter. This resonates with Peter and Collins (2000) earlier deduction that these multimedia realities provide students the significant potential and possibility to come closer to the fundamental reality of their subject matter.

A majority (87.5 %) of the students stated that podcasting enhanced the interaction between learners and lecturers and contributed to breaking the limiting barriers of communication between them (i.e. learner and lecturer). The students submitted that the latter can be attributed to the innovative nature of the podcast tool in alignment with the earlier deduction by Chickering & Gamson (1987) that new and innovative mediums into educational institutions for the purposes of transferring information must also allow for the advancement of teaching-and-learning processes which in turn must assist in reaching the objectives of learning outcomes for that particular institutions syllabus (O'Bryan & Hegelheimer, 2007). However, 12.5% of the students do mention that podcasting did not aid the enhancement of interaction with their lecturers. In view of the students' rationale, this could attribute to the lack of lecturer motivation in providing students further support in the use of the tool. Beldarria (2006) points out that 'it is the responsibility of the instructor to maximize on student interaction' as well as actively partake in the interaction platforms provided by him/herself for the class. Motivation is a key factor in bringing on board learners and fulfilling the latter pronouncement.

The majority of the students indicated that podcasting facilitated enhanced group work. The 2nd year Nursing students were engaged in team work as their first practice assignment was to assist each other and work together to complete their task. They highlighted that team work allowed for better reflection and understanding of their work bringing to fruition. Shneiderman & Kearsly (1999) argument that collaborative teaching-and-learning practices allows for authentic teaching-and-learning processes.

Recommendations and Conclusion

The experience obtained during implementation highlighted a number of elements to be considered during the implementation of a large scale podcast pilot project in the context of an education institution. Presenting lessons that could assist in the smooth roll-out of the pilot or in the least brings one closer to the realisation of the objectives of the pilot.

The authors recommend that before embarking on such large scale podcast pilot project institutions willing to implement such projects should be committed to investing appropriate

funds to ensure that adequate resources vis-à-vis human capacity and technological infrastructure are available at time of project implementation.

Secondly, the level of user familiarity or skill with technology should be considered as podcasting in itself is an advanced level of technology and would require participants who at the least have basic technological skills. Such consideration could result in a smoother roll-out of the podcasting pilot.

Thirdly, implementing podcasts to larger classes can prove to be challenging in terms of project management and ensuring the main objective of the pilot are reached. To realise these objectives the authors recommend that smaller groups be created within the larger groups and team work amongst the learners be the essence of given tasks.

Fourthly, the objective of the pilot must be formulated in consultation with the targeted group (i.e. lecturers); in addition all stakeholders (eLearning facilitators, lecturers and students) should be aware of these objectives from the onset. Lastly, the authors recommend that implementers of the podcast pilot ensure that lecturers who choose to be part of a podcast pilot project initiative are willing, highly motivated and supportive towards meeting the project objectives – 'a shared vision.'

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Editor's Note: When a new communication tool becomes incredibly popular, it raises the question about educational opportunities. For what purposes can it be used? And how should it be integrated into the education environment?

Mobile Learning: Enhancing a Pre-Algebra Course at a Community College with Text Messaging

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Abstract

This study investigated the use of text messaging as an educational tool in a pre-algebra course at a community college in the central region of North Carolina. The research was conducted in two pre-algebra classes with thirty-three students and one instructor. Data were gathered using qualitative and quantitative methods. A mixed method design utilizing surveys, focus groups, and an interview with the instructor was employed to collect data. Quantitative data were analyzed using descriptive statistics. Qualitative data analysis was employed to analyze the thoughts and perceptions of participants and the instructor. Analyses of both qualitative and quantitative data show that participants have favorable dispositions and perceptions to the use of text messaging as an educational tool.

Keywords: Text messaging, Mobile learning, Technology in pre-algebra, Instructional technology, Informal learning, Electronic learning.

Introduction

As much as technology is a part of our daily lives, it is also a part of our current educational theoretical framework. Technology is used for many reasons, one of which is to reach learners of multiple learning styles; whether it is using a liquid crystal projector to meet the needs of visual impaired students, using a MP-3 player to reach students that are musically inclined or using interactive educational software for students that thrive in an interpersonal setting. On the other hand far less consideration has been given to providing learners with technologies to help them learn whenever and wherever they choose and to support their personal learning throughout a lifetime (Sharples, 2000). According to Thornburg (1999), "We have the opportunity to use technologies in ways that support modern pedagogical thought devoted to the premise that all are capable of learning, even if the pathway for each learner are different."

Mobile Learning

According to the Horizon Report (2009), there are six areas of emerging technologies that will significantly impact education in the next five years; cloud computing, the use of Geocoded data, personal web tools, semantic-aware applications, smart objects that give ordinary objects the power to recognize their physical location and respond appropriately, and mobile devices. This study focuses on the last of these emerging technologies, mobile devices. One mobile device that could possibly have a big impact in education is the cell phone. The cell phone is a tool instructors and students are starting to use to extend teaching and learning beyond the walls of the traditional classroom. The cell phone is currently being used in a variety of ways; students are able to take quizzes via the cell phone, students can communicate with instructors and peers, check their daily class schedule, register for classes, conduct Internet searches, engage in social networking, and they can even check on the dining hall menu, (Kharif, 2008). According to William Rankin (2008), co-director of mobile learning research at Abilene Christian University, "This is a new platform for learning, in the same way a laptop or a desktop was a new platform".

Using the cell phone or smart phone technology, (a hybrid device with PDA and phone capabilities), in the classroom is a relatively new phenomenon in education.

When mobile devices are used in education it falls within the category of M-Learning. What is M-Learning? McConatha and Praul (2008), define mobile learning as learning accomplished with the use of small, portable computing devices. Lee and Chan, (2007) define it as "the acquisition of any knowledge and skill through using mobile technology, anywhere, anytime". O'Malley defines M-Learning as any learning that happens when the learner is not at a fixed, predetermined location via mobile technology. While the definitions from these authors do not provide a concrete definition they all seemingly agreed that M-Learning is learning via a mobile device. John Traxler (2007), states that there are some people who view mobile learning as mobility of learning in terms of the learner's experiences of learning with mobile devices. Traxler also believes that mobile learning will support a wide variety of conceptions of teaching uniquely placed to support learning that is personalized, authentic, and situated. In their study of using mobile devices, Chan and Lee identified seven key attributes of mobile learning; spontaneity, personalization, informality, context-sensitivity, portability, ubiquity and pervasiveness. Instructional technologists, instructors, and administrators are trying to find effective ways to integrate mobile learning in traditional and online settings. Despite not having one concise definition or a theoretical framework M-Learning has the potential to have a big impact in education. According to the Benefits & Compensation Digest (2008), there is a good possibility that M-Learning will permeate our lives in the future to meet the increasing demand for quality, flexibility training, and to fulfill the needs of lifelong learning.

As M-Learning continues to be explored cell phones and one of its prominent features text messaging, also known as Short Message Service (SMS) are aspects of this new phenomena that will be addressed in this study. Cell phones are particularly popular for teenage and college students. In Varda's (2004) article, Rebecca Noah, AT&T wireless spokeswoman, "Students are most interested in using cell phones because of their flexibility." Ball State Media Relation director Marc Ransford said, "Text messaging has overtaken e-mail and instant messaging as the main form of communication, as 94 percent of students send and receive text messages". Like cell phones the use of text messaging is relatively new in terms of its use in education. Despite being a new tool in education, institutions, administration, staff, and faculty are experimenting with text messaging in a variety of ways. In a study done by Cavus and Ibrahim (2007), text messaging was used to help students learn new English words. Using special software on the instructor's computer, a new word was sent out to students every half an hour as a text in order to help students become familiar with new English words. The experiment received favorable marks; all the participants expressed their satisfaction and enjoyment of learning away from the classroom. Students in the Cavus and Ibrahim study noted that other instructors should also use mobile phone based teaching to support their teaching activities in the classroom.

With any new integration, there are both positives and negatives. As text messaging, cell phones, and M-Learning move through their initial stages of pedagogical development there are issues that need to be addressed. One of the big issues with text messaging is dealing with its own lingo (e.g., "your "spelled "UR", problems cut down to "Probs".) For some educators this presents a problem. Labrow (2004) addresses this concerns, "Times change, and letter writing isn't the formal thing that it was. But these low standards of communication now pervade our everyday lives". As for cell phones, Noble (2009), president of the Canadian Teachers' Federation does not object to cell phones, however asserts "We have serious concerns about their misuses (e.g., cheating on exams, cyber bulling or just being disruptive in class".) With some of the positives and the negatives outlined there is the need to validate pedagogical and technological integration of M-learning components in education. Labrow sums up this view in the following statement,

"Mobile Learning could be great - but let's get it right, and let's not be seduced by the speed and availability of mobile media."

Theoretical Framework

According to Traxler (2007), mobile learning is essentially personal, contextual and situated; this means it is "noisy". Being "noisy" is a possible reason why at the time of this study M-learning does not have one concrete definition or a theoretical framework as it relates to education. The study is guided by the learning theory of informal and lifelong learning (Muyinda, 2007). According to Muyinda, "The learning theory of Informal and Lifelong learning promotes activities that support learning outside of a dedicated learning environment." Mobile technologies can support Informal learning, which may be intentional or accidental (Sharples, 2000). The use of mobile learning, especially text messaging via the cell phone, could be used to informally address problem based learning. Mobile learning will help people blend formal and informal learning and manage their studies across life transitions (Peng, Su, Chou & Tsai, 2009.) On the other hand Naismith, et al., (2004) define informal and lifelong learning as activities that support learning outside a dedicated learning environment and formal curriculum.

Importance of the Study

This research seeks to discover the effectiveness of text messaging as a teaching tool in a pre-algebra course. Secondly, the research seeks to gain an understanding of students' perceptions of text messaging as an educational tool. Text Messaging is a form of mobile learning and this pedagogy is relatively new when it comes to Education. Finally, the research seeks to build upon previous research to define the role of mobile technologies like cell phones, smart phones and PDA's in education. Is mobile learning just a fad or is it something that can truly be used as an effective teaching tool used for every student?

Purpose of the Study

The purpose of this study was to investigate the impact of using text messaging as an educational tool in a pre-algebra class at a community college in the central region of North Carolina. This study seeks to prove that the integration of text messaging in the pre-algebra course will positively impact the perceptions of students' to the use of text messaging in the pre-algebra course.

Research Questions

This research will seek to reject the hypothesis that students did not have a more positive disposition to text messaging as an instructional tool after the integration in the pre-algebra course. This research was guided by the following research questions:

1. How effective was text messaging as an instructional tool in a pre-algebra course?
2. What are students' perceptions to text messaging as an educational tool?
3. In what ways can text messaging be used to enhance the educational experience?
4. To what extent can text messaging be utilized to support communication, reflection, and interest, and thus provide pedagogically rich learning environments that engage and motivate the learner?

Participants

The research was conducted in two pre-algebra classes at community college located in the central region of North Carolina. Thirty-three students and one instructor volunteered to participate in the study.

Research Design

The study was conducted in spring 2010. This study utilized both qualitative and quantitative design methodologies. Participants completed a pre-survey at the beginning of the course and a post-survey at the end of the course (see Table 1). They also participated in a focus group session at the end of the treatment. The purpose of the focus group was to collect and analyze information on the perceptions of participants on the use of text messaging and cellular telephones in their pre-algebra course. The following are examples of questions posed during the focus group discussion:

(a) What are some of your thoughts about having text messages sent to you as part of your pre-algebra course?

(b) How did the text messages enhance your participation in class?

(c) What types of text messages did you like the most during this experience?

(d) What are your views on using text messaging in education?

The course instructor provided the text messages researchers send out to students. The normal routine for the instructor was to provide the text messages to the researchers at the beginning of the week. Researchers would check daily with the instructor to see if there were any last minute texts the instructor would like to send out that were not given to the researcher at the beginning of the week. Generally, the instructor provided four texts to send out during the week. However, there were few weeks students received a text everyday, Monday – Friday. Researchers sent out texts at various times of the day, between the hours of 10 a.m. -8 p.m., Monday - Sunday via a smart phone (Apple-I-phone). Each text was archived for the purpose of discussing the text at the end of the experiment with the students in the focus group and with the instructor (see Table 2). For the purposes of this research the text message delivery was a one-way communication from instructor to students. This was done to maintain privacy for the instructor, reduce contact hours with students, and not having to constantly engage with students via text messaging.

The surveys were used to understand the participants' perception of text messaging in a pre-algebra classroom. The survey allowed the participants to rank both text messaging and cell phone in 10 categories; Important, Interesting, Relevant, Exciting, Means a lot, Appealing, Fascinating, Valuable, Involving and Needed on a 7 point scale. The participants ranked each category from 1-7 with one being the lowest and seven being the highest. The mean was compared on a 70 point scale. The instrument was developed by researchers. Using SPSS (now IBM PASW) the Cronbach alpha reliability test was done on the instrument. The reliability of the instrument was determined at .973. Cronbach's alpha reliability coefficient normally ranges between 0 and 1. However, there is actually no lower limit to the coefficient. The closer Cronbach's alpha coefficient is to 1.0 the greater the internal consistency of the items in the scale. It should also be noted that an alpha of .8 is probably a reasonable goal. It should also be noted that while a high value for Cronbach's alpha indicates good internal consistency of the items in the scale, it does not mean that the scale is one-dimensional. At the end of the research participants participated in a focus group discussion. Findings from the qualitative analysis were used to get a clear and concise understanding of their perceptions of integrating text messaging in the pre-algebra course through themes and categories.

Table 1
Pre and Post-Survey Text Messaging and Cell Phone Educational Uses Instruments

Instructions: Place an 'x' between each adjective pair to indicate how you feel about the use of cell phone in your pre-algebra course.

To me, **Text Messaging Use in Education is:**

	1	2	3	4	5	6	7	
1. unimportant	_____	_____	_____	_____	_____	_____	_____	important
2. boring	_____	_____	_____	_____	_____	_____	_____	interesting
3. irrelevant	_____	_____	_____	_____	_____	_____	_____	relevant
4. unexciting	_____	_____	_____	_____	_____	_____	_____	exciting
5. means nothing	_____	_____	_____	_____	_____	_____	_____	means a lot
6. unappealing	_____	_____	_____	_____	_____	_____	_____	appealing
7. Mundane	_____	_____	_____	_____	_____	_____	_____	fascinating
8. worthless	_____	_____	_____	_____	_____	_____	_____	valuable
9. uninvolving	_____	_____	_____	_____	_____	_____	_____	involving
10. not needed	_____	_____	_____	_____	_____	_____	_____	needed

To me, **Cell Phone Use in Education is:**

	1	2	3	4	5	6	7	
1. unimportant	_____	_____	_____	_____	_____	_____	_____	important
2. boring	_____	_____	_____	_____	_____	_____	_____	interesting
3. irrelevant	_____	_____	_____	_____	_____	_____	_____	relevant
4. unexciting	_____	_____	_____	_____	_____	_____	_____	exciting
5. means nothing	_____	_____	_____	_____	_____	_____	_____	means a lot
6. unappealing	_____	_____	_____	_____	_____	_____	_____	appealing
7. Mundane	_____	_____	_____	_____	_____	_____	_____	fascinating
8. worthless	_____	_____	_____	_____	_____	_____	_____	valuable
9. uninvolving	_____	_____	_____	_____	_____	_____	_____	involving
10. not needed	_____	_____	_____	_____	_____	_____	_____	needed

Conclusions and Findings

Qualitative Findings

The results acquired from this study clearly provide evidences that text messaging is a tool that can enhance both the teaching and learning experiences of students. The qualitative analysis yielded several themes from the study. Students liked the fact that they can get reminders, practice problems, and updates right on their mobile devices. No longer did they have to wait in long lines to use a computer at the school lab, no worries about finding a hot spot so they can log into their e-mail account. They were truly excited about the opportunity of receiving text messages. When asked during the focus group session how often they would like to get an educational text message, one student said "Bring it on I would like to get a text everyday". Text Messaging is a way of life for a lot of people. One participant commented I'd rather text than talk to people on the phone. If texting is that important to students and it is something that they feel is not an invasion of their privacy, which was the common response from all the students that participated, it is important that this piece of technology is investigated by the faculty, staff and administrators at the college. This is a type of technology that has the potential to revolutionize mathematics and learning in general. Imagine students entering a mathematics class and believing mathematics could be fun and exciting. Text messaging could possibly provide this experience. Below are qualitative analyses to specific questions:

How effective was text messaging as a tool in the Pre-Algebra course?

Participants stated that text messaging is an effective way to remind students about, quizzes, labs, and other related mathematics assignments. As Vanessa puts it, "It was helpful as far as remembering if I had a test or quiz the next day. With me working I would tend to forget and every time I would get off work, I would see I had a text message, so it helped me be prepared for class". Some participants felt that content related text messages helped them with their assignments. As Josh puts it, "The problems helped jog my memory, kept me thinking what was going on that day. I never solved the problem, but if I got a text and it was a decimal problem I was like okay that's what we studied today." Fatima stated that mnemonics sent out made a difference, "The sayings were good because they helped remind me how to set up formulas when solving a problem."

What are your perceptions of integrating text messaging in your math class?

For majority of the participants receiving text messages was nothing new. However, this was the very first time for all the students to receive text messages in academic setting. Participants felt it was good to get the text messages, especially getting the practice problems. As one student puts it, "The text did not make it more exciting or fun. It just helped a lot."

What would have made the text messaging experience more appealing to you as a student?

Participants felt that providing actual mathematical problems with corresponding formulas would have enhanced the experience. Walter a participant stated, "I can agree with sending formulas. Some people struggle in Math. If you send problems and the formula, it takes the text a little bit further and would be helpful to a lot of kids who are having a hard time." Some participants felt that feedback via text messaging would have enhanced their experience. Thomas, a participant, stated "If you send a problem out and we sent it back and got it wrong, tell us to use a particular rule to solve the problem." Others wanted more practice problems that would help them prepare for class.

Table 2
Sample Text Messages

1. Math - Reminder you have a quiz tomorrow, Be sure that you can solve a percent problem by using both an equation and a proportion.
2. Math - If you would like extra help, you may stay after on Thursday in LE 14 from 2:00-4:00. Bring material to work on or questions.
3. Math - A tree has 8ft. shadow. A man places a 10ft ladder from the top of the tree to the end of the shadow. How tall is the tree beside it with a 6ft shadow? Please show your work and turn in tomorrow for the chance to win a frosty.
4. Math - Are congruent triangles similar? Hint: Think about the definition of similar triangles.
5. Math - Reminder you have a test tomorrow.
6. Math - Is the following a true proportion? 5 is to 12 as 10 is to 24.
7. Math - A saying we used today was "King Henry Died While Drinking Chocolate Milk" it stands for kilo, hecto, deka, whole unit, deci, centi, milli.
8. Math - Remember the Excel lab must be done using Excel. If you do not have the program at home, you can find it in the computer labs here on campus.
9. Math - Now is a good time to start preparing for the final. Do you know where all of you old test are?
10. Math - Remember that all assignments are not worth the same. Use the grade breakdown sheet to average your grades. Also the extra lab is due tomorrow.
11. For example; Solve the following problem- **(0.5x+7=0.2x+2.5).**

What are the perceptions of the course instructor to use of text messaging in her course?

The instructor in this study felt that the use of text messaging in her course both "helped and hurt" students in the following areas:

1. It helped from the standpoint of being able to send reminders to student about upcoming test, quizzes or reminded them the lab was due the next day.
2. On the other hand, students became dependent on the text messaging and not on the traditional calendar, class information, or course delivery tools. She further states, "I have students complain if I did not send a text to remind them that they had a test or quiz. In that way it hurts. Students became dependent on the text messages. I felt like they were not listening to me in class. I was resending information that we have talked about in class, posted on Blackboard, and also displayed on the calendar I provide them each month".
3. The instructor felt that she was limited as to the types of text messages she could send. The instructor stated, "Mathematical texts are hard to send because you cannot text division symbols. You cannot make fractions. There is a lot of stuff that I could not text."
4. The instructors felt that sending all the formulas via text messaging and promoting use of cell phones in the classroom could promote cheating. As she put it, "I think about students who I have to take their cell phones away now because they are text messaging in class when they are not supposed to. I would be thinking the students may have all the formulas on their phones, that would make me worry and concerned about students cheating on my test".

Quantitative Findings

While the qualitative data did provide depth to the research with encouraging results, the quantitative data provided both limited and statistical significance findings. It was clear from the data that after the integration of text messaging participants demonstrated a more favorable perception toward text messaging. The qualitative data yielded positive findings about the attitudes of students toward integrating text messaging as an instructional tool. In general, the research show that students preferred text messaging over email as a form of class communication. Therefore, participants were responsive to text messaging a form of communication. Participants were also able to separate work, social, and academics communications, and accepted text messages as an extension of their education outside the walls of the classroom in the community college.

Descriptive analysis was used to compare the means of the pre-survey and the post-survey. On a 70 point scale, the mean for the pre-survey for text messaging was 52, which shows a very favorable disposition toward the use of text messaging in their algebra course. The post survey mean was 57 (see Table 3), which shows a significant gain of 5 point towards a more favorable disposition to the use of text messaging in their education. A gain of 5 points is statistical significant in this study.

From the analysis of Table 3, it is clear that participants felt that text messaging in education was "important" and "valuable" with the largest post survey mean gains of 7 points followed by "relevant," "appealing," and "involving" with post survey mean gains of 6 points. "Needed" gain 5 points in the post survey mean. With six out of ten categories gaining 5+ points, it is clear that participants had a positive disposition to the use of text messaging in their pre-algebra course.

Table 3
Text Messaging Mean Scores for Pre and Post Survey on a 70 Point Scale

Text Messaging	Pre	Post
Important	54	61
Interesting	55	59
Relevant	54	60
Exciting	51	54
Means a lot	51	55
Appealing	49	55
Fascinating	51	52
Valuable	54	61
Involving	53	59
Needed	53	58
Total- Mean	52	57

The results for the use of cell phones were not as statistically significant as those of text messaging (see Table 4). This could be attributed to the fact that participants use their cell phones as an everyday tool. They did not see it a novel tool in their classroom. Also, the focus was not on the cell phone as the instructional tool, but on text messaging delivered via the cell phone.

Table 4
Cell Phone Mean Scores for Pre and Post Survey on a 70 Point Scale

Cellular Telephones	Pre	Post
Important	62	63
Interesting	56	59
Relevant	55	58
Exciting	54	55
Means a lot	57	56
Appealing	54	56
Fascinating	54	54
Valuable	58	59
Involving	53	58
Needed	58	60
Total-Mean	56	57

For cell phone a descriptive analysis was used to compare the means of the pre-survey and the post-survey for use of cell phone in education in general. On a 70 point scale the mean for the pre-survey was 56, which shows a very favorable disposition toward the use of text messaging in their algebra course. However, the post-survey mean of 57 did not show a more positive disposition after the integration of text messaging. Though this was not statistically significant, it showed a positive disposition towards using cell phone in education.

Conclusions

It is clear from the descriptive statistical analysis that there was a position shift from the pre survey mean to the post survey mean towards a more favorable disposition towards use of text messaging as an instructional tool. This study is unique in that there was a favorable disposition towards the use of text messaging resulting from a one-way delivery of information from the instructor to students. Imagine what the outcome would have been if students had the opportunity to engage the instructor in a two-way text messaging communication system. The use of text messaging in instruction has great potential that we as educators have to tap into. As educators, we need to explore and continue to investigate the uses of text messaging in education. What is unique about this technology and delivery is that most students have access to the technology and expertise needed to facilitate this delivery, which means that it should be cost effective to academic institutions to put in place. The use of text messaging as the leading form of electronic communication for college students in social networking electronic environments makes this mode of delivery an appealing system to students. It is incumbent upon academic institutions to explore creative ways to facilitate instructional delivery through text messaging and conduct sustained research on its effectiveness in enhancing the intellectual climate of the institution. In as much as the findings from both qualitative and quantitative analyses in this study are very encouraging one should be cautious in extrapolating beyond this study because of limitations. First, the sample size in the study was small. With only thirty three students participating in the

study, one could expect skewed results. Second, the study was conducted within four weeks and not the entire semester. A lengthier study may have significant implications for integration. Also, the text message communication was a one-way communication from the instructor to the student. Even with these limitations the research yielded positive results on the use of text messaging instruction.

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Editor's Note: Blended learning combines classroom instruction with distance learning. Courses can be designed to incorporate the advantages of both learning environments. Also, it eases both teachers and students into new roles and responsibilities associated with teaching and learning on the Internet.

Using Blended Learning to Prepare Future Distance Learning: A Technology Perspective

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Abstract

The Associate of Science of Nursing (ASN) programs in the United States typically adopt face-to-face teaching mode due to nursing field's practice-oriented characteristic. Recently, more and more ASN programs have migrated to a blended mode where lectures are pre-recorded and hosted in a robust Course Management System, and the traditional face-to-face teaching is still conducted on regular basis to reinforce learning. For the RN-BSN programs, however, the online mode is the main format for support of full time working registered nurses. This paper presents an exploratory evaluation of a blended learning mode adopted by an ASN program in terms of students' technology competence. The aim of this study is to investigate whether the blended learning mode of an associate nursing program can technologically prepare its students for their future distance education.

Keywords: technology competency, blended learning, nursing education, e-learning, f2f classroom learning, online learning, e-learning, distance learning, asynchronous learning, synchronous learning

Introduction

Blended learning is commonly defined as an integration of traditional classroom-based approach and newly Internet-based approach to deliver instruction (Garrison & Kanuka, 2004; Graham, 2006; Macdonald, 2008). In the blended learning mode, the students have the benefit of taking courses face-to-face (f2f) with an online component or e-learning component, using sophisticated course management systems (CMS) such as Blackboard (including former WebCT and Angel Learning), Moodle, or Sakai. Blended learning mode provides students with greater time and place flexibility and improved learning outcomes; however, students initially encounter various issues such as time management, taking greater responsibility for their own learning, and lack of support when using sophisticated technologies (Vaughan, 2007).

With blended learning, teachers can use online tools and web-based resources as part of their daily classroom instruction. Students' learning toolkit in the past only consisted of notebooks, paper assignments and "stand and deliver" classroom presentations; nowadays the toolkit has also included online learning tools (such as synchronous chat and asynchronous discussion forum, etc). This expanded toolkit helps students better develop their higher education and workforce skills (Pape, 2010).

However, Jones, *et al.* (2004) criticized the assumption that most students have the ability to use those new learning tools within an educational setting, and suggested that many undergraduate students entering the university had limited experience with the internet and had very little information technology (Arif, 2001). In fact, distance education tools might seem to be unfamiliar or difficult to learn for many students, so they might not be enthusiastic about participating in online activities (Hong, Ridzuan, & Kuek, 2003; Xie et al., 2006). Hence, it is essential that students should have basic computer/internet skills to augment their e-learning outcome.

In the meantime, American Association of Colleges of Nursing (AACN) estimated a shortage of 500,000 registered nurses is expected by 2025 in the United States (U.S) alone. According to AACN's report on *2008-2009 Enrollment and Graduations in Baccalaureate and Graduate Programs in Nursing*, U.S. nursing schools turned away 49,948 qualified applicants from baccalaureate and graduate nursing programs in 2008 due to insufficient number of faculty, clinical sites, classroom space, clinical preceptors, and budget constraints. Almost two-thirds of the nursing schools responding to the survey pointed to faculty shortages as a reason for not accepting all qualified applicants into their programs (AACN, 2009).

A central strategy, recognized by the AACN, is to increase access to nursing education by distance education. Distance education, or e-learning, is planned learning that occurs in different places from teaching, requiring interactive technology in delayed (asynchronous) or real time (synchronous) (Novotny & Wyatt, 2006). A 2002 survey of 365 AACN member nursing institutions reported that 187 (51%) offered distance education courses. The survey also determined that 162 accredited nursing distance education programs reported that the heaviest enrollment was online registered nursing Bachelor of Science in nursing (BSN) completion programs (90.73%), followed by Master's degree (3.65%), and doctoral degrees (0.06%) (Hodson-Carlton *et al*., 2003). In 2010, AACN reported that among the 634 RN to BSN programs that are available in the U.S., more than 400 are offered at least partially online.

Overall, it appears that blended learning provides students with greater time and place flexibility and exposes students and instructors with various computer/internet-based learning technologies. However, little is known on how well students are technologically prepared for their future distance education. At the same time, distance education seems to be considered as one of the effective strategies to solve nursing and nursing faculty shortages. This paper intends to investigate if the nursing students from an ASN program that adopts blended learning are technologically prepared for their future distance learning.

Conceptual Framework

In the well cited "Technology Acceptance Model" (TAM) framework by Davis, Bogzzi, & Warshaw in 1989, computer use is determined by behavioral intention that is formed by perceived usefulness and perceived ease of use (Davis, *et al*, 1989). In 2008, Sahin and Sheleey further developed the TAM model into the "Distance Student Satisfaction Model" (DSSM). The DSSM framework has four constructs: a) computer knowledge; b) flexibility of distance learning; c) usefulness of distance learning, and d) distance learning satisfaction, that lead to higher levels of use of distance education (Sahin & Shelley, 2008). Four constructs from the TAM framework and the DSSM framework are utilized in this study: 1) computer/internet knowledge; 2) perceived ease of use of computer/Internet in learning; 3) technology use satisfaction in learning; and 4) perceived usefulness of computer/Internet skills in learning. A descriptive study design was used to answer the research question: Does blended learning in the ASN nursing program technologically prepare nursing graduates for their future distance learning?

Blended Learning Mode

The Department of Nursing at the authors' college started to migrate to a blended teaching and learning mode at the beginning of 2008. By the end of 2009, all nursing courses were using the blended learning mode. The blended learning concept is defined in the college's Academic College Bulletin and is quoted below:

> "Blended learning includes content and activities delivered in a web-based format, while other content and activities are offered in a traditional classroom setting. The blended course promotes learning that is interactive and engaging for the student in the classroom

but also allows them the autonomy to learn at their own pace outside the classroom. In the blended format, a portion of the course activities will be completed on campus to provide face-to-face contact with course instructors. Course activities may include, but are not limited to: lecture content, case scenarios, chat or discussions, exams, and clinical involvement."

There are two parts of the blended learning mode: i) the traditional face-to-face (f2f) teaching part, where students and instructors meet, typically once a week, to participate in various learning activities such as case studies, clinical scenario analysis, tests, quizzes, games, simulations, stories, videos, practice questions, and discussions; and ii) the e-learning part, where course materials including Flash-based pre-recorded lectures, all the assignments, take-home quizzes, and other learning activities are hosted in the Course Management System (CMS).

Figure 1: A typical Flash-based lecture content interface hosted in the LMS.

Figure 1 is a typical recorded lecture interface that is Flash-based. Text pops up on the screen while synchronized with the voice over. The recorded lectures allow students to have multiple accesses twenty-four hours a day, and seven a week. Students are able to pause and skip certain parts during their lecture viewing. It is required that students go through those recorded lectures and required textbook reading before they come to class to attend live (f2f) lectures.

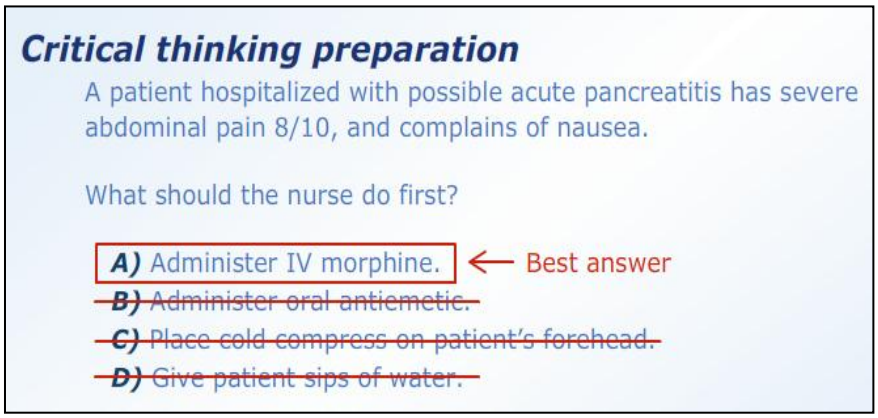

Figure 2: A learning activity was provided during the lecture content.

A variety of different interactive activities are embedded periodically throughout the lectures to reinforce concept learning (Figure 2). Students must complete the activities in order to move on.

The E-Learning Skills

Basic Computer/Internet Skills

Before being admitted into the ASN program, students are required to take the "Introduction to Microcomputers", a pre-requisite course, where they learn basic computer skills such as Microsoft Word, Excel and PowerPoint, Internet, and browsers skills (Table 1). Due to the blended learning mode that the ASN program adopts, the majority of the course materials are hosted in the CMS for students to access 24/7., Students submit their electronic assignments via the web, and tests and quizzes are administered online. Therefore those basic computer and Internet skills are reinforced while they are beginning to take ASN courses.

With computer-based testing in National Council Licensure Examination-Registered Nurse (NCLEX) as a driving force, the nursing department at the authors' college embarked on a laptop initiative around 2004. The nursing faculty felt that engaging the students in taking timed computer-based assessments would better prepare the undergraduate nursing students for what they would experience when they sat for their NCLEX. The notebook/laptop was the chosen device for the students to use because it was portable. Scheduling one classroom equipped with computers for any time a student was available to take the NCLEX was next to impossible due to the security of the testing in nursing courses. The nursing faculty and IT Department worked together to develop an image set for the custom-factory imaged DELL Latitude model. A wireless network was installed and configured for the college. In addition to the goal of computerized testing in the classroom, laptops can also be integrated into regular teaching and learning. Since the campus migrated from traditional face-to-face teaching to blended learning mode, various computer/Internet-based technologies were introduced to the classroom. The laptop initiative is the "one stone that killed two birds".

Table 1
Computers

Skills	Narration
Windows Operations	Latest Microsoft Windows operating system is installed on students' college-deployed laptops. Features such as boot/reboot the system, web page saving, folder management, and searching are exposed and reinforced.
Microsoft Office	Microsoft Office was taught in detail in the pre-requisite course "Introduction to Microcomputers". During the nursing program, those skills were reinforced by asking the students to use Word to write papers or report, use PowerPoint to present and Excel sheet to calculate their grades.
Browsers	The college IT department decided the latest version of Internet Explorer and Mozilla Firefox are the two designated browsers that are installed on every nursing student's laptop. Students are encouraged to use either of them to access the CMS. Often times due to glitches, they have to alternate between the two in order to have the desired results.
Laptop Skills	In addition to basic laptop skills such as wireless Internet connection, print screen, folder and files management, and speaker volume adjustment, students use laptops to submit their electronic assignments, take computerized tests and quizzes, have their attendance verified, and participate in laptop-based classroom response system (clickers).

Asynchronous Learning Skills

Asynchronous learning pedagogy is defined as teaching and learning that occurs when the interaction between the instructor and students is not constrained by time and place. It is based on the constructivist theory, and is a student-centered approach that emphasizes the importance of peer-to-peer interactions. Zsohar & Smith (2008) have identified three distinct benefits of asynchronous learning: students: 1) have an increased amount of time to prepare their responses, 2) can not interrupt other students when posting or speaking, and 3) have access to all written records of all discussions for later references. Disadvantages of using asynchronous learning include: i) loss of direct personal contact such as eye contact or facial expression, ii) loss of spontaneity when responding to questions, and iii) limitations to the type of discussion faculty can pose (Zsohar & Smith, 2008 and Anderson, 2009).

The CMS (course management system) is an electronic environment that helps the instructor and students communicate, exchange information, manage and schedule the learning process. It is a major component of today's online program: it hosts all the course materials and it is the central place where students and instructors meet. Since Blackboard Learn acquired WebCT and Angel Learning, the CMS market is dominated by Blackboard Learn. Students in the ASN program are exposed to the following CMS-based asynchronous learning tools: folders that contain course materials, discussion forums, emails, and assignment dropboxes.

Table 2
Presentation and Feedback

Skills	Narration
Pre-recorded Lectures Access	In ASN curriculum at FHCHS, all lectures are pre-recorded in Flash format and are hosted in the CMS, which allows students access 24/7.
Threaded Discussion Forum	Currently in ASN program, Adult Health Nursing III, Nursing of the Child and Family courses are using discussion forum. Discussion forum allows students to post their input on designated topics asynchronously (at different times and at different places).
Email	Faculties are encouraged to use CMS internal email to contact their students. Students, on the other hand, need to log into CMS in order to view and read the class emails. Students are encouraged to log into CMS at least once a day to check their emails.
Assignment Dropbox	Students in the ASN program typically submit their electronic assignments to dropbox inside the CMS. Faculty downloads the assignments onto their own computers, give grades, and then the grades will be recorded in the gradebook.

Synchronous Learning Skills

Synchronous learning is defined as the pedagogy where instructors and students participate in the same learning activity at the same time. Chat rooms and video conferencing are the two main synchronous learning tools in online education. Literature shows disadvantages and advantages on synchronized learning tools. Little, Passmore & Schullo (2006) reported that the advantages included: i) increased communication; and ii) increased savings in time and money due to ability to meet online versus traveling to a designated location. Disadvantages include initial technical glitches during the setup phase and high support need during the actual implementation phase.

Table 3
Interaction

Skills	Narration
Chat Room	Chat rooms are text-based, real-time synchronous learning tool. Currently Adult Health Nursing II and Adult Health Nursing IV courses (two ASN courses) are using chat rooms to help students prepare for the unit exams. Students and the instructor log into the chat room at the same time and conversations are typed and displayed on the screen. The chats are archived and allow students to review the information.
Wimba Video Conferencing	Wimba is a video conferencing tool that allows students and faculties to conduct real-time audio and video conversion. It also has desktop sharing and archiving features. The faculty in "Nursing of the Child and Family" are currently utilizing Wimba to archive their live classroom lectures (PowerPoint slides and live voice). Students can directly log into Wimba to access archived files after class. These archived lectures serve as a great backup to the students who want to listen multiple times and who miss the class due to illness or other problems that prevented them for participating. For example, during the Swine Flu Pandemic season early in 2010, some students were having high fevers and thus quarantined at home, by accessing those archived files, those students could continue their study at home.

Data Collection

Adult Health Nursing III taught during the 4th trimester, and Adult Health Nursing IV are the final capstone courses in the ASN program at the authors' college. Subjects were obtained from both courses and were surveyed. Both courses use same format of flash-based pre-recorded lectures. It is assumed by the time students are at the 4th and the final trimesters, they are: 1) proficient in using the CMS system and other technologies utilized during the nursing program; and 2) more ready to respond to the question about their willingness to continue their nursing education after the upcoming graduation from the ASN program. Therefore, forty-five out of fifty-three students in Adult Health Nursing III and thirty-eight out of forty-one in Adult Health Nursing IV completed the survey, which yielded a total of 83 students out of 94 (88%) who responded to the survey. Both groups that were surveyed had the same questions; therefore the results were combined and analyzed in the following Table 3-Table 6.

Data Analysis

Students' perceptions of using technologies in blended learning format were measured by eight perception questions which used a Likert scale ranging from 1 (strongly disagree) to 5 (Strongly agree). The eight questions were designed based upon the four constructs drawn from the TAM framework and the DSSM framework: 1) basic computer/Internet knowledge; 2) perceived ease of use of computer/Internet in learning; 3) technology use satisfaction in learning, and 4) perceived usefulness of computer/Internet skills in learning.

1. Computer/Internet knowledge

Table 4
Perception Survey Results * (n=83)

Survey Questions	Mean	1	2	3	4	5
I am proficient in using my laptop computer.	4.53	1%	0%	0%	43%	56%
I am proficient in using the Course Management System (CMS).	4.57	2%	0%	0%	35%	63%
I am proficient in using one of two basic Internet browsers: Internet Explorer or Mozilla Firefox.	4.36	1%	8%	2%	32%	57%
*** Strongly Disagree=1; Disagree=2; Unsure=3; Agree=4; Strongly Agree=5**						

Table 4 shows 99% reported familiarization with laptop features such as wireless Internet connection, basic Windows operation and Microsoft office. Those skills are reinforced during the entire ASN program and will be utilized in their future online courses. Eighty nine percent reported familiarity with one or the other of two basic Internet browsers Internet Explorer or Firefox. The literature supports that higher level of computer experiences are linked to greater enjoyment of users with distance learning (Mitchell et al., 2005). In fact, "inadequate or incomplete knowledge and awareness inevitably compromises the quality and appropriateness of learning experiences which can be provided and developed" (White, 2005, p. 170). As long as students have the skills to use online tools and perceive that distance education is a useful and flexible way of learning, communicating, and sharing, their enjoyment from online instruction will be promoted. Ultimately, this satisfaction might lead to higher levels of engagement, learning, and success in the setting.

Table 4 also shows about 98% of the students are confident using the various features offered by CMS. According to a 2009 report by American Society for Training and Development, 91 percent of ASTD respondents are using CMS's in their organizations (Ellis, 2009). It is critical to have proficient computer and CMS skills such as Microsoft Word processing, emailing, discussion forum, assignment drop box, chat room and accessing online files.

2. Perceived Ease Use of Online Learning Tools

Table 5
Perception Survey Results * (n=83)

Survey Questions	Mean	1	2	3	4	5
I found it is easy to use asynchronous learning tools such as email and discussion board.	4.11	1%	10%	4%	47%	38%
I found it is easy to use synchronous learning tools such as chat room, and Wimba video conferencing.	4.31	1%	1%	5%	52%	41%
*** Strongly Disagree=1; Disagree=2; Unsure=3; Agree=4; Strongly Agree=5**						

Table 5 shows about 85% of the students reported they were exposed to asynchronous technologies such as discussion board, email, take-home quizzes, and pre-recorded lectures, and 93% reported they were familiar with synchronous tools such as chat room and video conferencing. Both asynchronous (delayed) and synchronous (real-time) learning tools play critical roles in today's distance learning. The exposure to asynchronous and synchronous learning tools will help students better utilize them in their future distance learning.

Until recently, distance learning initiatives mainly relied on the asynchronous means for teaching and learning (Romiszowski & Mason, 2004). However, the recent improvements in technology and increasing bandwidth capabilities have led to the growing popularity of synchronous learning (Kinshuk & Chen, 2006). While asynchronous learning tools do not allow interactions between faculty and students constrained by time and place; synchronous learning allows students to interact instantly and eliminates the feeling of isolation that is inherent in asynchronous learning.

3. Technology Use Satisfaction

Table 6
Perception Survey Results * (n=83)

Survey Questions	Mean	1	2	3	4	5
I enjoyed using computer technologies in the blended learning program in the ASN program.	4.06	1%	9%	5%	53%	32%
*** Strongly Disagree=1; Disagree=2; Unsure=3; Agree=4; Strongly Agree=5**						

Table 6 shows 85% of the students reported they were satisfied with the technology experience through the ASN program. The technology use satisfaction in learning will eventually lead to high levels adoption of distance learning.

4. Perceived Usefulness of Technologies

Table 7
Perception Survey Results * (n=83)

Survey Questions	Mean	1	2	3	4	5
Technologically I am confident and comfortable to take online courses to further my future nursing education after I graduate from the ASN program.	4.31	1%	2%	5%	49%	43%
The technologies that I learned and used in the ASN program make my future life-long education possible.	4.13	1%	5%	7%	54%	33%
*** Strongly Disagree=1; Disagree=2; Unsure=3; Agree=4; Strongly Agree=5**						

Table 7 shows 92% of the students were confident and comfortable to take online courses in the future and 87% reported life-long learning was possible with proper technologies equipment. Using the blended learning method gives students a variety of ways to obtain their knowledge that is being studied as well as appealing to diverse learning styles and thus fostering independent learning. It also gives the students the ability to become lifelong learners (Pape, 2010).

Summary

It appears that the technologies and skills that nursing students learn in the blended learning program in the authors' college can adequately prepare them for their future distance learning and even life-long learning. The study also suggests that students' computer knowledge and perceptions, such as the perceived usefulness, perceived ease of use of computer/Internet in learning and technology use satisfaction in learning, should be considered as predictors for their success in distance learning environments. Although the data garnered from this study is far from inclusive, the findings are relevant and useful for consideration by other programs concerned with their students' technology readiness for future distance learning. Undergraduate college programs can adopt the blended learning mode to increase students' level of computer knowledge and emphasize the flexibility and usefulness characteristics of distance learning.

However, this study was conducted in one ASN nursing program in the southeastern United States. No student demographic data were gathered; therefore care should be taken in applying the findings of this study to other courses in different subjects.

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Editor's Note: This is an interesting yet disturbing paper. The effects of cheating have always been difficult to assess. This is a serious and uncomfortable academic concern in classroom teaching and learnin g and in online classes.

Cheating in Online Courses: A Qualitative Study

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USA

Abstract

The purpose of this study was to explore the ways students have cheated in online courses. Ten students who had either cheated in online courses or knew of others who had cheated in online courses were interviewed for the study. The participants' responses to the interview questions were analyzed using qualitative methods of data analysis. The results show that the majority of the participants had cheated or knew of someone who had cheated in online courses. Working together with other students, referring to class notes, textbooks, and other useful course materials while taking online tests and quizzes, and using Internet resources were some of the methods students used to cheat in online courses. One student reported that she was paid to complete an entire course for another student. This unique finding of the study can be labeled 'paid impersonation.'

Introduction

Distance education has evolved alongside technology over the past two centuries. From its humble origins in correspondence courses, to radio, television, teleconferencing, and now offered online, distance education has always been a convenient way for students to get an education. Distance education has been in demand for quite a few years at the university and college level in both the United States and other countries. In the United States distance education is also becoming popular in the K-12 level. Clark (2001) reports that virtual high schools, like The Florida Virtual School, are the latest paradigm shift in education. The trend has grown considerably in the first decade of this century with nearly 50,000 students taking online courses in over 40 virtual high schools across 14 states (Clark, 2001). This is a clear sign that distance education is popular in the United States.

Distance education has also seen a large growth over the past few decades. Daniel (1996) reported 11 mega-universities across Africa, Asia, and Europe. In 2009 it was reported that there are 24 mega-universities across the globe (Altbach, Reisberg, & Rumbley, 2009). These mega-universities deliver distance education methodically to the millions of students that they seek to educate. The growth of these mega-universities proves that distance education is an international phenomenon.

At its best, distance education has brought educational opportunities to uncharted regions where qualified teachers were not available to enrich the academic experience of the student body. Barbour (2007) illustrates that this was case in Newfoundland and Labrador in Canada during the late 1980's. This area in Canada was, at the time, a region where educators were hard to come by. The educational stakeholders were eager to provide high quality education to their student populations. After receiving funding from the Canadian government, the provinces of Newfoundland and Labrador expanded their course offerings through distance education. The first of these courses were offered in the disciplines of advanced mathematics and the hard sciences.

The Newfoundland and Labrador example illustrates how online classes can help provide equity to disadvantaged students. However, online classes, as well intentioned as they might be, are not immune to the Law of Unintended Consequences because, with use of the Internet came serious concern about plagiarism, cheating, and the validity of distance education. Students enroll in large numbers in distance education courses and programs, for several reasons including convenience and flexibility (Braun, 2008).

Purpose of the Study

A most pressing concern in the context of distance education is academic dishonesty. We live in an era where copying-and-pasting is the norm and cheating is not considered a serious offense by the student body. Therefore, such behavior often goes unnoticed and unpunished. The purpose of this study is to explore the extent to which cheating occurs in online courses, the different ways of cheating, and how such behavior can be minimized or eliminated. The study will use the information gathered from published sources as well as data obtained from interviews to achieve its purpose.

Summary of the Relevant Literature

Students engage in academic dishonesty for numerous reasons. These include a wide range of academically unacceptable behaviors. This study focuses only on how students cheat on quizzes, tests, and exams while they were enrolled in online courses. Studies on why students take part in this type behavior have concluded that students do so because they can rationalize their behavior (Lindsay, 2008), their grade point average is important to them (Wotring, 2007), to remain academically competitive (McCabe, 2005), and reap the benefits of advancement (Willen, 2004). Other reasons for cheating include ineffective disciplinary actions taken by educational institutions (Etter, Cramer & Finn, 2006: Leonard, 2008; Leonard & LeBrasseur, 2008), and the differences in values placed on physical versus electronic property (Willen, 2004). As Fulkert and Kustron (2002) noted, most students now view Internet content as public domain and taking passages from various websites is not a vice.

Studies conducted in Romania (Teodorescu et al, 2007), United Kingdom (Lindsay, 2008), New Zealand (Lindsay, 2008), and various universities in the United States (McCabe, 2005; Price & Price, 2005; Kelley et al, 2005; Wotring, 2007) have concluded that around 47% to 88% of students have committed some type of academic dishonesty such as cheating and plagiarism, at least once, in a face-to-face course.

In a traditional face-to-face class academic dishonesty can take various forms: copying answers from another student, utilizing unauthorized materials, copying verbatim from textbook (Jacoy & DiBiase 2006; Teodorescu et al, 2007). However, with online classes there are more options for committing academic dishonesty while taking the class such as texting or instant messaging a friend for the answer, copying verbatim from an online source and coercing a friend to take the class for you or sit adjacent to you with the intention of aiding you throughout the course.

The research conducted by Kelley et. Al. (2005), Teodorescu et al (2007) and Wotring (2007) demonstrate that gender is insignificant when trying to determine who is more likely to commit academic dishonesty. However, the research shows that the likely of cheating is higher for student athletes and those who were enrolled in religious schools (Kelley et al, 2005). Hours of employment and extracurricular activities (Teodorescu et al, 2007) do have an effect on who is more likely to commit academic dishonesty. Furthermore, students with high grade point averages, a commitment to strong mastery goals, and a belief in the honor code were less likely to commit academic dishonesty (Wotring, 2007).

The integrity of the learning process is an integral part of receiving a formal education. Prospective employers rely on a student having learned the necessary skills to successfully and competently overcome the challenges in any given situation. With all institutes of learning having addressed this issue as part of their mission statement, why are so many of them failing? Research studies on academic dishonesty estimate that 45% to 88% of students have cheated at least once in face-to-face settings throughout their academic careers (Kelley et al, 2005; Lindsay, 2008; McCabe, 2005, Price & Price, 2005; Wotring 2007).

Selection of Study Participants

The researchers sought and received the required approval from the university's Institutional Review Board (IRB). An instructor within the College of Education at a large public university located in the southeastern part of the United States was contacted via e-mail and asked if he was willing to allow the researchers to come to his classes and recruit students for the research study about online classes. He replied to the e-mail stating that he was willing to participate. Soon thereafter, a time and a date that was convenient for the researchers and the instructor was set.

The researchers visited one of the classes taught by the cooperating instructor and informed the students that they were doing research about online or distance education. The researchers asked if any of the students have completed courses fully online either during their high school years or in a college or university to step outside. Then we asked the remaining students if they themselves have, or if they know of others, who have cheated in online courses. Then we asked those students who answer in the affirmative if they would like to participate in a research study and be interviewed anonymously. Several measures were taken to ensure the anonymity of the participants. If students and faculty know each other and/or have been enrolled in courses taught by the PI or Co-PI of this study, these students were not included in the study. We set up a date and times for the interviews. We then informed them that refreshments and snacks will be provided during the in-depth interview process. Five students from this class participated in the study. Five more students, who were enrolled in another course also taught by the cooperating instructor, were interviewed for the study. The course instructor asked students in the class who had completed courses online to volunteer for the study. The researchers had set up a room next door to the room where the class was taught, and the instructor sent the five students one at a time to be interviewed by the researchers. One student could not be interviewed because she had previously enrolled in a course taught by one of the researchers. This was done to comply with the IRB guidelines under which permission was granted to conduct the study.

During the interview process refreshments and snacks were provided to participants. Before the interview began we ask the participants to not identify themselves so that we can guarantee them total anonymity. Also, the responses of the participants were not videotaped nor audio recorded. We felt it was necessary to ensure that neither the research nor the participant knew each and thus we asked once again have been enrolled in courses taught by the PI or Co-PI of this study . These measures were taken to guarantee the total anonymity of the participants. Some participants had more information to share than others therefore, the length of the interviews ranged from 6 minutes to 22 minutes. The average interview time was 12 minutes and 48 seconds.

Sex, Ethnic and College Major Distribution of the Sample of Participants

The breakdown of gender, race, and major of participants is shown in Table 1.

What courses have they or their close friends or relatives completed online?

The interviews revealed that students are taking a considerable amount of online courses and so are their friends. The participants took courses mainly in the social sciences and mathematics while most of their friends took courses involving mathematics. This is not surprising because

most Early Childhood and Elementary Education majors struggle with mathematics early in their college career. Their strength lies in the social sciences and that they take these courses online because it is an easy way to advance and receive a boost to their grade point average at the same time.

Have they cheated in online courses, and if so, how?

Participants were asked if they had cheated in an online class and the following responses were given six of them said "yes," while four of them said "no." Participants were asked if they knew of someone who had cheated in an online course. These may include significant other, friends, or classmate to which the eight participants said that "yes" they knew someone who had cheated in an online course. Of those only two said that "no" they did not know of anyone who had cheated in an online course. This supports the findings in the literature review that a good portion of students have cheated and are not doing so in online classes. The methods students are using can be placed into three general categories: collaboration, course materials, and other resources.

Table 1
Gender, Race, and Major of Participants

Participant	Gender	Race	Major
1	Male	White (Non-Hispanic)	Criminal Justice
2	Female	White (Non-Hispanic)	Elementary Education
3	Female	Black (Non-Hispanic)	Elementary Education
4	Female	Hispanic	Elementary Education
5	Female	Hispanic	Elementary Education with Environmental Science minor
6	Female	Hispanic	Early Childhood Education
7	Female	Hispanic	Sports Fitness with Education minor
8	Female	Hispanic	Elementary Education
9	Male	Hispanic	Psychology with Education minor
10	Female	Hispanic	Special Education

Collaboration

During the interview process one of the most frequent responses can be summarized as collaboration. Classmates and their friends would get together and work on assignments. They also would take test and quizzes together. During the course of the interview one Participant #6 did not consider this cheating at all. She went on to rationalize her behavior saying that the instructor "[did] not specify about working groups." During test, this same participant admitted that she and two of her friends would work on test together. While one student was testing "the other two were helping." Participant #1, #2, #5, and #10 tell a comparable story. Participant #10 recounts her "friends would help [her] do the assignments and test."

Using Course Materials

During the interviews it was discovered that, during test and quizzes, students used maps, notes, formula sheets, and their textbook. Participants #2, #4, #5, #6, #7, and #9 admitted to using these materials or knew of someone who had used them. Interestingly enough, Participant #5 considered using a map for a geography exam as "lightly cheating." Participant #9 admits that she used a "book during an exam." Similarly, Participant #7 recalls that her boyfriend often used his textbook during a test. She revealed that during his tests, he had unlimited time to take a test, but even with the help of his textbook, it would "take him 2 to 3 hours" to complete a test.

Internet and Other Resources

Since the classes are online, students are resorting to other forms of cheating. The first form of cheating that they use search engines such as Google to look for answers to the test. Participant #4 mentioned that she used "Ctrl + "F" to find the answers scattered throughout the notes in the module. Participant #3 mentioned that some her friends are using the Internet and search engines such as Google to find answers to the test. This is not always the case. Participant #3 pointed out that when she tried to open a browser window it "shuts down the quiz." Participant #5 shared a related story that when she was taking quizzes and tests "…all access to the Internet and the whole computer" were locked.

The participants revealed they were aware of the cheating because they had been part of the group of students who cheated in the class by working together on tests, quizzes, projects, and assignments. Also, during casual conversation among their friends and classmates, they had discussed the matter and had admitted to participating in such a behavior. Some of the participants had witnessed other students cheating.

Paid Impersonation

Shyles (2002) describes two very important types of academic dishonesty that are important to online classes in distance education: impersonation and misrepresentation. The unique finding of the study conducted was 'paid impersonation.' We define 'paid impersonation' as one student pretending to be another student for a fee, and enrolling in and completing the course for another student. It was revealed that in high school one of the study participants took Geometry and Liberal Arts Mathematics through a virtual school that offers courses at the K-12 level. In these courses the participant was paid to impersonate another student.

How can cheating in online course be either minimized or eliminated?

There might be ways to minimize cheating in online classes but one participant felt that it was not possible. In the discussions several types of responses emerged. They covered a broad range of topics that include rules, penalties, technology, and assessment.

Rules and Regulations

After speaking to the participants, it was obvious that cheating is a relative issue. Where one person might see cheating another one might see a technicality. It was mentioned that the instructor was not specific about what is considered individual work and what is considered group work. Participants felt that one way to eliminate cheating in online classes is to have clear expectations about the course. The instructor should create work that does not force them to cheat. Another suggestion that was mentioned was to make online classes worth fewer credits/units.

Penalties

To reduce the behavior students could be subject to harsher punishments by university officials. The students felt that harsher punishment would be a viable option in reducing the behavior.

Technology

It was mentioned by the participants that the instructors should find a way to block all access to other parts of the computers and block access to the Internet. To avoid the possibility of looking back at the lesson notes, the questions should be written in a different format. If courses were offered in a hybrid manner, with a part of the class offered online and part of the class taught face-to-face, this might eliminate cheating. If this is not possible, have video chats with the students.

Assessment

If the test and quizzes are to remain online, the student should have just one attempt at the assessment. The questions within the test should be randomized. After the assessment is complete, withhold the answers until the deadline has expired. A consistent response among the participants was that test and quizzes should be in person to avoid cheating. The perception that tests and quizzes should be taken in a face-to-face manner was a very popular response among students. This is not a cure all because as one student points out "some professors don't care." Lastly, it was recommended that the instructor reveal the answers to a test or quiz after the deadline so that the answer do not get passed down to another student.

An extreme measure that the participants felt could eliminate cheating in online classes was to eliminate online classes completely but they concluded that was "unrealistic." And three participants felt that eliminating cheating in online classes is impossible because cheating is "inevitable."

Is cheating easier online or in face-to-face courses and why?

During the discussion this was a question that participants were consistently asked as a follow up question. Overwhelmingly eight of the ten participants felt that cheating was easier in online courses. One of the participants felt that it was easy to cheat in both situations and one answered with "I don't know."

Other thoughts on the topic of cheating in online courses

When asked to give their final thoughts on the matter, students felt that the amount and the type of cheating that occurs in online classes are "not too bad" and "not a serious problem." Even though it happens, they felt that it was not worth removing online classes. Students cheat regardless of whether they are in a face-to-face class or an online class, therefore it was not worth eliminating the convenience of having classes online. Overall, students liked online classes and stated that they will continue taking them, especially those students who live off-campus and who travel back home during the summer months.

Conclusion

The findings of this study show that students and their friends are cheating in online classes. They are collaborating with another on tests, quizzes, assignments, and projects. They are also using their notes, textbooks, and the Internet to look for answers. A unique finding to this study was paid impersonation. In this particular case a student was paid to take two high school mathematics classes offered by a virtual school for another student. It is worth investigating if this phenomenon of paid impersonation is happening on a large scale.

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