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Editorial

## The Politics of Progress

Donald G. Perrin

In these times of economic distress, jobs are scarce, and unemployed workers (who can afford it) are entering college and university programs to upgrade their skills and prepare themselves for new professions. Many lost jobs will never be replaced because of changes wrought by technology and competition from emerging economies such as China. These changes provide opportunities for entrepreneurs, but spell death to the world as we knew it. The economics have changed, the politics have changed, and what made us successful yesterday may fail us now or in the world of tomorrow. Never has education been more important to facilitate positive change and growth. Yet education too has fallen victim to scarcity of resources.

For the past century, technology has enabled successful educational interventions into third world countries. The phonograph, slides, filmstrips, motion pictures, television, and Negroponte's [laptop computer](#) have enabled education of large populations with clinic-like efficiency. Yet we in the United States hesitate to make necessary changes because of legal barriers, opposition from unions, and fear that budget saving approaches will reduce future budgets (as they should!). The net result is that educational programs in emerging nations have advanced faster than the United States because they are not hamstrung by legacy facilities, equipment, methodologies, and political battles. The result is a decline in quality of education in the United States relative to other industrial nations and emerging economies in south-east Asia, Pacific Islands, and elsewhere.

To be a leader in innovation, we must take risks. We may need to dismantle existing structures and build new ones. We will be required to coordinate efforts among educators to plan, build, and test new educational tools and strategies to meet the needs of the twenty-first century. We must recognize errors and ambiguities in existing system and initiate changes and replace failed solutions. For a decade, U.S. schools have attempted to improve learning through standardized tests and rewarding schools and teachers who increase test scores. The result has been narrowing of curriculum to teach the tests, and cheating to enhance test scores. Attempts to tie teacher salaries to test results are stymied by lack of confidence in the testing instruments themselves:

... the teacher's union ... has fought efforts to make student test scores any part of evaluations. United-Teachers-Los Angeles leaders say test scores are too unreliable and narrowly focused to use for high stakes personnel decisions.

*LA Times LATEXTRA p.1 November 1, 2011.*

Perhaps in the next decade we should look at ways for schools to compete against social media and commercial entertainment with motivating learning experiences that incorporate relevant curriculum and interactive media?



**Editor's Note:** This is a study of different kinds of interaction that finds students place a lower than expected value on student-student interactions. Exploration of this topic provides statistical verification and a rationale to guide those who design and deliver distance learning.

## **Transactional Distance Theory: Should It Be Revised To Exclude Student-Student Interactions?**

**M.O. Thirunarayanan, Elizabeth C. Ferris,  
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USA**

### **Abstract**

A survey was conducted to determine university students' opinions about the three kinds of interactions, student-course instructor, student-course content, and student-student, which are considered to be important and even essential according to transactional distance theory. The survey also included an item about the fourth kind of interaction mentioned in the literature, which is learner-interface interaction. One hundred and seventy students who were enrolled in different sections of online courses participated in the study and completed a survey during the second half of the semester, after they have had opportunities to interact with the instructor, course website and with other students enrolled in the course. Both undergraduate and graduate students who participated in this study did not want student-student interactions to be mandatory in online courses. This and other findings of this study indicate that there is a need to revise transactional distance theory to exclude student-student interactions. Statistically significant responses were provided by undergraduate and graduate students on an item that declared that interacting with other students in was the best way to learn the course content in an online course. A statistically significant (Pearson Chi Square Value = 4.802, asymptotic 2-sided significance  $p=.028$ ; Fisher's Exact Test exact 2-sided significance  $p=.042$ ) proportion of graduate students disagreed with their undergraduate counterparts on this item.

### **Introduction**

A theory of distance education was proposed by Moore (1972) which he labeled the theory of transactional distance (Moore, 1980). A few years later, Moore (1991) acknowledges this timeline in an editorial in *The American Journal of Distance Education*.

Moore (1989) stated that "distance educators need to agree on the distinctions between three types of interaction, which I labeled learner-content interaction, learner-instructor interaction, and learner-learner interaction."

He (Moore, 1989) also explained the three types of interactions that he proposed:

The first type of interaction is interaction between the learner and the content or subject of study. This is a defining characteristic of education. Without it there cannot be education, since it is the process of intellectually interacting with content that results in changes in the learner's understanding, the learner's perspective, or the cognitive structures of the learner's mind.

The second type of interaction (regarded as essential by many educators, and as highly desirable by many learners) is interaction between the learner and the expert who prepared the subject material, or some other expert acting as instructor.

It is the third form of interaction, a new dimension of distance education, that will be a challenge to our thinking and practice in the 1990s. This is inter-learner interaction

between one learner and other learners, alone or in group settings, with or without the real-time presence of an instructor.

However, learner-learner interaction among members of a class or other group is sometimes an extremely valuable resource for learning, and is sometimes even essential.

Hillman, Willis, and Gunawardena (1994) proposed a fourth type of interaction, which they labeled the 'learner-interface' interaction. This type of interaction is obviously important because of the increased use of and reliance on computer-based hardware and software tools in distance education. While the interactions between learners and the computer interface is not the primary focus of this research study, the survey that was used to collect data for this study has at least one item regarding this type of interface.

The purpose of this study is to determine which of the three types of interactions in distance education courses that were proposed by Moore (1989) do students themselves think are more important than the other types of interactions. The study will especially focus on the importance students attribute to interactions with other students, or as Moore (1989) calls it, 'learner-learner' interactions.

### **A Focused Review of the Literature on Student-Student Interactions**

Chickering and Gamson (1987) reviewed the research on teaching and learning and developed seven principles that can be incorporated into face-to-face teaching practices at the university level. One of the seven principles recognizes the importance of student-faculty interaction (Chickering and Gamson, 1987). The two authors (Chickering and Gamson, 1987) also recognized the importance of student-student interaction in f2f classes when they stated that "Sharing one's own ideas and responding to others' reactions sharpens thinking and deepens understanding." Chickering and Ehrmann (1996) discussed the different ways modern tools of technology can help implement the seven principles, and stated:

The increased opportunities for interaction with faculty noted above apply equally to communication with fellow students. Study groups, collaborative learning, group problem solving, and discussion of assignments can all be dramatically strengthened through communication tools that facilitate such activity.

Holden and Westfall (2006) make a distinction between distance and e-learning while stressing the importance of interaction:

Generally speaking then, distance learning refers to all forms of learning at a distance, encompassing the full spectrum of instructional media—including non-electronic media whereas e-learning generally refers to those learning activities that employ "electronic" technologies, and distance education refers specifically to learning activities within a K-12, higher education, or professional continuing education environments where interaction is an integral component (p. 9).

Many authors have supported student-student interactions in distance education courses. Studies have shown that students miss interacting with other students in online courses (Knowles and Kerkman, 2007). A report published by the Institute for Higher Education Policy (2000) considers interactions with others students as one of the benchmarks of quality in distance education programs. Levin, Waddoups, Levin, and Buell (2001) identified five dimensions that make effective learning possible in online environments, and they labeled one of these dimensions as "rich environments for student-to-student interaction." Rovai and Barnum (2003) found that active interaction in a course was a much better predictor of perceived learning among students than passive interactions.

In addition to individual studies that have found student-student interactions to be important elements of distance education courses, there are also a few studies that summarize the findings of a number of research studies scattered throughout the literature. These studies are known as meta-analyses.

A meta-analysis by Bernard et al (2009) showed that student-student interaction was indeed an important factor as far as student achievement was concerned. The authors of this meta-analysis initially reviewed the abstracts of more than 6000 papers, and then reviewed 1034 papers before finally including only 74 studies in their meta-analysis (Bernard et al, 2009)). The studies that were included in the meta-analysis were those that were conducted during the years from 1985 until the year 2006 and those that also met the several other criteria specified by the authors (Bernard et al, 2009).

Lou, Bernard, and Abrami, (2006) also conducted a meta-analysis that analyzed the findings of 103 selected studies. One of the findings of this meta-analytical study was that technology-mediated discussions among students that are collaborative in nature, coupled with opportunities for meeting their peers help to make student-student interactions more effective (Lou, Bernard, and Abrami, 2006). Collaborative student-student interaction using asynchronous communication tools was one of the four suggestions offered by Lou, Bernard, and Abrami (2006) that do help optimize the learning that takes place.

A focused review of both individual studies and the findings of two meta-analyses show that student-student interactions are considered by many to be important in distance education courses. However, there are also studies that have raised some doubts about the value of student-student interactions in courses offered at a distance. For example, one of the research questions in Muirhead's (1999) dissertation, which was not included in the meta-analysis (Bernard et al, 2009), was what are the graduate student's attitudes toward interactivity (communication, participation, and feedback) with other online students (p. 3.).

His findings (Muirhead, 1999) indicate that 47.3 percent of students in his study considered that because students did not post their comments in a timely manner, such reductions in postings resulted in weakening the overall quality of the interactions or discussions with other students.

More recently, a study by Kellogg and Smith (2009) also did not find positive outcomes related to student-student interactions. In the course that they studied, they report that 49 or 64.5 percent of the 76 responses that they analyzed indicated that students learned the least by interacting with other students. Kellogg and Smith (2009) concluded the qualitative evidence of the data analysis course speaks clearly to the perceived value of student-to-student interaction. Among those who reference peer interactions, the majority of the working adult students in this course reported learning little from interactions with their peers (p. 447).

This focused review has shown that while many consider student-student interactions to be quite important in online courses, some research studies have reported results that are in disagreement with the effectiveness of such interactions in online courses. The survey used in this study has items and questions that are designed to determine what students who are enrolled in online courses think about student-student interactions, and how they value such interactions in comparison to the other types of interactions.

## **Study Methods**

### ***Description of the Sample of Study Participants***

The Institutional Review Board (IRB) at the university where this study was conducted approved the application to conduct the study and to gather data from students enrolled in courses in the university. With such approval in hand, one of the authors of this study approached a faculty

member who taught online courses in the discipline of psychology at the undergraduate and graduate levels, and sought her permission to administer an online survey to students enrolled in her courses. The course instructor graciously allowed one of the researchers, who also worked in an office of online learning at the university, to place the online survey in each of the five online courses that she taught. The instructor even decided to offer extra credit to all students who completed the online survey.

The survey was placed inside each course in Moodle, the course management system (CMS) that was used by the instructor to teach the course. The surveys were initially kept open for a period of eleven days. One of the researchers of the study requested that the course instructor send messages to her students asking them to complete the survey. A similar request was made a week later. In response to these requests, the course instructor sent one message to the students regarding the survey.

During this period of time one of the students sent the first author of this paper an email message stating that she did not wish to participate in the study and gave reasons as to why she decided not to participate in the study. Permission was obtained from the student and the university's IRB to use the content of the email message as additional data for this study without revealing the identity of the student. The comments made by the student in her email message will be quoted in different parts of this paper.

At the end of the eleven-day period only 109 of the 229 students enrolled in the courses had responded to the survey. A decision was made to keep the survey open for eleven more days. The instructor was requested again to send another message to her students encouraging them to participate in the survey when the survey was reopened and sent yet another message the following week. This time the instructor sent two messages to her students regarding the study. As result of keeping the survey open for an extra eleven-day period and also probably because of the two additional messages from the instructor, a total of 170 students participated in the study. Data from the four sections of the courses, one of which was cross-listed as both an undergraduate and a graduate course, bringing the total number of courses she taught to five, were compiled and analyzed.

Of the 170 students who participated in the study, 28 or 16.5 percent were males and the other 142 or 83.5 percent were females. There were more undergraduate students (139 or 81.8%) who participated in the study than graduate students (31 or 18.2%). Hispanics were the largest ethnic group in the sample, with 118 or 69.4 percent of the participants belonging to this group. This is not surprising because the university where the study was conducted is known as a Hispanic Serving Institution (HSI) and is located in an urban metropolitan area in a large and diverse city in the southeastern part of the United States. Europeans and Caribbean were the next largest ethnic groups represented in the study, with thirteen students each (7.6%). Africans were the next largest group (12 or 7.1%), followed by multi-ethnic and other groups (5 each, 2.9%). Four (2.4%) Asians also participated in the study.

One hundred and one students (59.4%) preferred to take courses fully online, while forty three (25.3%) preferred a hybrid or partially online format. Twenty-six students (15.3%) preferred to take courses that were offered completely in face-to-face settings. One hundred and seven (62.9%) of the participants considered themselves to be 'intermediate' as far as their level of computer expertise was concerned, and fifty-eight (34.1%) considered themselves to be experts. Only five (2.9%) reported that they considered themselves to be beginners. More than a third of the participants (60 - 35.3%) responded that were not at all familiar with the course management system (CMS). Eleven (6.5%) were 'somewhat unfamiliar,' fifty-two (30.6%) were 'somewhat familiar,' and the rest (47 - 27.6%) were 'very familiar' with the course management system.

## **Findings of the Study and Discussion of the Findings**

The data collected using an online survey were obtained from the course management system and transferred to the computer of the principal investigator of this study, who used the data to compute frequencies. The frequencies data definitely show a trend, and this will be discussed in the following section. Statistically significant differences were also found on responses to one of the items. This will also be reported and discussed later in the paper.

### ***The Computer Interface is Important***

#### **Findings**

In response to an item on the survey, both undergraduate and graduate students considered interaction with the computer interface in an online course to be important. Eleven (7.9%) considered interaction with the computer interface to be most important while one hundred and ten (79.1%) indicated that such interaction was indeed important. As far as graduate students were concerned, the corresponding numbers were eight (most important = 25.8%) and seventeen (important = 54.8%).

#### **Discussion of the Findings**

It is the computer interface that makes it either easy or difficult to navigate through the course web site and find the course content or interact with the instructor or find out what projects are due and when, and take care of other essential online course related activities and assignments. If the computer interface is poorly designed, students in online courses will find it hard to keep up with the course requirements.

### ***Using Chat Rooms Do Add Value and Bulletin Boards Do Make Online Courses More Interesting***

#### **Findings**

According to the data shown in Table 1, responses from both undergraduate and graduate students show that overall both groups of students considered that using bulletin boards makes online courses more interesting and that using chat rooms do add value to online courses. The percentages of students who either agreed or strongly agreed that chat rooms add value and bulletin boards make online courses more interesting, as well as the percentages of those who either disagreed or strongly disagreed, are shown in Table 1.

#### **Discussion of the Findings**

The two questions, one about chat rooms and the other about bulletin boards, were asked without any reference to interactions with other students who were enrolled in the course. The manner in which the course instructor moderated the chat room and bulletin board discussions could also have influenced participants' responses to the two questions. If the course instructor managed the chat rooms and bulletin board discussion sessions well, the use of these communication tools would certainly make them valuable additions to the course.

### ***Support for Student-Student Interactions***

#### **Findings**

Larger percentages of both undergraduate and graduate students either disagreed or strongly disagreed that student-student interactions in online courses were more social and less related to content. They also either disagreed or strongly disagreed that interacting with other students in online courses did not help them learn the content covered in the course. Both groups of students also either disagreed or strongly disagreed that the interactions with other students were distracting and not helpful. Data that support these findings are shown in greater detail in Table 2.

**Table 1**  
**Chat rooms add value and discussion boards**  
**make online courses more interesting**

Survey Item or Question	Educational Level	Strongly Agree	Agree	Disagree	Strongly Disagree	Total
Interactions with other students in online courses using chat rooms adds value to online courses	Undergraduate	24 (17.3%)	73 (52.5%)	33 (23.7%)	9 (6.5%)	139 (100%)
	Graduate	2 (6.5%)	19 (61.3%)	5 (16.1%)	5 (16.1%)	31 (100%)
Interactions with other students in online courses using discussion boards makes online courses more interesting	Undergraduate	34 (24.5%)	78 (56.1%)	20 (14.4%)	7 (5.0%)	139 (100%)
	Graduate	9 (29.0%)	15 (48.4%)	4 (12.9%)	3 (9.7%)	31 (100%)

**Table 2**  
**Student-Student interactions were more social in nature**  
**and did not help learn the course content**

Survey Item or Question	Educational Level	Strongly Agree	Agree	Disagree	Strongly Disagree	Total
Interactions with other students in online courses were more social in nature than content related	Undergraduate	11 (7.9%)	42 (30.2%)	65 (46.8%)	21 (15.1%)	139 (100%)
	Graduate	3 (9.7%)	5 (16.1%)	18 (58.1%)	5 (16.1%)	31 (100%)
Interactions with other students in online courses did not help me learn the course content	Undergraduate	20 (14.4%)	33 (23.7%)	70 (50.4%)	16 (11.5%)	139 (100%)
	Graduate	1 (3.2%)	13 (41.9%)	12 (38.7%)	5 (16.1%)	31 (100%)

### Discussion of the Findings

The questions about student-student interactions, responses to which were reported above, were asked independently and not in conjunction with the other types of interactions. This could explain why students responded favorably to questions about such interactions. Data reported later on in the paper shows that when the survey participants were asked to choose between different types of interactions such as interactions with the course instructor, course content, course web site, and other students. In most instances, it was student-student interactions that were selected by smaller percentages of survey participants. It is also possible that the role of the instructor as the moderator of the interactions could have influenced students' thinking about their interactions with other students in the course.

## ***Differences between Undergraduate and Graduate Students Regarding their Perceptions of Student-Student Interactions***

### **Findings**

Undergraduate and graduate students differed in their responses regarding the types of interactions that gave them a sense of belonging in online courses. More undergraduate students indicated that they felt a sense of belonging in online courses in which they could interact with their classmates. This choice was followed by interactions with the instructor of the course, course content and course website, in that order. In the case of graduate students, interactions with the instructor and the content were selected by a majority of participants and were tied as the two most important types of interactions that created a sense of belonging in the course. A slightly smaller percentage of graduate students selected interactions with other students who were also enrolled in their online course, and only one graduate student responded that he or she derived a sense of belonging in the course as a result of interactions with the website. This is shown in Table 3.

**Table 3**  
**Differences between graduate and undergraduate students:**  
**Sense of belonging in online courses**

<b>Survey Item or Question</b>	<b>Educational Level</b>	<b>Other Students</b>	<b>Course Content</b>	<b>Course Instructor</b>	<b>Course Website</b>	<b>Total</b>
I feel a sense of belonging in online courses in which there are many opportunities to interact with:	Undergraduate	49 (35.3%)	39 (28.1%)	44 (31.7%)	7 (5.0%)	139 (100%)
	Graduate	8 (25.8%)	11 (35.5%)	11 (35.5%)	1 (3.2%)	31 (100%)

Differences were also observed between the responses offered by undergraduate and graduate students on a survey item about the importance of interacting with other students in online courses. Seventy-nine (56.8%) of the undergraduate students who participated in the study reported that such interactions were important, while six (4.3%) thought that student-student interactions were very important. More graduate students considered student-student interactions to be not important (15 or 48.4%) or least important (5 or 16.1%). This is shown in Table 4.

On the survey item that asked respondents how important student-student interactions was for purposes of learning the content covered in an online course, less than fifty percent combined of the undergraduates considered such interactions to be not important (42 or 30.2%) or least important (22 or 15.8%). On the other hand, more than sixty percent of the graduate students considered such interactions to be not important (10 or 32.3%) or least important (9 or 29.0%) for learning the content covered in the course. This is also shown in Table 4.

Differences in responses between undergraduate and graduate students were also observed on another item. Larger percentages of undergraduate students either agreed (73 or 52.5%) or strongly agreed (15 or 10.8%) that the best way to learn the content in online courses is by interacting with other students who are also enrolled in the course. Graduate students either disagreed (15 or 48.4%) or strongly disagreed (3 or 9.7%) with the idea that interacting with other students is the best way to learn the content in the course, as the data in Table 5 shows. This difference between graduate and undergraduate students was even statistically significant, as shown in Table 6.

**Table 4**  
**Differences between graduate and undergraduate students:**  
**Importance of interacting with other students in online courses**  
**and interacting for purposes of learning course content**

Survey Item or Question	Educational Level	Most Important	Important	Not Important	Least Important	Total
In an online course, interaction with other students in the course is:	Undergraduate	6 (4.3%)	79 (56.8%)	33 (23.7%)	21 (15.1%)	139 (100%)
	Graduate	2 (6.5%)	9 (29.0%)	15 (48.4%)	5 (16.1%)	31 (100%)
For purposes of learning the content in an online course, interacting with other students in the course is:	Undergraduate	8 (5.8%)	67 (48.2%)	42 (30.2%)	22 (15.8%)	139 (100%)
	Graduate	1 (3.2%)	11 (35.5%)	10 (32.3%)	9 (29.0%)	31 (100%)

**Table 5**  
**Differences between graduate and undergraduate students:**  
**The best way to learn course content is by interacting with other students**  
**in the course**

Survey Item or Question	Educational Level	Strongly Agree	Agree	Disagree	Strongly Disagree	Total
The best way to learn the content in an online course is by interacting with other students in the course is:	Undergraduate	15 (10.8%)	73 (52.5%)	41 (29.5%)	10 (7.2%)	139 (100%)
	Graduate	2 (6.5%)	11 (35.5%)	15 (48.4%)	3 (9.7%)	31 (100%)

**Table 6**  
**Cross tabulations showing statistically significant differences between**  
**graduate and undergraduate students: the best way to learn course content is by**  
**interacting with other students in the course**

Survey Item or Question	Educational Level	Agreement (Strongly Agree and Agree combined)	Disagreement (Disagree and Strongly Disagree combined)	Total
The best way to learn the content in an online course is by interacting with other students in the course is:	Undergraduate	88 (63.3%)	51 (36.7%)	139 (100%)
	Graduate	13 (41.9%)	18 (58.1%)	31 (100%)

Pearson Chi-Square Value = 4.802 – Asymptotic 2-Sided Significance = .028  
 Fisher's Exact Test – Exact 2-Sided Significance = .042

## Discussion of the Findings

Undergraduate students felt that interactions with other students in the course were more important for their sense of belonging. Graduate students considered interactions with other students to be less important for their sense of belonging in an online course than interacting with the course content and the course instructor. Graduate students also did not consider student-student interactions by itself to be important in online courses. Larger proportions of graduate students also did not consider interactions with other students to be important for learning the course content. On one survey item, the difference was statistically significant. This could be because graduate students are perhaps more motivated and self-directed than undergraduate students. Graduate students are also more mature and probably prefer to learn on their own.

## ***Student Satisfaction, Success, and Confidence in Online Courses***

### **Findings**

As the data in Table 7 shows, larger percentages of both undergraduate and graduate students reported that they felt more satisfied in online courses that offered opportunities for interactions with the course content and the course instructor. Interactions with other students and interactions with the course web site were selected by much smaller percentages of survey respondents at both the undergraduate and graduate levels. A similar pattern was observed in responses to the survey item regarding feeling successful in online courses. Much larger percentages of undergraduate and graduate students considered that they felt successful in online courses in which they could interact with the course content and the instructor. Smaller percentages of both undergraduate and graduate students selected the other two options of interacting with other students in the course and with the course website. For students who participated in this survey, confidence in the course also stemmed more from interactions with the instructor or content, and less from interactions with their peers or with the course website.

**Table 7**  
**Student satisfaction, success, and confidence in online courses**

Survey Item or Question	Educational Level	Other Students	Course Content	Course Instructor	Course Website	Total
I feel more satisfied with online courses in which there are many opportunities to interact with:	Undergraduate	14 (10.1%)	57 (41.0%)	57 (41.0%)	11 (7.9%)	139 (100%)
	Graduate	1 (3.2%)	16 (51.6%)	11 (35.5%)	3 (9.7%)	31 (100%)
I feel more successful in online courses in which there are many opportunities to interact with:	Undergraduate	14 (10.1%)	62 (44.6%)	52 (37.4%)	11 (7.9%)	139 (100%)
	Graduate	1 (3.2%)	11 (51.6%)	10 (35.5%)	9 (9.7%)	31 (100%)
I feel more confident in online courses in which there are many opportunities to interact with:	Undergraduate	21 (15.1%)	48 (34.5%)	60 (43.2%)	10 (7.2%)	139 (100%)
	Graduate	1 (3.2%)	14 (45.2%)	14 (45.2%)	2 (6.5%)	31 (100%)

## Discussion of the Findings

Interacting with other students in the course did not seem to be important for feeling a sense of confidence in the course, or feeling successful in the course. This was true for both undergraduate and graduate students. As noted earlier, when asked to choose between the different kinds of interactions in the course, students clearly did not think that student-student interactions was as important as interactions with the course content or the course instructor. As far as the undergraduate students are concerned, the findings of this study regarding the importance of contact with the course instructor for feeling satisfied with the course is supported by the earlier findings of Bolliger and Martindale (2004) and Johnston, Killion, and Oomen (2005).

### ***Should Student-Student Interactions be Mandatory in Online Courses?***

#### **Findings**

Twelve graduate students (38.7%) disagreed and eleven (35.5%) of the graduate students strongly disagreed that interactions with other students should be mandatory in online courses. Fifty-eight (41.7%) percent of the undergraduate students disagreed and twenty-one (5.1%) strongly disagreed that interactions with other students in online courses should be mandatory. Table 8 contains more detailed data of students' responses on this topic.

**Table 8**  
**Interactions with other students in online courses should be mandatory**

Survey Item or Question	Educational Level	Strongly Agree	Agree	Disagree	Strongly Disagree	Total
Interactions with other students in online courses should be mandatory	Undergraduate	11 (7.9%)	49 (35.3%)	58 (41.7%)	21 (15.1%)	139 (100%)
	Graduate	2 (6.5%)	6 (19.4%)	12 (38.7%)	11 (35.5%)	31 (100%)

Similar sentiments were verbalized in the email message that was sent by a graduate student to the first author of this study (personal communication):

I tried to interact with other classmates online at first, but really disliked it... It would be one thing if I had already met them in person, but to email/message people online that I've never met and not get a reply for days if at all seems like a waste of time to me. Online communication and technology can be a very useful TOOL, but I don't think it should ever be a REPLACEMENT for actual human interaction.

## Discussion of the Findings

The data clearly show that both undergraduate and graduate students responded that student-student interactions should not be mandatory in online courses. The study findings show that neither the undergraduate students nor the graduate students who participated in this study considered student-student interactions to be important. This and other findings reported in this paper do certainly raise questions about the importance attributed to learner-learner or student-student interactions in Moore's (1980) theory of transactional distance.

### ***Current Trends in Electronic Communications and Networking in Society at Large: A Possible Explanation for the Findings of the Study***

The phenomenon of social networking as we know it today was practically non-existent during the time when Moore (1972; 1980) proposed his theory. Email is now being replaced with other

tools for communicating and networking, such as chat, IR, and texting. Nowadays, there are also several tools and services such as Twitter and Facebook that make it easier for people to connect, communicate, and network with each other.

The sight of students checking their cell phones or smartphones to see if they have any text messages or "tweets" or "status updates" waiting for their attention and action when they are walking in and out of face-to-face (f2f) classes and oftentimes even during classes is increasingly becoming very common in colleges and universities across the United States.

Many current college age students also consider email to be too slow and prefer the instantaneous method of texting and chatting to communicate with each other. This suggests that asynchronous communication with peers in an online course may be too slow for today's learners who expect and perhaps even demand immediate responses to the questions or comments that they post on bulletin boards.

Students of today also have 24 /7 access to information on the Web and tools and services like Google and Wikipedia cater to students' demand for instant information and answers to questions. Why should students log into a closed learning management system and post something and wait any length of time to receive a response from a fellow student that they may or may not know? Also, when they can get the information that they are seeking without having to rely on others, why should they collaborate with others to construct that information? It is perhaps because of these reasons that today's online students do not value interactions with other students in online courses as much as students in the past?

### **Limitations and Suggestions for Future Research**

Because the survey was conducted in a university that is a Hispanic Serving Institution, the majority of the participants in this study were of Hispanic heritage. Therefore the findings of this study may not be applicable to members of other ethnic groups. Larger percentages of the sample of participants are undergraduate than graduate students. Many more females participated in this study than did males. In spite of these potential limitations, the findings of this study do show without any doubts that student-student interactions are not as valued as much as other kinds of interactions by students enrolled in online.

The findings of this study need to be replicated by other studies using other research methods and using samples drawn from other ethnic groups. Larger proportions of males and graduate students should also be included in such studies. Other research studies should also focus on research questions that this study did not ask or answer.

### **Conclusions**

The findings of this study clearly show that students who participated in the study and responded to questions on a survey and who were also enrolled in different sections of online courses did not consider student-student interactions in online courses to be very important. There were also significant differences between graduate and undergraduate students regarding the importance of student-student interaction for learning the content covered in online courses. Although student-student interactions were considered by study participants to be of value by itself, such interactions were considered to be of less importance when compared to the other types of interactions, such as interactions with the course content and the course instructor. When asked if student-student should be made mandatory in online courses, majorities of both undergraduate and graduate students did not want such interactions to be mandatory. Such a response speaks volumes about the perceived lack of importance of student-student interactions in courses that are offered online. It must be mentioned that the survey was conducted towards the end of the semester, and students who participated in the study had already experienced interactions with

other students, the course content, the course instructor, and the course web site. The students who completed the survey were in a position to provide experience-based responses to questions and items on the survey.

The graduate student who sent an email message had this to say about interactions with other students (personal communication):

I wanted the interaction, discussion and networking that comes with taking classes in person. I don't consider it "interaction" to comment on people's posts for the week, despite the efforts to make it interactive.

The findings of this study have clearly demonstrated that student-student interactions are not valued as much as other kinds of interactions by students, and especially by graduate students. Such findings provide empirical evidence for the need to revise Moore's (1980) theory of transactional distance to either exclude or at least minimize the importance of student-student interactions in online courses.

Perhaps there is some overlap between student-student interactions and student-instructor interactions. In courses in which the course instructor moderates the chat room and bulletin board discussions very actively, students enrolled in the course could consider interactions with other students to be overlapping with interactions with their course instructor. The question "Do students value interactions with other students more if the course instructor moderates discussions more actively?" needs to be studied.

These findings have many implications for the design and delivery of online courses. First and foremost is that the course content should be made readily available and accessible to all students in online courses. Interacting with the course content is what students think makes them learn the content the most. Such interactions should be built throughout the course. The course content should be made easily accessible to students in online courses, thus promoting the possibility of greater interaction with the content.

Second, the course instructor should interact with the students as much as possible. Interaction with the online course instructor was reported as being important in response to many questions on the survey. Such interactions should be made mandatory in courses. A portion of the course grades should be based on interactions with the course instructor.

Last but not the least, opportunities for interactions with other students may need to be reconsidered when designing online courses. The results of this study clearly show that such interactions should not be made mandatory. Such interactions could be made optional in online courses.

Finally, the theory of transactional distance needs to be looked at more carefully and the importance of student-student interactions be more thoroughly reviewed. This study and a few others mentioned earlier in this paper have provided the necessary evidence to consider the possibility of even excluding student-student interactions from transactional distance theory.

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**Editor's Note:** A large number of islands in the South Pacific are supported by the University of the South Pacific in Fiji. Distance learning via television, and more recently the Internet, has expanded educational opportunities to thousands of learners. However, the question continues to be asked regarding students preference for face-to-face, technology assisted, and technology dependent learning.

## **Learners' Preference for Instructional Delivery Mode: A Case Study from the University of South Pacific (USP)**

**Shikha Raturi, Robert Hogan, Konai Helu Thaman**  
Fiji Islands

### **Abstract**

The study focused on learners' preference for instructional delivery modes in the three courses at graduate level in the University of the South Pacific. Each of the three courses were offered via a different instructional delivery mode namely; face-to-face (0-10% technology dependent), blended (30-79% technology dependent) and online (80+% technology dependent). The study utilized a mixed method approach incorporating both quantitative and qualitative aspects to provide a complete picture by asking one simple question through a survey conducted online as well as face-to-face depending on learners' preference. The learners' satisfaction towards the instructional delivery mode reveals that elearning provided a satisfying experience. It indicates that a virtual learning environment is a plausible option in the South Pacific region. An overwhelming majority of learners preferred instructional delivery modes that made use of a virtual learning environment (VLE). Blended followed by elearning followed by face-to-face were the preferred choice in that order.

**Keywords:** Virtual Learning Environment (VLE), Distance Education (DE), elearning, blended-mode

### **Introduction**

The University of the South Pacific (USP) is a regional university extending throughout the region of South Pacific with population sparsely populated over 33 million squares of the ocean. The learners in the three courses come not only from USP's twelve member countries (Cook Islands, Fiji, Kiribati, Marshall Islands, Nauru, Niue, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu and Vanuatu) but the others Pacific Island Countries (PICs) in the region too, making education accessible to many students. USP started as a traditional University in 1968. The education accessibility need around the region prompted USP to offer six courses through the print based Distance and Flexible Learning (DFL) mode in 1971. The print based DFL mode grew to the extent that by 2006 it was offering 340 courses. The enrollment in the print based DFL mode grew rapidly, and soon more than half of the students enrolled at USP were doing either some or all of their courses through DFL for various reasons. Advanced communication technologies through USPNet made DFL a feasible and popular option across the vast expanses of the Pacific Ocean. However, one has to be mindful of the transactional distance (Moore, 1983, 1997) that is created by DFL (or DE). Transactional distance is the distance between learner and teacher that is not merely geographic but educational and psychological as well; creating distance in the relationship between two partners in the educational enterprise (Moore, 1983, pg.185).

The changing role of technology, along with the development of the World Wide Web has transformed learning environments in higher education. Thus, in addition to the traditional face-to-face and print based DFL courses, USP also offers courses in blended and fully online modes. The number of courses being offered through blended and online is relatively small as compared to face-to-face and print based DFL mode. The study is first of its kind in PICs in the sense that it investigates the three instructional delivery modes simultaneously while creating a base for future studies in this area that would complement the existing literature.

## Background and Context

The impact of globalization has led to fierce competition among universities to offer courses in other countries. It requires universities to be versatile and evolve in order to keep up with the current trends in pedagogical practices that often use technology. It is therefore, crucial to understand the preferred mode of instructional delivery based on the changing needs of today's learner. The role of Information and Communication Technologies (ICT) as well as Computer and Communication Technologies (CCT) and their integration in higher education have transformed the higher education scene at USP and PICs at large (Hammond, 2000; Bakalevu, 2005; Johanson-Fua, 2005; Marsh and Hogan, 2005; Nobobo-Baba, 2008; Sharma, 2008 et al) resulting in an appreciation of the benefits of elearning (Owston et.al, 2008; Hogan, 2009). The advancement in technology and changing needs of learners have played a major role in the transformation in distance education. The models of Distance Education and Associated Delivery Technologies as given by Taylor (1995) have given rise to the fifth generation of Flexible Learning Model. The fifth generation model incorporates the use of Interactive multimedia (IMM) and Computer mediated communications (CMC) such as emails, CoSy, etc. The characteristics of delivery technologies include flexibility in terms of time, place and pace of study, an array of highly refined materials and advanced interactive delivery.

Previous studies show that computer mediated courses promote student centered learning (Roblyer and Edwards, 2000, Taylor 1995; Davies and Graff, 2005) and are as good as traditional learning environments (Campbell et al, 2008, Scoville and Bushirk, 2007). Thus, blended and elearning instructional delivery modes are now becoming options of not just convenience but perhaps even necessity all over the world. Therefore, it is no surprise that the Pacific has also moved from the traditional chalk and board routine of the classroom, to integrating technology in learning and teaching methods at various levels, to the extent of creating fully online learning environments in higher education. The learners' satisfaction and preference are crucial for considerations in order for any institution to integrate and implement technology in its delivery modes.

At USP, the use of 'chalk and talk' was practiced commonly in the traditional style of learning and teaching (Sharma, 2008) just like in the rest of the world. With the advent of technology, academics in this region made use of overhead projectors, white boards, audio-video tapes, eventually moving on to more sophisticated PowerPoint presentations with simulations. USP adopted its own very basic system that one may compare with a much simplified version of the Course Management System (CMS)/ Learning Management System (LMS) called 'ClassShares'. ClassShares is a space on the USP Network where lecturers could make files available to their students and students can access these files that may include lectures, tutorial exercises, PowerPoints, exam guidelines, and notices.

ClassShares is a purely one-way system with no way for students to contribute or respond online. ClassShares have been used by the majority of academics and students but they are now being phased out as indicated by the rise in number of courses currently making use of Moodle (110 courses in semester 1, 2009 to 199 course in semester 1, 2010). During its experimentation with ClassShares (Appendix A), USP utilized WebCT as the LMS for a number of years which was then replaced with Moodle (Appendix B) in 2006. Over the years, the varied use of Moodle has given rise to three different learning environments (Allen an Seaman, 2003, 2007) namely face-to-face (0-10% technology dependent), blended (30-79% technology dependent) and online (80+% technology dependent). Studies have indicated that the print based DFL mode has various issues such as success rates, drop-outs, lack of mentoring/ guidance, isolation due to ineffective communication, course structure and assignment turn-around time, gender specific struggle etc (Prasad, 1988; Lal, 1989; Tuimaleali'ifano, 1994; Hola, 1995; Bolabola and Wah, 1995; Baba, 1997; Thaman, 2001; Marsh & Hogan, 2005; Nabobo-Baba, 2008; Sharma, 2008; Hogan, 2009).

This may be an ideal time to explore if use of technology could help make the DFL sustainable and successful. Thus, it was felt appropriate to investigate what is the most preferred mode of instructional delivery amongst a group of graduate level students in School of Education as a case study.

## Research Question

The objective of this research was to gauge the preferred mode of instructional delivery among graduate learner in School of Education, thus the research question was:

- What is the preferred instructional delivery mode for learners enrolled in face-to-face, blended and online courses and what are the reasons for their preferences?

## Methodology

A case-study usually helps to give in-depth information and understanding of a field of study. In this case, USP was a logical choice to investigate different instructional delivery modes since it is the oldest and largest regional university serving twelve countries in the region. There has been no such comparative study of the three instructional delivery modes (done simultaneously) at USP prior to this study. The study utilized a mixed method approach incorporating both quantitative and qualitative aspects to provide a complete picture by asking one simple question through a survey conducted online as well as face-to-face depending on learners' preference.

In the current climate of globalization and competition within the country as well as globally, SP is currently standing at the junction where it needs to make decisions on ways to increase as well as sustain current enrollment and also provide students in PICs what suits them in terms of instructional delivery modes.

## Sample

Three groups of graduate level students who were studying courses using three different instructional delivery modes were selected. The courses were either part of the PG certificate, diploma or degree program meant for education professionals. The courses in this study were labeled as EDf2f (Education courses via face-to-face mode), EDBlen (Education course via Blended mode) and EDElearn (Education course via Elearning mode); 'f2f', 'Blen' and 'Elearn' denoting the mode of instructional delivery. While some learners were at a fairly early stage of their academic and professional careers, others were far more experienced with some retirees enrolled once again to professionally develop themselves. EDBlen is offered as part of 'Graduate Certificate in Tertiary Teaching' (GCTT), all three courses can be taken as Post Graduate Diploma in Education (PGDE) or Post Graduate Degree programme (MEd). The three courses used technology to different extents giving rise to the three learning environments.

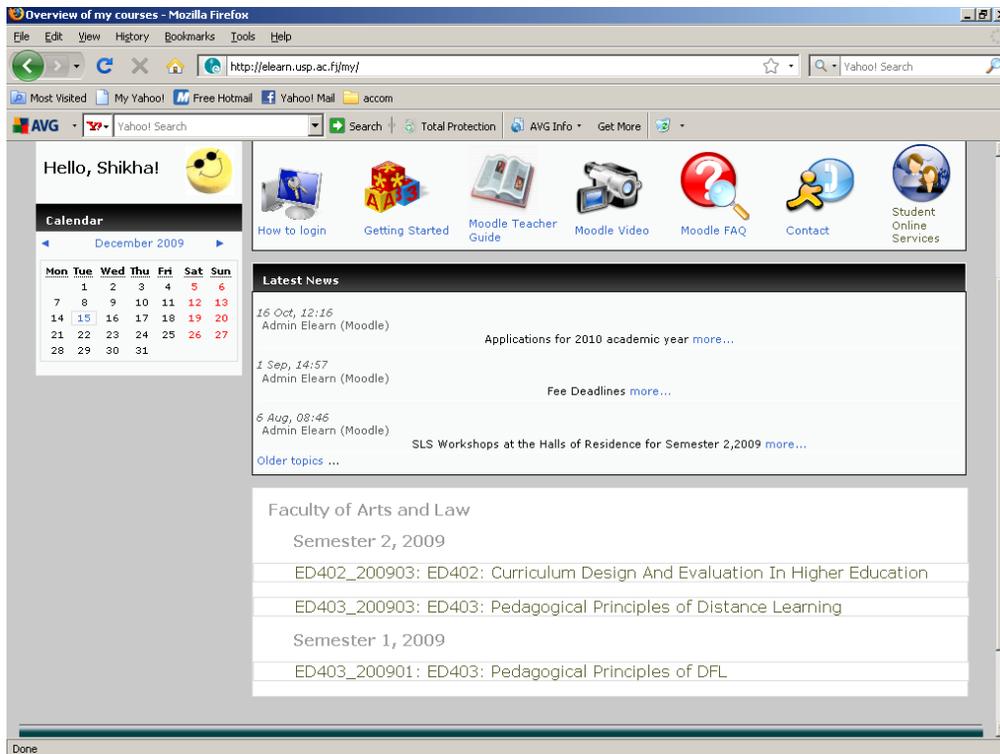
## Learning Environments in the study

As described above, the three different learning environments studied were face-to-face, blended and elearning with some courses making use of VLEs at USP website. EDf2f made use of ClassShares while EDBlen and EDElearn made use of Moodle as the CMS/ LMS.

EDf2f generally uses ClassShares (but not this particular semester) to post syllabi, lectures, announcements etc, it was a one-way communication from teacher to student handouts were given during the lectures. The EDf2f course runs for 14 weeks during both the semesters with one 2-3 hour lecture on a weekday evening (5-8p.m. every Tuesday during this semester). The course structure included a variety of activities ranging from discussion style lectures and presentations to critiques and a few guest lectures. The lectures generally had a 20-30 minute break that incorporated informal 'talanoa' (discussion) sessions. Emails were used to communicate with students along with f2f interaction times. The students/ learners from both semester I and II of

2009 participated in this study. There were a total of 15 learners in semester I and 16 learners in semester II; all were based in Suva and in the outskirts of Suva.

Both EDBlen (shown as ED402 in figure 1) and EDElearn (shown as ED403 in figure 1) make use of Moodle.



**Figure 1: Elearn homepage for a student taking courses that make use of VLE, Moodle**

The VLE in both the courses was used to cater for a variety of activities right from posting lectures/ topics of discussion to activities and a different types of forums such as one for the instructor to make formal announcements, answer to student query, discussion forum, and social forum.

EDBlen runs for 14 weeks with only three face-to-face sessions for tutorials and three other tutorial sessions conducted through satellite to cater for the learners in the region and the rest of the pedagogical practices made use of Moodle. The total number of learners enrolled in this course was 69 although some dropped; majority were based in Suva (Fiji), about 10 in Labasa (Fiji), one in Nauru, one in Vanuatu and one in Tonga.

EDElearn runs for 10 weeks and is a fully online course. The learners from semester I and semester II participated in this study. The total number of learners enrolled in semester I were 14 and semester II were 25. Amongst the learners from semester I, while majority were based in Suva, one in Sigatoka, one in Rakiraki and one in Lautoka (the four towns in Fiji) and one in Vanuatu. The majority of learners in semester II were based in Federated States of Micronesia (Koloni, Yap, Kosrae, Chuk and Paliki) while the instructor and 3 learners were based in Suva (Fiji). The course in semester II made use of four mentors out of which one was based in Toulouse (France), one in Sigatoka (Fiji) and two in Suva (Fiji). EDElearn in semester I made use of Moodle to the full extent as shown in figure 2.

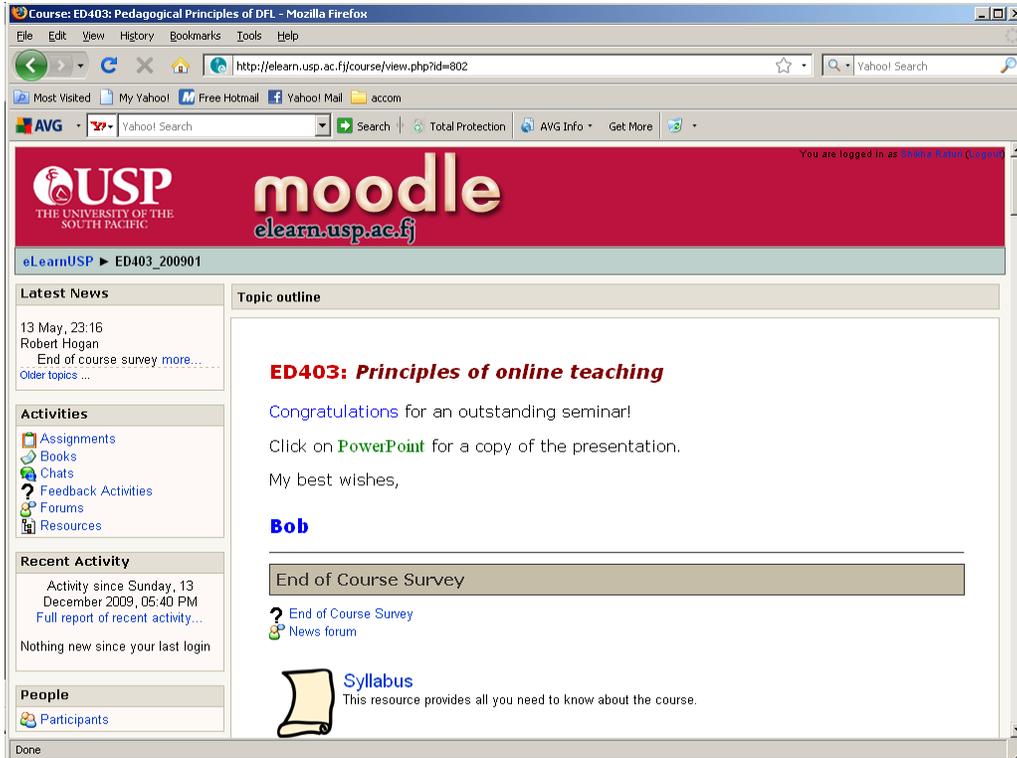
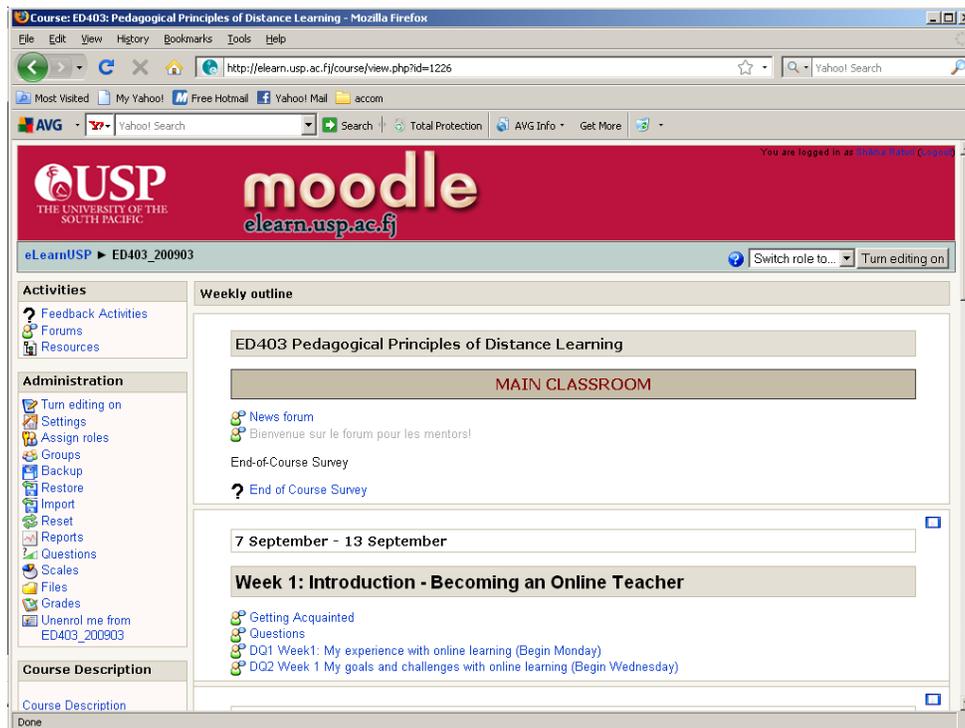
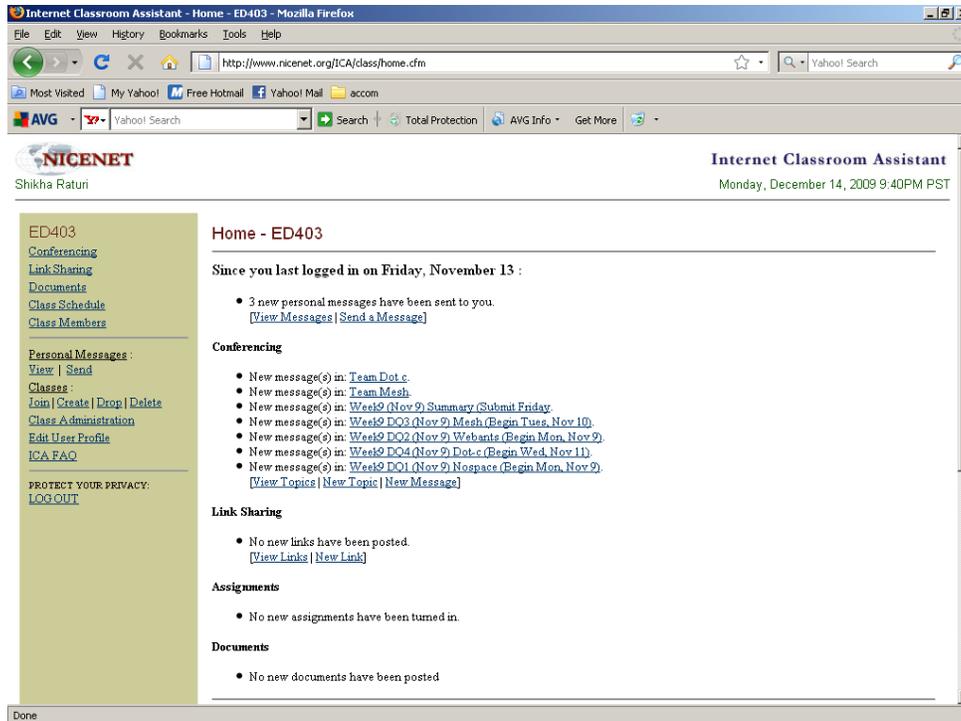


Figure 2: Moodle homepage for EDElearn Semester 1.

In semester II, EDElearn, the course began with Moodle for the first two weeks and then switched to Nicenet as shown in Figure 3 due to technical problems in Micronesia.





**Figure 3: Moodle homepage later switched to Nicenet homepage for EDElearn Semester II**

The study aimed at 140 learners from these three courses, but due to some drop outs from the course and some who did not respond, a total of 92 participated in this study.

**The Question**

- Which mode (face-to-face, blended, online) would best meet your needs? Why?

**Procedure**

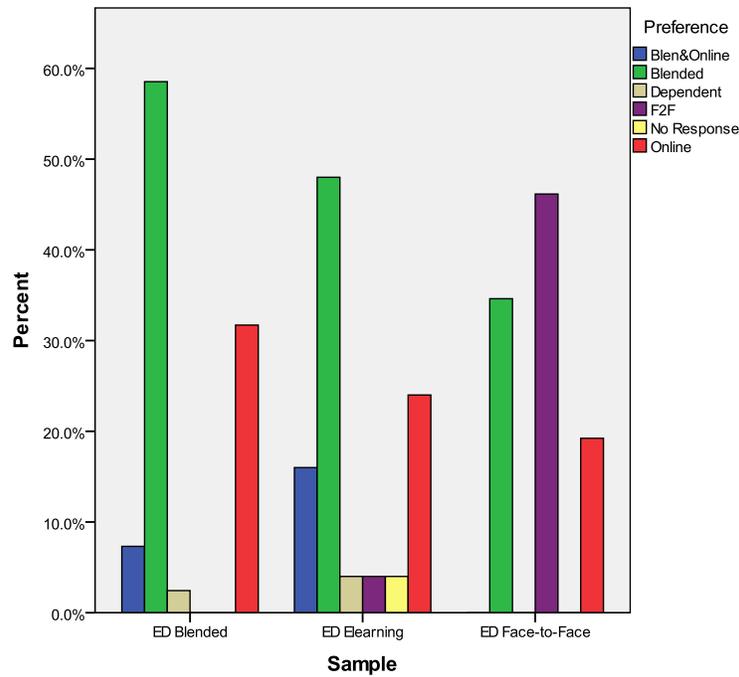
The course coordinators were contacted for the permission and the data was collected during weeks 10-15 in semester II. The participants were asked to fill in the questionnaire either online or in print depending on their preference. The questionnaire in print was filled out by students enrolled in EDf2f during their lecture and EDBlen during their tutorial session. The online questionnaire was filled by all students enrolled in EDElearn and some students from EDf2f and EDBlen at a time and place convenient to them. An overall response rate was approx. 71% and 76% for EDf2f, 67% for EDBlen and 71% for EDElearn. Table 1 indicates the actual numbers.

**Table 1  
Preference for instructional delivery modes versus current mode**

Preference for Instructional Delivery Mode							
Sample	Dependent	Blended & Online	Online	Blended	F2F	No Response	TOTAL
EDBlend	1	3	13	24	0	0	41
EDElearn	1	4	6	12	1	1	25
EDf2f	0	0	5	9	12	0	26
<b>TOTAL</b>	<b>2</b>	<b>7</b>	<b>24</b>	<b>45</b>	<b>13</b>	<b>1</b>	<b>92</b>

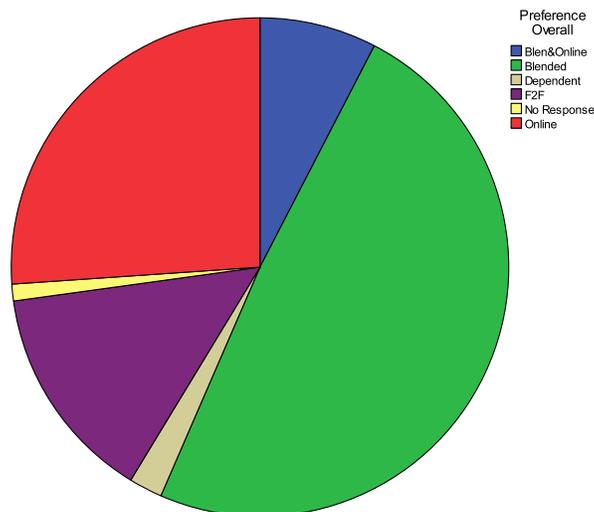
## Results

The majority of the learners in each delivery mode as well as overall preferred blended instructional delivery mode when asked to pick the mode that meets their needs the best as shown in figure 4.



**Figure 4: Preference for Instructional Delivery Mode per course**

An overall analysis for the 92 learner participants in the study as shown in figure 5 shows more than 80% preferred the learning environments (that made use of VLE i.e. blended and online mode) other than f2f. Overall, 49% of the learners preferred blended followed by 26% with a preference for online and 14% f2f. There were 8% with a preference for blended and online and 2% dependent on course and circumstances.



**Figure 5: Preference for Instructional Delivery Mode overall**

The second part of the open ended question helped in deriving reasons for the preferred choice of blended instructional delivery mode. The reasons given by the learners indicated a number of key areas as identified below:

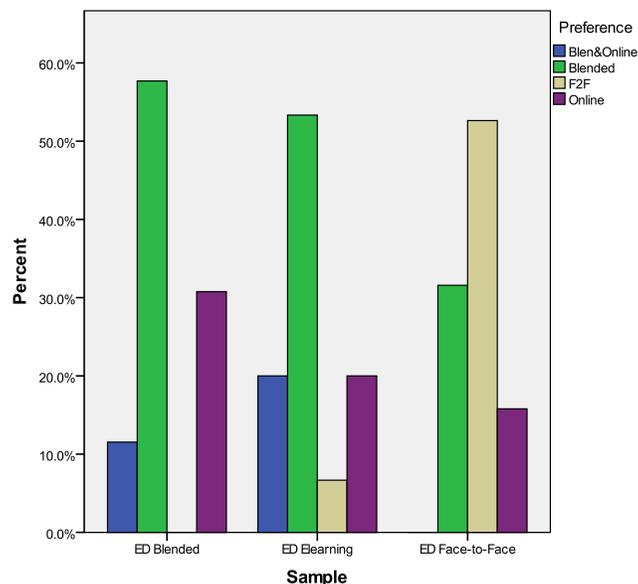
1. Technology: Improvement in technological infrastructure, with more technical help and training were identified by some learners in Micronesia.  
“Technical support: lack of resources and training need to be addressed”, a learner in Micronesia.  
“I like online because this will also help me become proficient with technology”
2. Interaction/ Discussion Forum: Interaction with lecturer and peers was considered an important aspect of learning and the social presence of others in a face-to-face setting was acknowledged as the reason for preference of face-to-face and blended (with possibility of face-to-face sessions in this mode).  
“Technology might make students socially awkward and introverted personalities giving rise to social anxiety”.  
“In online, there is convenience of time but expensive technology”.  
The importance, freedom of expression and effective use of ‘discussion forum’ on moodle was highlighted as a good technique to increase interaction.  
“Discussion forum allows express opinion without anyone looking and judging you, human connection allows gestures and tones”  
“Human interaction in face-to-face may not happen in an online mode”  
“Discussion forum helps to clarify issues further” commented a blended mode learner.  
“Discussion forum helps to discuss and at length anytime”  
“Impressive!..”commented by a blended learning student for VLE.
3. Autonomy: Learning at own pace and own time, develop own style with time were considered important for the learners as reasons for preferring elearning or blended.
4. Course Structure: Access to course structure through moodle considered important for learners choosing blended and online.
5. Work and professional development: Majority of learners work. Some commented work and studies can be balanced best in an online or blended mode.
6. Family and personal: Family time/ community obligations for blended and online learners with personal reasons seemed a balancing act.
7. Cost effective: Commuting time and transport cost contributed towards cost-effective measures.
8. Flexibility and convenience: Suited learning styles, flexibility and convenience of time were reasons for choosing online or blended modes.  
“Online mode would be best for me because I travel a lot”, a face-to-face learner.  
“Non-availability of PG courses in Micronesia in f2f, therefore, online suited, I think f2f is still the best way to learn when it comes to technical courses”.  
“I do not have to travel to attend lectures”, a blended learner student in Suva.  
“I like face-to-face but prefer online”, commented a blended learner  
“I am an audio-learner and like live interaction of a classroom and I prefer face-to-face”, remarked a face-to-face learner.
9. Enjoyment: Enjoyment, fun.
10. “Online learning is fun”, an online learner.

Blended mode learners commented it as the best of two modes.

An online learner, “Work and family commitments can be looked after with online learning, but technical issues...still advantages are more than disadvantages”.

### Other Aspects of the Results

The researcher has a special interest in female learners’ needs and this was further looked into. 68% of female in the population at graduate level in education (Raturi, 2010) was not only encouraging in terms of gender parity but also worthwhile further investigating so as to what was most preferred mode by female learners. Figure 6 reveals blended as the most preferred mode overall amongst female learners. It was interesting to note that blended and elearning together (32% blended and 15% online approx.) was in a close tie with f2f (53% approx.) in the EDf2f course whereas blended was by far the most preferred mode in EDBlen and EDElearn courses. However, all learners opted for learning environments that make use of VLEs in EDBlen. This clearly indicates that female learners irrespective of the instructional delivery mode they experienced in the enrolled course still preferred VLE. The reasons for preference towards VLE were mainly ‘convenience’ and its ‘flexible nature’.



**Figure 6: Preference for instructional delivery mode in each course for all female learners**

### Discussion and Implications

The learning environments that make use of VLEs emerged as the most popular mode in this study of graduate students which clearly indicates blended/ elearning (depending on the need) as a plausible option in Pacific giving USP scope for extension to the region as well as the wider world. Access to tools and experience with technology is an important aspect for learners’ confidence in using VLE. Raturi (2010) reported that the learners’ in this cohort have high above average (3-5 on a likert scale of 1-5) access to tools and experience with technology. It is, therefore, not a surprise that learners were able to switch from Moodle to Nicenet in EDElearn with ease and prefer VLE.

The reasons (from the responses to open-ended question) for preference in the three instructional delivery modes are summarized in Table 2. The learners found certain aspects of a particular delivery mode as advantageous for their preference towards it (listed in the table 2 as ‘Reasons

For or In favour’). Other aspects that were noted as a hurdle or disadvantage are listed in the same table (Table 2) as ‘Reason Against’.

These reasons in favour can be generalized to suit the context of this study. It is noted that interaction, course structure and autonomy have emerged as advantages and disadvantage depending upon the instructional delivery mode. ‘Discussion forum’ emerges as the space for interaction which in turn results in the reduced transactional distance (Moore, 1997) and increased satisfaction and ultimately reason for preference.

Non-availability of post-graduate courses emerges as one of the reasons for elearning providing accessibility to regional learners to develop professionally further. Currently, apart from Fiji, PICs need some improvement in technical support and training. A good access to internet, technical support and training would be a desired area of improvement for an effective learning environment that makes use of VLEs.

**Table 2**  
**Summarized reasons (favour/ against) for preference towards instructional delivery modes**

Instructional Delivery Mode	Reason For (in favour)	Reason Against
Face-to-Face	<ol style="list-style-type: none"> <li>1. Interaction-Human touch</li> <li>2. Lively interactions</li> <li>3. Suited learning style</li> <li>4. Lively classroom</li> </ol>	<ol style="list-style-type: none"> <li>1. Commuting time</li> <li>2. Work sometimes clashes with study</li> <li>3. Need to be on site</li> </ol>
Blended	<ol style="list-style-type: none"> <li>1. Interaction via f2f &amp; elearn discussion forum</li> <li>2. Easy course access</li> <li>3. Reflection time</li> <li>4. Give time with family</li> <li>5. Study while working</li> <li>6. Suited learning style</li> <li>7. Cost-effective</li> <li>8. Increases autonomy</li> <li>9. Fun</li> </ol>	<ol style="list-style-type: none"> <li>1. Computer and internet access needed.</li> <li>2. Technical support and training required.</li> </ol>
Elearning	<ol style="list-style-type: none"> <li>1. Interaction via discussion forum gives time for reflection.</li> <li>2. Easy course access</li> <li>3. Gives time with family</li> <li>4. Study while working</li> <li>5. Flexibility of site and time</li> <li>6. Suited learning style</li> <li>7. Increases proficiency with technology</li> <li>8. Increases autonomy</li> <li>9. Enjoyable</li> </ol>	<ol style="list-style-type: none"> <li>1. Lack of human interaction</li> <li>2. All time Computer and internet access needed.</li> <li>3. Technical support and training required.</li> </ol>

A comparative summarised account of reasons in favour (yes) and against (no) in the three instructional delivery modes is given in table 3.

**Table 3**  
**A comparative summarized reasons in favour of instructional delivery modes**

	Reasons in favour		
	f2f	Blen	Elearn
Allows Interaction through ‘Human touch’	Yes	Yes	No
Interaction through discussion forum only	No	Yes	Yes
Interaction through face-to face as well as discussion forum	No	Yes	No/Yes
Easy course access at anytime and from anywhere	No	Yes	Yes
Saves on commuting time	No	Yes/No	Yes
Increases autonomy		Yes	Yes
Time with family	Yes/No	Yes	Yes
Study while working	Yes	Yes	Yes
Independent of technical support and training	Yes	No	No
Enjoyable	Yes	Yes	Yes
Accessibility of course for other islands learners	No	Yes	Yes

Regarding interaction, while blended mode will be cost effective for learners, it will involve instructor commuting to the site for a video telecast/ f2f session (as is the case in the ED Blended) and the institution’s responsibility in terms of costs involving video telecast or instructors’ commuting arrangements. It does not save on the commuting time for the learners completely as they have to commute for the tutorial to a designated location but with greater flexibility as compared to f2f and lesser as compared to elearning course. It is important to note that learners identified ‘discussion forum’ as one that provides greater degree of interaction regardless of place and time. The learners are professionals who work during the day time and thus time and place for them is an important factor.

Therefore, in spite of the sample size, the findings of this study are remarkable for School of Education and the University of the South Pacific considering it is a premier institution that provides teacher training and other professional development programmes to teaching professionals in the region of South Pacific. The findings encouraged School of Education to offer more courses online. Since 2010, School of Education at USP has started offering ED 401 and ED402 fully online. These courses comprise the ‘Graduate Certificate in Tertiary Teaching’ which is taken by teaching professionals in tertiary institute in this region. Online offering of ED401 and 402 will enable access to education among the teaching professionals in PICs. The University of the South Pacific has also increased the number of courses to be offered online university wide since 2010. It is to be noted that at the moment no other university in PICs offers courses through online instructional delivery mode. The capability of USP to increase the number of online courses will eventually help USP to compete with other universities in this region.

## Conclusion

The most preferred mode of instructional delivery was blended mode followed by online and a small fraction preferred face-to-face. Some of the main reasons for the preference for delivery modes that make use of VLE are its flexible nature, convenience and interaction. Interaction is one of the most important factor in the learning process and needs further investigation. The learners’ preference towards VLEs suggests elearning as an option to provide access to

'Education For All'. The study is first of its kind in comparing three instructional delivery modes (simultaneously) at USP. Replication of this study with another cohort at graduate level in this faculty as well as other would help substantiate the findings of this research and more generalized interpretations can be derived.

### Acknowledgement

The researcher and corresponding author would like to thank the participants in this study for taking out their valuable time to fill in the survey questionnaire as well as the course coordinators for agreeing to provide access to their course work/site and students. The cooperation by the course-coordinators is appreciated and acknowledged. Prof. Konai Helu Thaman and Dr. Robert Hogan's input and critical reviews of all the processes involved in this research is also acknowledged.

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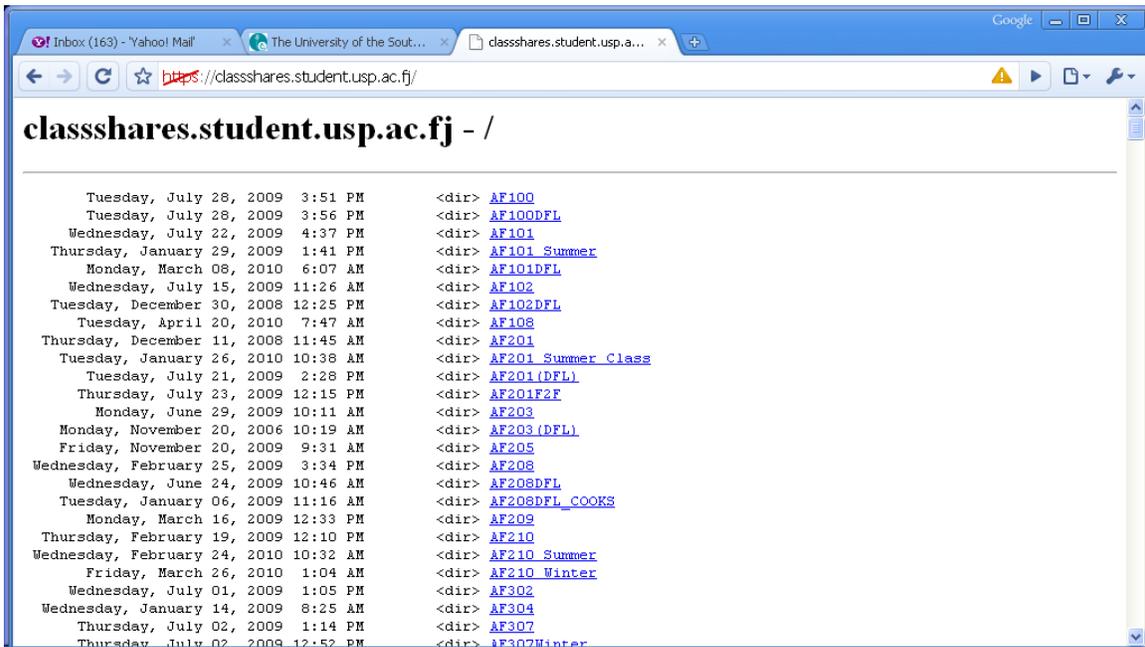
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## Appendix A

Homepage from [www.classshares.student.usp.ac.fj](http://www.classshares.student.usp.ac.fj)



## Appendix B

Home page from [www.elearn.usp.ac.fj](http://www.elearn.usp.ac.fj)



**Editor's Note:** Student feedback provides valuable guidance to those who design and those who implement distance learning programs.

## **Exploring Community College Student Perceptions of Online Learning**

**Terry Ann Morris**  
USA

### **Abstract**

Successful completion of online courses by community college students is an issue both at the national and local level. The purpose of this qualitative study was to explore community college student perceptions of online learning within the theoretical construct of the Community of Inquiry (CoI) model, which describes the manner in which the elements of social presence, teaching presence, and cognitive presence interact to create an educational experience. An online questionnaire, interviews, and artifact reviews were employed in the study. Interpretive analysis was utilized to identify themes and provide insights into student perceptions of satisfaction and success with online learning. The findings of the study revealed aspects of community college student perceptions about online courses, related these perceptions to the social presence, teaching presence, and cognitive presence components of the Community of Inquiry model, and provided examples of successful instructional design and course facilitation techniques utilized in the online courses. The study findings provided insights about student perceptions related to communication and interaction, isolation, preferred course activities, and the positive impact of prompt and helpful instructor feedback. Recommendations for practical applications by instructional designers and instructors are provided.

**Keywords:** online learning, community college, distance education, community of inquiry, social presence, cognitive presence, teaching presence, online student perceptions, student success, student satisfaction, instructional design.

### **Introduction**

Higher education online enrollments in the United States continue to grow each year (Allen & Seaman, 2010). Lower retention of online students than of traditional face-to-face classroom students has been a concern for institutions of higher education for quite some time (Carr, 2000; Conklin, 2008; Diaz, 2002; Patterson & McFadden, 2009). A national survey of community college distance education administrators indicated low course completion rate as one of the top challenges faced by respondents with an average course completion rate of 65% for distance education courses and 72% for traditional courses (Instructional Technology Council, 2009). In a study of community college students enrolled in online and traditional courses during a five-year time span (2001-2006), Conklin noted a significantly higher rate of dropout for those enrolled in online courses. With growing enrollments, successful completion of online courses continues to be a concern. The lower course completion rate for the increasing population of distance learning students needs to be addressed to promote online student success. A qualitative study of community college student perceptions about online courses will address this problem and has the potential to provide insights and reveal themes, online pedagogy techniques, and methodologies which promote student satisfaction and successful completion of online courses.

### **Purpose**

The purpose of this qualitative study was to explore community college student perceptions of online learning within the theoretical construct of the Community of Inquiry (CoI) framework proposed by Garrison, Anderson, and Archer (2000), which describes the manner in which the

elements of social presence, teaching presence, and cognitive presence exist together to create an educational experience. The study focused on the following research questions:

1. How do community college students in an online course perceive and describe their educational experience in terms of social presence?
2. How do community college students in an online course perceive and describe their educational experience in terms of teaching presence?
3. How do community college students in an online course perceive and describe their educational experience in terms of cognitive presence?
4. How do community college students in an online course perceive and describe their educational experience in terms of course satisfaction?

## Literature Review

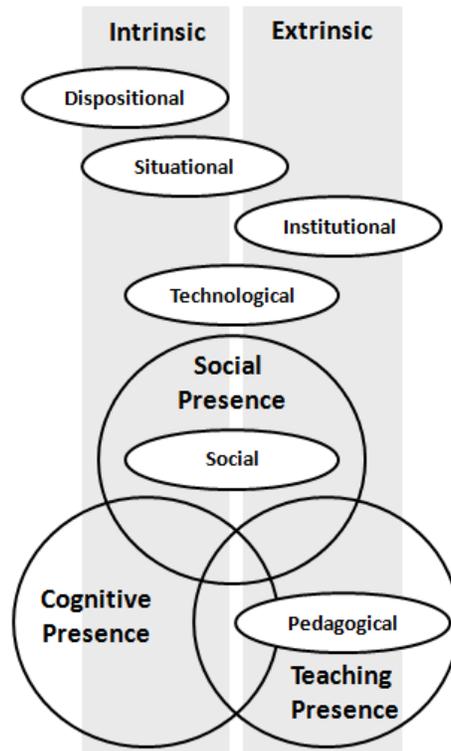
The CoI framework models the manner in which the elements of social presence, teaching presence, and cognitive presence combine to create an educational experience that supports and enhances learning (Garrison, 2007). Social presence is defined by Garrison (2009) as "the ability of participants to identify with the community, ... communicate purposefully in a trusting environment, and develop inter-personal relationships by way of projecting their individual personalities" (p. 352). Teaching presence is multi-faceted and involves determining curriculum, choosing methodology, facilitating, and providing focus on tasks (Garrison, 2007). Cognitive presence refers to "the exploration, construction, resolution and confirmation of understanding through collaboration and reflection in a community of inquiry" (Garrison, 2007, p. 65). Within a CoI, an educational experience is a learning environment created in collaboration by faculty and students through which meaningful and worthwhile knowledge is constructed (Garrison, 2006).

Research about various elements of the CoI framework has been conducted and summarized in the literature (Garrison, 2007; Garrison & Arbaugh, 2007; Rourke & Kanuka, 2009). Cleveland-Innes, Garrison, and Kinsel (2007) found that online learners experience an adjustment process during an online course as related to the components of the CoI framework which includes cognitive presence, social presence, and teaching presence. The elements of a Community of Inquiry (social presence, teaching presence, and cognitive presence) have been linked with student satisfaction in the literature (Akyol & Garrison, 2008; Arbaugh, 2005; Garrison & Arbaugh, 2007; Richardson & Swan, 2003; Shea, Pickett, & Pelz, 2003; Swan & Shih, 2005). Richardson and Swan determined that the element of social presence in discussion board postings was a significant predictor of perceived learning and course satisfaction. On average, students who reported high levels of teaching presence indicators related to "instructional design and organization also reported high levels of satisfaction and learning" (Shea et al., p. 75). This trend was evident to a lesser extent for the teaching presence roles of direct instruction and facilitating discourse (Shea et al.). According to Rovai (2002), students "who have stronger sense of community and perceive greater cognitive learning should feel less isolated and have greater satisfaction with their academic programs" (p. 328). The literature presents several predictors of student satisfaction:

1. Social presence factors (Akyol & Garrison, 2008; Arbaugh, 2005; Garrison & Arbaugh, 2007; Lin et al., 2008; Richardson & Swan, 2003; Swan & Shih, 2005)
2. Teaching presence factors (Akyol & Garrison, 2008; Arbaugh, 2005; Garrison & Arbaugh, 2007; Lin et al., 2008; Shea et al., 2003)
3. Cognitive presence factors (Akyol & Garrison, 2008)
4. Factors intrinsic to the learner: self-efficacy and self-regulation of their time and study environment (Lin et al., 2008).

Satisfied students are more likely to be successful. Levy (2007) studied over 400 undergraduate and graduate online students' attitudes towards e-learning and found that student satisfaction was a major factor in successful online course completion. Non-completers had significantly lower satisfaction than students who successfully completed the same online course.

Cross (1992) categorized situational, dispositional, and institutional barriers faced by adult learners. While some situational, dispositional, and institutional barriers may be mitigated by online education, they still exist; online education introduces additional barriers related to social interaction, technology, pedagogy, and accessibility issues (Morris, 2009). Menchaca and Bekele (2008) developed a conceptual framework to depict success factors for online students. The major categories of the Menchaca and Bekele framework are human factors (perceptions, attitudes, and competencies), course factors (instructional design and organization aspects of teaching presence), leadership factors (focusing on the role of the administration), pedagogic factors (related to the facilitation and direct instruction aspects of teaching presence), and technology factors (ease of use, dependability). A synthesis of the barriers and success factors proposed in the literature (Cross; Liu et al., 2007; Menchaca & Bekele) results in six categories: situational, dispositional, institutional, technological, social, and pedagogical factors. Student success factors may be predominantly intrinsic to the learner (dispositional and situational), predominantly extrinsic to the learner (institutional and pedagogical) or a combination of intrinsic and extrinsic (technological and social) in nature. The social presence and teaching presence elements of the CoI influence social and pedagogical factors (Akyol & Garrison, 2008; Garrison, 2007; Garrison & Arbaugh, 2007; Garrison & Cleveland-Innes, 2005; Ice et al.; 2007; Ice et al; 2008; Mykota & Duncan, 2007; Richardson & Swan, 2003; Shea et al., 2005; Shea, 2006; Swan & Shih, 2005). The elements of social presence and teaching presence facilitate development of cognitive presence (Garrison & Cleveland-Innes; Schrire, 2004). See Figure 1 for a conceptual model of six student success factors which depicts extrinsic factors, intrinsic factors, and the influence of the CoI elements of social presence, teaching presence, and cognitive presence.



**Figure 1. Student Success Factors and the Community of Inquiry**

## Methodology

Qualitative research "seeks to understand the world from the perspective of those living in it" (Hatch, 2002, p. 7). The qualitative study was conducted using an online questionnaire, interviews, and artifact reviews. An opportunity to participate in the study was offered to 144 online community college students in five courses which represent three different disciplines: liberal arts, social science, and information. Within this purposefully chosen group of disciplines, the study participants were self-selected because students are offered a choice at registration of day, evening, and online course sections.

*Questionnaire.* The online questionnaire was comprised of six open-ended questions and a limited number of demographic questions. According to Brookfield (1995), a critical incident is "a vivid happening that for some reason people remember" (p. 114). Brookfield developed a series of questions intended to trigger thinking and reflection about critical incidents, called the Critical Incident Questionnaire (CIQ). Brookfield (2006) indicated that reflection of this type is useful to discover how students are experiencing the course and helps the instructor to "obtain invaluable information about the submerged dynamics and tensions that are either inhibiting or enhancing learning" (p. 29). Although the original purpose of the CIQ was for a classroom teacher to obtain rich student feedback, the CIQ has been utilized by researchers as an instrument (Gilstrap & Dupree, 2008; Glowacki-Dudka & Barnett, 2007). An adaptation of the CIQ was used to engage participants in reflection as they write about their online course experience. The open-ended questions are shown below:

1. At what point in the class this semester did you feel most engaged with what was happening?
2. At what point in the class this semester did you feel most distanced with what was happening?
3. What action that anyone (teacher or student) took in class this semester did you find most affirming or helpful?
4. What about the course surprised you the most? (This could be something about your own reaction to what went on, or something that someone did, or anything else that occurs to you.)
5. Describe your level of satisfaction with the course. What do you believe influenced your satisfaction the most?
6. Do you believe that you will successfully complete this course? Why or why not?

Demographic questions were limited to those needed for foundational information about the study participants. Participation in the questionnaire was voluntary. The questionnaire was begun by 34 students out of a total of 144 potential respondents. 25 students completed the questionnaire. The response rate was 17 percent.

*Interview.* Swan and Shih (2005) developed a series of open-ended interview questions for their research on social presence in online course discussions. The interview questions used in this study were an adaptation and extension of the Swan and Shih work and inquire not only about online course discussions but also about the use of other types of communication and collaboration technologies. Interview invitees were purposefully chosen from the self-disclosed questionnaire participants with the goal of selecting subjects in a variety of disciplines who provided information-rich questionnaire responses. Participation in the interview was voluntary. Seven interviews were conducted and ranged in length from 22 minutes to 50 minutes. The interview provided an opportunity to more deeply explore the participant's perspectives about their online course experience.

*Artifact review.* Online course syllabi and rubrics for assignments such as discussion question responses were requested from the instructors. The artifacts were available for use in triangulation and were useful to provide a context for the perspectives shared by the participants. The artifacts were also utilized to document instructional design or pedagogical techniques described by participants in their responses—for example, rubrics for course activities, policies noted in syllabi, or engaging course activities.

## Participant Characteristics

The 25 participants were students in online courses at a Midwest community college. Table 1 depicts participant characteristics. It is of note that the students who self-selected to participate in the survey represented experienced online learners, with only 8% currently taking their first online course and with 60% who have taken two or more previous online courses.

**Table 1**

Characteristic	Female	Male	Total	Percent
<b>Age</b>				
18-24	6	4	10	40%
25-34	3	3	6	24%
35-44	4	2	6	24%
45-54	3	0	3	12%
<b>Status</b>				
Full-time	8	4	12	48%
Part-time	7	5	12	48%
Decline to answer	1	0	1	4%
<b>Course Discipline</b>				
Information Technology	3	1	4	16%
Liberal Arts	11	5	16	64%
Social Science	2	3	5	20%
<b>Online Course Experience</b>				
None	0	2	2	8%
One previous online course	7	1	8	32%
Two previous online courses	4	3	7	28%
Three or more previous online courses	5	3	8	32%

As shown in Table 2, over half (52%) of this group of veteran online learners indicated a login frequency of three to six times each week. Daily logins were reported by close to half (44%) of the study participants. Only one respondent indicated a low login frequency of once or twice each week.

**Table 2**

<b>Previous Online Experience</b>	<b>Once or Twice Per Week</b>	<b>Three to Six Times Per Week</b>	<b>Every Day</b>
None	0	2	0
One online course	1	3	4
Two online courses	0	5	2
Three or more online courses	0	3	5

### Interview Participant Profiles

Students from each discipline were invited to participate in an interview. Seven students were interviewed. Table 3 shows an overview of interview participant characteristics.

**Table 3**

<b>Discipline and Course Subject</b>	<b>Gender</b>	<b>Age Range</b>	<b>Previous Online Courses</b>	<b>Pseudonym</b>
<b>Information Technology</b>				
Web Development	Female	45-54	3 or more	Susan
<b>Liberal Arts</b>				
Philosophy	Female	35-44	1	Maria
Philosophy	Male	25-34	2	Noah
<b>Social Science</b>				
Economics	Female	35-44	2	Keisha
Economics	Female	25-34	2	Alexis
Geography	Male	18-24	0	Ali
Geography	Male	35-44	2	Thomas

The interview participants included individuals with a variety of backgrounds and educational goals. Only one of the seven interview participants was enrolled in their first online course. A profile for each interview participant is provided below.

Ali wanted to complete an Associate Degree and eventually major in chemical engineering. He decided to take his first online course to save time driving to school. Ali enrolled in a geography course to satisfy general education requirements. As a first time online student, Ali typically logged in three to six times per week and was surprised by “The fact that I’m enjoying learning the material for the first time as an independent. It’s very self-fulfilling being able to study in an online course and enjoy the material without someone lecturing.”

Susan enrolled in an online computer technology course to pursue personal interests. She was an experienced online student who enjoyed the flexibility that online courses offer. Susan has successfully completed more than three online courses. She logged in to the online web development course every day. Susan noted the importance of a sense of belonging in an online course that begins “within the discussion board area, [with] feedback from students, and feedback from the instructor.”

Keisha enrolled in the economics course to prepare for business courses in graduate school. A part-time student, Keisha was a full-time working mother and chose online courses for the flexibility they provided to balance her work and life. An experienced online student, she has taken two online courses. Keisha logged in to her online course every day and expected to be successful but felt “disconnected from the interaction with other students” and wished for more.

Thomas was actually a graduate student enrolled in an online geography course at the community college to complete requirements for teacher certification. He chose an online course for flexibility — he worked full-time and was the parent of two children. An experienced online student, Thomas has completed two other online courses. He logged in to his online geography course three to six times per week. Thomas enjoyed the online experience and stated, “it’s comfortable for me as opposed to sitting in courses a lot of times because I am an older student. Sometimes I’m self-conscious of the fact that I’m old enough to be some of the students’ parents.”

Alexis was employed full-time and she enrolled in three courses during the semester in order to make progress towards her short-term goal of completing an Associate Degree. Eventually Alexis would like to major in business administration at a local university. She chose the online economics course in order to fit it into her busy schedule. Alexis was an experienced online student and has already taken two online courses, although she did not successfully complete either of them. Determined to succeed this time, Alexis emphasized her resolve and stated “it’s a motivation thing ... there’s definitely a different attitude I had going into this class than I did the previous two I signed up for.”

Maria worked full-time and was the parent of two children. Her goal was to transfer to a college or university without earning an Associate Degree. Maria enrolled in the online philosophy course for convenience. She has successfully completed one other online course. Maria logged in to her online course every day and enjoyed interacting on the discussion board with her fellow online students. She stated “the online medium offers more benefit because in a classroom environment you don’t have as much time to think through what you’re going to say and if you take too long then the moment’s past.”

Noah was a transfer student with the goal of earning an Associate Degree. The father of two children, he worked full-time during the day. Because his wife worked in the evening, Noah chose to take an online course to fit in with his family and work responsibilities. He has already completed two online courses and logged in to his online philosophy course three to six times per week. Noah recalled being engaged in his online course right from the start, “So, within the first week, even though you weren’t in a classroom with these people, you were already interacting with them [on the discussion board] and getting to know people, even though you’d never met them.”

## Data Analysis

The researcher carefully reviewed the questionnaire responses, interview transcriptions, and artifacts. Next, interpretive analysis began. Over 40 preliminary coding categories were created after two reviews of the data. A third review of the data resulted in categorization of the following five themes: communication/interaction (social presence), instructor involvement/support (teaching presence), instructional design (teaching presence), learner engagement with content (cognitive presence), and learner characteristics/needs (dispositional and situational factors). The next section discusses the results of the analysis as related to each research question.

## Results & Discussion

*How do community college students in an online course perceive and describe their educational experience in terms of social presence?* The findings demonstrated that communication and interaction with others through discussion board participation was a major source of engagement for students. All courses in the study included opportunities for interaction in a discussion board. However, not every course required regular participation in the discussion board. It was common for online students to feel distance or isolation at some point during their online course experience, with the most frequently cited time at the beginning of the course. The three students who indicated they usually felt isolated were enrolled in courses without required discussion board participation. Regular interaction and communication utilizing a discussion board seems to benefit most online students.

*How do community college students in an online course perceive and describe their educational experience in terms of teaching presence?* The findings demonstrated the impact of instructor involvement and support which was described as the most helpful or affirming point in the course by 64% of the study participants. The instructor actions which were noted included feedback, quick response via e-mail or discussion board to a question, and review of assignment drafts. Prompt and helpful instructor support and response seems to benefit many online students.

The findings also demonstrated the influence of instructional design. Almost one-quarter of the study participants attributed their expectations of successful completion of the course specifically to aspects of the instructional design, such as clear expectations and easy-to-follow course structure. When responding to the survey question, “Describe your level of satisfaction with the course. What do you believe influenced your satisfaction the most?” five students (20%) provided comments about the course design, praising components such as course structure, timing of assignments, neat instructions, and clear guidelines. Course activities that students perceive to be of value which require learners to challenge each other’s opinions and work (such as peer review) may provide opportunities for students to exhibit teaching presence in the form of involvement and support. Redmond and Lock (2006) indicated that teaching presence is not confined to the instructor; everyone has a “role to play” (p. 270). Course collaborative activities which do not have a clear purpose will be underutilized by students, even if activities involve Web 2.0 technology (such as a social networking website). Course activities such as formative assessments and early non-graded peer or instructor review were perceived in a positive manner by the study participants.

The instructional design of online courses which include opportunities for non-graded formative assessment (such as review games, self-quizzes, peer review, and early instructor review) are of perceived benefit to students. The instructional design of course activities which include opportunities for collaborative work may serve to better engage and involve online students. When deciding to incorporate use of a new technology, verify that the technology enables activities related to course learning outcomes which are of perceived benefit to students. In a study of the causal relationships between social presence, teaching presence, and cognitive presence, Garrison et al. (2010) emphasized the key role that teaching presence plays in influencing student perceptions of social presence and cognitive presence.

*How do community college students in an online course perceive and describe their educational experience in terms of cognitive presence?* The findings demonstrated that the course activities which were deemed to be the most beneficial by interview participants included discussion board participation, formative assessment, instructor-created notes, and lab activities. The variety of the types of activities perceived as beneficial by participants exemplifies the impact of student individual characteristics and learning preferences. Most of the interview participants indicated that they learned more through independent study than from the instructor or from other students.

The instructional design aspect of teaching presence set the stage for student engagement with content by structuring activities and discussions. Each of the interview participants enrolled in courses with required discussion board participation mentioned engagement with content while preparing to post or reply on the discussion board. While most online learners are engaged by discussion board communication, the instructional design of an online course should include a variety of course activities and materials intended to meet the needs of learners with varied learning preferences and individual needs.

*How do community college students in an online course perceive and describe their educational experience in terms of course satisfaction?* The findings demonstrated that most (80%) of the participants were satisfied with their online course experience. Further, all of the interview participants enrolled in courses with required discussion board participation were satisfied with their online course experience and indicated that the communication and collaboration increased their satisfaction with the course. Close to one-third of the participants indicated the dual-faceted category of teaching presence (instructional design and instructor involvement/support) as a reason for their course satisfaction. Akyol and Garrison (2008) determined that teaching presence, social presence, and cognitive presence demonstrated a significant relationship with satisfaction. However, the most frequent contributor cited by survey participants for positive course satisfaction was related to individual learner characteristics such as self-efficacy, enjoyment of learning, self-improvement, convenience, and meeting expectations.

All participants in the study expected to successfully complete their online course. The top three reasons provided when participants predicted success were self-efficacy and determination, learner engagement with content, and instructional design. Each of the interview participants cited situational factors when providing a reason for enrolling in the online course. Advice provided by the interview participants to other online students emphasized dispositional factors: time management, responsibility, and staying on task. Participant responses for expected success, satisfaction with the course, and advice to other students reinforce the importance of individual learner characteristics/needs – the dispositional and situational factors as described by Cross (1992). While instructional design can provide opportunities for student engagement, dispositional and situational factors play a role in the satisfaction and success of online students.

The community college students who shared their perceptions about online courses in this study were a diverse group with varied individual needs, preferences, and long-term goals. Their perceptions reflected the interrelationship of communication/interaction, instructor involvement/support, instructional design, learner engagement with content, and satisfaction. Figure 1 presented a conceptual model of six student success factors (dispositional, situational, social, technological, institutional, and pedagogical) and the components of the COL framework. The majority of the participants in the study were satisfied with their online course experience and all expected to successfully complete their online course. The influence of intrinsic factors (dispositional and situational) and pedagogical factors were evident in the participant's perceptions. These self-efficacious online students had overcome or were transcending factors which may have presented barriers to them, such as technological factors, social factors, and pedagogical factors. Institutional factors were not mentioned by any of the study participants.

## Limitations

As qualitative research with a limited sample size by design, a limitation of the study was that only the perceptions of students who chose to participate were included. It is of note that the participants all expected to successfully complete the online course in which they were enrolled. Another limitation was that due to student privacy issues, the actual grades of the participants were not captured so there is no corroboration that students who expected to be successful actually met their goal.

## Recommendations for Practical Application

The findings from this study provide implications for practice and may be useful to instructional designers, community college faculty, other higher education faculty, and administrators.

Recommendations for practical applications are listed below:

1. Communication and interaction with others through discussion board participation was a major source of engagement for the participants. It is recommended that course designers and instructors include mandatory, regular discussion board participation in online courses to provide for student interaction and to help alleviate/prevent the feelings of isolation and distance. It is further advised to require student participation on multiple days during the discussion to enhance the social interaction and communication.
2. The impact of instructor involvement and support was described as the most helpful or affirming point in the course by many of the participants. Prompt feedback and instructor-to-student communication was noted by the study participants and will help to alleviate feelings of isolation. It is recommended that instructors place a high priority on providing prompt feedback on assignments and responses to student e-mails.
3. While participants indicated positive perceptions of the use of virtual classroom sessions and online chat sessions, the interviewees reported little use of Facebook groups due to a lack of purpose. It is advised that instructional designers and instructors purposefully determine and/or create activities which support learning outcomes and are of perceivable benefit to students when choosing to incorporate new technologies or web applications such as Facebook in online courses.
4. All participants in the study expected to successfully complete their online course. The top reason provided when participants each predicted success was self-efficacy and determination. The individual characteristics, needs, and preferences of learners were evident throughout the survey and interview responses. The findings demonstrate the complexity of teaching community college students with varied dispositional and situational factors. It is recommended that instructors strive to be mindful of these individual differences and attempt to accommodate a spectrum of reasonable learner needs and situations.
5. Close to one-third of the participants indicated aspects of instructional design, such as clear expectations and easy-to-follow course structure, as a reason for their success, but when asked to describe the most beneficial course activity, the responses were varied. It is recommended that instructional designers be mindful of dispositional factors and individual learning preferences as they create courses with a variety of learning activities to serve students with various learning preferences. Classroom students have many opportunities for early formative feedback that are often lacking in an online course environment. In addition to the ubiquitous discussion board, course designers should consider incorporating collaborative peer review activities and formative assessment activities (such as interactive review games and self-quizzes).

## Recommendations for Future Research

The study findings provide a basis for additional studies related to student perceptions, student success, and the Community of Inquiry model. Future research in this topic may include a larger study with a more varied sample of courses from different disciplines and a mixed methods study of a single course in which student self-reported satisfaction and predictions of success can be correlated with the actual course grade.

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**Editor's Note:** This is a useful exploration and documentation of faculty use of learning management systems to facilitate administrative functions and support teaching, learning, evaluation, and feedback.

## **Increasing Faculty Usage of Learning Management Systems (LMS) in a Caribbean Islands State University College: Implications for the use of LMS**

**Mark A. Minott and Allan E. Young**  
Cayman Islands

### **Abstract**

The aim of this research was three-fold: to ascertain the extent to which faculty used the learning management system (LMS), factors affecting their use of the LMS and how to increase their use of the system. A subsidiary, yet important aim, was to outline implications for the use of LMS generally. A mixed mode methodology was used. The data collection instrument was an online questionnaire made up of closed and open-ended questions. The extent of faculty usage of the LMS can be seen in the fact that sixty four percent (64%) used the LMS all or sometimes and for a variety of online activities. Factors affecting faculty use of the LMS and ways to increase usage involved the need for an attitudinal shift, time for experimenting with the LMS and the need to provide IT support and training. The paper addresses these and concludes with the implications of the study for the use of LMS.

### **Introduction and outline**

In 2007, the University College of the Cayman Islands (UCCI), implemented the Learning management system (LMS) 'ANGEL'. The adoption of this learning management system (LMS) was deemed necessary to enhance teaching and learning and to provide e-learning experiences for students and faculty.

Through the University's IT department, the process of implementation started with a series of training sessions for faculty. Subsequently, new faculty is introduced to the LMS by way of a special workshop during the University's orientation period. The aim of these sessions is to encourage faculty to utilize the LMS. Despite these initiatives, the university administration 'sensed' that faculty was under utilizing the system and therefore need to increase their usage of it. As a result, a study was launched. The aim was three-folds: to ascertain: the extent to which faculty used the LMS, factors affecting their use of the LMS and how to increase their use of the LMS. A subsidiary, yet important aim was to outline implications for the use of LMS.

This paper commences with a survey of literature which discusses factors which affect faculty use of LMS and how to increase their usage of the system. This establishes a framework for the study. The literature review is followed by an outline of the research which forms the basis of the study, a discussion of the findings and suggestions for the use of LMS.

### **Literature Review**

#### ***Design the LMS according to faculty needs***

The writers Yueh and Hsu (2008) in their study on how to increase faculty use of LMS at a Taiwanese University point out that it is necessary to examine the needs of the faculty before designing or deciding on a commercially available LMS. This is important because faculty will utilize LMS that has features and functions which suit their needs and where the technical complexities are not too difficult. Bongalos et al (2006) also make the point that faculty appreciate the fact that LMS complements their time-tested teaching modalities. Specifically, Yueh and Hsu (2008) suggest the following may increase faculty use of LMS:

- The LMS must be instructive by informing faculty members about steps used in traditional instructional methods, for example: setting objectives, clear structuring of courses, encouraging interaction among students and ensuring evaluation.
- The LMS must assist faculty in various instructional functions such as: creating and editing a course syllabus and its content, deciding on a course schedule, creating a class roster, scheduling homework and including student groupings and interactive activities.

Despite these innovations, the writers also made the point that some professors at the university felt they did not possess the ability nor have the time to learn to build web-based courses via a LMS. This the writers see as a barrier which limits LMS use, and attributes it to a fear of technology. The difficulties highlighted here is the fact that developing lessons for the LMS is viewed as time consuming, and that to effectively engage in such a task, requires specialized abilities. We can infer from Yueh and Hsu (2008) that an appropriately designed or carefully selected commercial LMS which address these concerns would aid in increasing faculty usage.

### ***Provide appropriate technical support and training for faculty***

Offering appropriate technical help to faculty experiencing technical difficulties using LMS could increase their use of the technology (Yueh and Hsu 2008 & Schaffhauser, 2010). Learning Management Systems (LMS) are on the rise and are being used to augment the delivery of many courses at the tertiary level. Bongalos, et al (2006) made the point that LMS are recognized by faculty as an important instructional supplement and delivery medium that can rival, but not replace classroom learning. The augmentation that LMS provides may involve hybrid courses and the integration of other technology that further complements the teaching/ learning process, for example, lessons that are a part of the LMS can now be integrated in such a way that those with iPods and other devices of like-kind could benefit. Most if not all the traditional instructional activities, for example, managing course material, collecting and marking students' work can now be completely online using a LMS.

All these activities require a degree of 'technical-know-how' from faculty. However, for those with little or no 'technical-know-how' the availability of appropriate technical support is paramount. Minott (2010), in his study of e-learning, specifically, Interactive Video Conferencing, made the point that technical difficulties and malfunctioning of equipment were major sources of irritation to both faculty and students who participated in his study. He recommends greater vigilance and availability of technical staff, especially during the times when the technology is in use. One way to facilitate excellent technical support is to have IT personnel assigned specifically to the LMS (Schaffhauser, 2010).

Another way to increase faculty use of LMS is to provide specific training on the LMS and how to 'troubleshoot' (Schaffhauser, 2010 & Yueh and Hsu 2008). In discussing training of faculty in the use of LMS Schaffhauser( 2010) outlines what she calls

“Baby Steps approach to faculty Training” which involves someone new to LMS being encouraged to use three or four features at a time for example, posting a syllabus, a welcome announcement and enabling a drop box for students to turn in assignments. Upon becoming familiar with these, the person is then encouraged to learn other features such as the grade-book set up and implementation. In addition to the “baby steps approach” other training and help features such as persons to assist faculty and short lessons on videos and in-text forms could also be utilised (Shein 2008).

Bongalos, et al (2006) extends this approach to training to include the development of faculty's background knowledge and entry-level skills that relate to computer operation and the use of an array of software that supports and enhances productivity, for example, skills in troubleshooting, word processing and introductory desktop publishing and multimedia integration. However, to

achieve these, faculty need to be given time to learn the system and this may include reducing the time spent in the classroom.

### ***A pedagogical refocusing on learning outcomes, students' pressure, strategies, policies and shift in attitude***

We can infer from Schaffhauser (2010) that enabling faculty to assess their teaching impact on students' learning via the LMS could get them to utilize it more. The LMS should provide tools that enable them to monitor and track their students' progress in various subjects. This, she says, excites faculty members. A 'spin-off' is that, while faculty are utilizing the tracking and monitoring features of the LMS, they are sometimes inspired with new ways of redesigning courses and improving how they help students learn. Additionally, students' pressure in many instances has driven faculty to adopt the use of the LMS. Schaffhauser (2010) states that a survey carried out at a particular university displayed the fact that students avoid classes where the LMS is not being utilized and that approximately (99%) of students surveyed responded with a "yes" to the question, 'Do you prefer courses in which faculty use the LMS?' Additionally, during student registration, courses that used LMS usually fill-up quicker than those who did not.

At the heart of Schaffhauser's (2010) article is the idea that changing the context and shifting attitudes could increase faculty use of LMS. The thoughts of Sheehy et al (2006) are in-line with this assumption for they argue for strategies, policies and initiatives that can increase faculty participation. Specifically, the writers argue that policies at their university which were designed to support quality and innovation in teaching were critical in evoking a positive response from faculty regarding the possibilities that e-learning offered. Further, the development of coherent and harmonized strategies aimed at encouraging and supporting faculty up-take of e-learning also aid this endeavor. While Sheehy et al (2006) spoke broadly about e-learning in veterinary education, the strategies they forward for changing context and shifting attitudes are applicable to the use of LMS in any institution. For example the writers suggest the need to:

1. Articulate a vision for the use of e-learning in the institution
2. Develop and implement teaching and learning plans and key indicators for e-learning
3. Appoint staff to lead and support e-learning implementation
4. Allocate resources to upgrade e-learning classrooms
5. Allow e-learning potential in the institution to influence staff recruitment
6. Provide competitive funds to support e-learning and teaching innovation projects
7. Train and develop staff via groups and individual coaching
8. Establish an e-learning development and research group
9. Recognize e-learning workload and achievements.

### ***User friendliness, system accessibility and organic ground-up managerial approach***

We can infer from Beatty and Ulaswicz (2006) and Bongalos et al (2006) that user friendliness, in particular, the ease with which faculty can access various components of the LMS, could increase their use. For example, Beatty and Ulaswicz (2006) in their study found that faculty was drawn to a particular LMS because they found the instructor's interface intuitive and easy to use. This may involve the fact that the interface was able to show the instructor what students' see or the editing tools allowing for quick-re-ordering, editing or deletion. A similar finding was revealed in a survey carried out by Hoover and Flynn (2009) at Pepperdine University where the faculty and students scored 'easy to use and user friendly' as very important. Their responses led to the university adopting a particular LMS and rejecting another that did not meet this criterion

highlighted by the faculty. Sheehy et al (2006) also highlight the importance of using or developing systems that make it easy for staff to utilize, especially in adopting their face-to-face teaching activities to LMS.

As we speak of the important of LMS being user friendly, what is also of value is what Ashford-Rowe and Malfroy (2009) refer to as the ‘organic ground-up managerial approach’ which allows faculty to embrace the technology as they wanted to. The writers’ state that while this approach worked well in allowing faculty the freedom to utilize LMS on their own and at their leisure; strong institutional directive should not be ruled out, for doing so could encourage a constructivist approach to designing learning environments.

### ***Experience with the LMS***

The main factor in determining faculty usage of LMS—whether for course administration or instructional purposes—was experience with the tool (Woods, Baker and Hopper 2004). Abazi-Bexhetl, Kadriu and Ahmedi (2010) also made a similar conclusion in their study, but added that institution must develop a strategy for constant IT training of their academic staff- especially for those faculty members with no IT background. They also noted that increased faculty usage of the LMS acts as a catalyst for use by students.

To summarize, the foregoing literature suggests the following potential ways to increase faculty usage of LMS: design the LMS according to faculty needs, provide appropriate technical support and training for faculty, reduce time spent in the classroom to enable faculty to learn the system, a pedagogical refocusing on learning outcomes, students’ pressure, strategies, policies, shift in attitude, user friendliness, system accessibility, organic ground-up managerial approach and experience using LMS. However, what is still unknown is the extent to which faculty at the University College used the LMS, factors affecting their use of the LMS and how to increase their use of the LMS. Based on this, a study was launched.

## **Methodology**

### ***Participants, data collection and survey questions***

Participants in this qualitative study were all full-time faculty at the University College (n=25). They were asked to fill in an online survey mounted on the university’s intranet. A few participants were familiar with LMS, while others had had no previous encounter with a LMS. The data collection instrument was a semi-structured questionnaire. It contained seven questions (7) five (5) closed-ended and two (2) open-ended. Twenty two (22) faculty responded which is (88%) of the total.

### ***Data analysis***

The process of analyzing questions 1 to 5 on the survey involved the use of descriptive statistics i.e. simple percentage computations were made to establish level of usage of the LMS by faculty. Qualitative data analysis was used to analyze open-ended questions 6 and 7. These were analyzed using content analysis. Conclusions were then drawn regarding the extent to which faculty used the LMS, factors affecting their use of the LMS and how to increase their use of the LMS. We will use these areas as a template to outline the results in the next section.

## **Results**

The aim of this research was three fold: to ascertain the extent to which faculty used the LMS, factors affecting their use of the LMS and to determine how to increase their use of the LMS.

**The extent of faculty use of the LMS**

Two thirds of the faculty (64%) used the LMS all or sometimes in their classes. Thirty six percent (36%) did not use the system at all (Table. 1).

**Table 1**  
**Faculty Usage of LMS generally**

Usage	Raw Score	Percentage
All the time	9	41%
Sometimes	5	23%
None	8	36%
Total	N =22	100%

The majority, (73%) of faculty members in the survey, indicated that the LMS was useful as a teaching and learning tool. Notwithstanding, almost one third (27%) did see its usefulness. The data also revealed that two (9%) of the individuals--who did not use the LMS--support the fact that it was none-the-less useful.

**Factors affecting faculty use of the LMS**

**Table 2**  
**Respondents frequency of use per LMS features**

Terms	Frequency of features use (X)	Percentage who use it for this purpose (x/n) * 100
Lesson Content	14	70%
Online Tests	8	36%
File sharing	14	70%
Communication	5	23%
Grades	7	32%
Nothing	6	27%
Attendance	1	5%

N= Number of respondents (n=22),

X=frequency of statements by respondents.

An examination of table 2 reveals that the most common ways in which the respondents used the LMS in their class was by posting lesson content (70%) and file sharing (70%). Other uses were online tests, communications, grades, attendance.

**Table 3**  
**Percentage of faculty use of Angel during face-to-face teaching sessions**

(%) Class Use of Angel	Frequency
80– 100	8*
60-79	1
40-59	3
20-39	1
Below 20	9

\* 7 individuals used Angel (100%) of the time.

Eight faculty members used the LMS 80-100% of the time during face-to face teaching sessions; of those individuals, 7 used the system 100% of the time. Individuals who found the LMS to be useful were the ones who used it 100% of the time, indicating that faculty members who used LMS are more inclined to be satisfied. Answers given to question 6 of the questionnaire also highlighted factors affecting faculty use of the LMS.

When respondents were asked “Why do you think you and/or your students might not be using Angel?” a wide range of answers was presented. The three popular answers that emerged from the data were that the LMS was unnecessary, using the LMS was a problem and more training was required. Reflections on this question was also curt and to the point. For example,

“I’m just not convinced of its necessity...”

“Personally I feel it is not necessary.”

“I can’t see why I should use it for these things” and “no need”.

Several of the respondents indicated that their lack of use was attributed to the problems that they encountered. Examples of specific responses were: “I would use it more if I were not encountering problems with Angel.” “I have not been able to upload the required exercises, tests, assignments etc... on angel”. This is closely linked with the issue of ‘help’ or assistance. Not having someone to respond to their queries seemed to be another barrier to their use of the LMS. This was duly supported by statements such as, “I would use it more if I were not encountering problems with Angel”, “would like someone be assigned to upload the exercise, test items etc.”

There were other responses that pertained to questions 6 and 7 that indicated that time was of the essence and this also prevented faculty from using the system in the manner that they would like to. “I find it time consuming” mentioned one respondent, who was backed up by another who said “I don’t have time to look on Angel for e-mails as well”.

### ***How to increase faculty’s usage of LMS***

Respondents were asked to comment specifically on factors they thought could increase their use of LMS. More than half suggested that more training on the LMS has led to their increased use of the system (55%). Forty five percent (45%) of the respondents indicated that they did not require any training to increase their use (see table 4). Of the individuals who indicate that they found the LMS useful 7/16(44%) indicated that more training would not be required at this time. It is interesting to note that of the group that indicated that they did not find the LMS to be a useful tool, 4/6 or (67%) indicated that more training would help them use the system.

**Table 4**  
**Faculty perception of usefulness and training needs**

<b>Response</b>	<b>Q2= Usefulness</b>	<b>Percentage</b>	<b>Q3= More Training</b>	<b>Percentage</b>
Yes	16	73%	12	55%
No	6	27%	10	45%
Total (n=22)	22	100	22	100%

Responses to question 7 which asked, “What do you think can be done to increase the use of Angel by students?” also support the focus on training. Several respondents state that it would help them overcome the hurdle of not using the LMS. Some examples of the responses were:

“We should have a short introduction for students at the beginning of the year”,

“I am not positive students would use Angel unless they were given mandatory workshop in the first weeks of class to orientate them on the system hands-on...”, and

“Need more training, would like to have more hands-on instruction”.

The suggestion that training would increase the use of the LMS is well supported by the literature (Yueh and Hsu 2008, Schaffhauser 2010 and Shein 2008).

## Discussion

The extent of faculty usage of the LMS can be seen in the fact that sixty four percent (64%) used the LMS all or sometimes and mainly for posting lesson content, file sharing and to a lesser degree, online tests, communications, grades and attendance record keeping.

The results suggest that at the main factor affecting faculty use of the LMS is that at a theoretical level, they recognize the benefits of the LMS even though some do not make use of the system in their practice (Bongalos, et al, 2006). There seems to be an understanding of its importance, but this understanding seems not to have the power to move them to action and engagement with the LMS. Firstly, while our study did not examine this occurrence, we will side with Yueh and Hsu (2008) in their conclusion that fear of technology could be a factor which contributes to this occurrence and, therefore should not be ruled out, but addressed. One way this could be addressed is through training and the development and implementation of appropriate policies and strategies. Secondly, there is the need for an attitudinal shift among faculty which will increase their use of the LMS. This attitudinal shift could be encouraged with appropriate policies, strategies and initiatives (Sheehy et. al. 2006).

Another factor that affect faculty's usage of the LMS it time. This finding supports the established literature which points out that insufficient time to experiment with the LMS was indeed a barrier to faculty's use of the system (Yueh and Hsu, 2008). Still another factor is the availability of IT support for faculty using the LMS. The suggestions offered my Minott (2010) and (Schaffhauser, 2010) are indispensable. The writers point out the need to have greater vigilance and availability of technical staff and to have IT personnel assigned specifically to the LMS.

These results have implications for the use of LMS. Firstly, there is the need to "sell" the benefits of LMS to faculty, especially those who see it as "unnecessary", showing it as a "value added," phenomenon, this ties in with the need to address attitudes which act as barrier to use of LMS. Ways these could be achieved have been outlined in the foregoing discussion. Secondly, it behooves administrators to pay attention to the training needs of their faculty members. While this may be the case, it seems faculty also needs to be proactive and take the initiative in seeking out training and make the time to become familiar with the LMS. The process of training is also of importance for an overriding concern will be the need to utilize an appropriate approach that gradually eases individuals into using new technology (Schaffhauser 2010, Shein 2008 Abazi-Bexhetl, Kadriu and Ahmedi 2010). Finally, as with all technology, some will embrace it and some will not, our study clearly displays this fact.

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**Editor's Note:** This paper addresses unresolved issues related to learning preferences, learning styles, and learning modalities. There is a varied literature with a broad range of hypotheses, theories, definitions, and interpretations. This paper is a reminder that it is time to revisit these issues and obtain a resolution.

## Learning Styles: Implications for Instructional Design

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USA

### Abstract

This paper explores the applicability and efficacy of learning styles and their effect, if any, on learning outcomes. Specifically, this paper addresses the subtleties between learning styles and learning modalities, as well as differentiating between learning styles and cognitive styles. A background on reliability and validity of instruments used to identify specific learning styles and their psychometric properties is discussed, as well as a brief summary on learning style research. Additionally, a critical view of learning styles and their effect on learning outcomes is introduced and analyzed.

**Keywords:** learning styles, learning modalities, cognitive styles, learner preferences, learner characteristics, instructional design.

### Research on Learning Styles

The recurring debate concerning the efficacy of learning styles and their impact on learning outcomes has been reflected in the literature for the past 50 years. The research, however, has not overwhelmingly supported the premise that learning styles are useful variables when designing instruction for adult learners. That said, the majority of research does not support a statistically significant relationship between learning styles and learning outcomes. Since the goal of designing instruction is to attain desired learning outcomes and ultimately improve human performance, the question an instructional designer must address is: Should learning styles be considered as variables when designing instruction?

A recent article in the *Chronicle of Higher Education* entitled *Matching Teaching Style to Learning Style May Not Help Students* (2009) addressed the aforementioned question. The article summarized a comprehensive meta-analysis on learning styles that revealed that there is not a compelling argument to support the predictive validity of measures of learning styles on learning outcomes (Pashler, McDaniel, Rohrer, & Bjork, 2008). A decade earlier, a similar conclusion was reached when Stahl (1999) found that research failed to demonstrate that assessing children's learning styles and matching them to instructional methods had any effect on their learning.

Nevertheless, there is a strong intuitive appeal to the notion that individual preferences and styles of learning must play a significant part in learning outcomes. Indeed, those who teach and those who learn notice the variability in the speed and manner with which their students acquire new information and ideas, and it seems reasonable that planning instruction to adapt to individual learning should yield improved learner outcomes (Coffield, Moseley, Hall, & Ecclestone, 2004).

### Reliability and Validity

Whereas the discussion on learning styles focuses on individual differences in learning, it *should* focus on the whether learning styles can be used to *predict* performance. Despite the commonly held belief that learning styles—most notably the visual, aural, and kinesthetic (VAK) models (Sharp, Byrne, & Bowker, 2008)—affect performance, there is a debate about whether learning styles even exist, and that perhaps the only current evidence of their existence are the tests used to

identify them. Any discussion concerning the research on learning styles, therefore, must address the reliability and validity of the instruments used to identify learning styles.

Simply stated, *validity* refers to whether a test appears to be measuring what it purports to measure, and *reliability* questions whether a test will consistently produce the same or similar results over repeated measures. That said, if the instruments used to identify learning styles do not meet the criteria for robust reliability and validity, then the results of those tests could not be used with confidence to establish relationships between variables. This conclusion was similarly reiterated by Cassidy (2004) where the twenty-four most common instruments used to identify learning or cognitive styles were analyzed. Cassidy concluded there were many overlaps and similarities between the different instruments resulting in a lack of explicit information needed to draw any conclusions about the effects of such styles on learning—the absence of reliability and validity data notwithstanding.

Myron Dembo, an esteemed educational psychologist and Emeritus Professor of Educational Psychology, stated “any usefulness that might be derived from applying learning styles must be substantiated by valid and reliable instruments” (Dembo & Howard, 2007, p. 103). He concludes, furthermore, that “there is no benefit to matching instruction to preferred learning style, and there is no evidence that understanding one’s learning style improves learning and its related outcomes” (p.107).

Although the visual, aural, and kinesthetic (VAK) learning styles are unquestionably the most familiar, research has identified *over 71 different types of learning styles* which have been categorized into 13 models and families (Learning Styles and Pedagogy in Post-16 Learning: A Systematic and Critical Review, 2004). Due to the low validity and reliability scores of the instruments used to identify specific learning styles, however, there are serious doubts about their psychometric properties (Coffield, Moseley, Hall, & Ecclestone, 2004; Liu, Ginther, & Ginther, 1999; Penger, Tekavčić, & Dimovski, 2008). This lack of reliability and validity of the instruments used to identify learning styles has been supported by Curry (1990). He claims that there are three basic problems associated with the use of instruments used to identify learning styles: (1) confusion in definitions of learning styles, (2) weaknesses in reliability and validity, and (3) the identification of relevant characteristics in instructional settings, or aptitude-treatment interactions.

Curry’s conclusion has also been echoed in a comprehensive literature review conducted by Professor Thomas Reeves, of the University of Georgia, entitled *Do Generational Differences Matter in Instructional Design?* (Reeves, 2006). In his literature review, Reeves stated that the weaknesses found in learning styles research throws grave doubt on the validity and utility of employing learning styles as a basis for accommodating students of any generation (Coffield, et al., 2004).

## Learning Styles versus Learning Modalities

There is substantial confusion between the terms *learning modalities* and *learning styles*; these are often used interchangeably. Learning or cognitive styles are *habitual ways of processing information to memory*. They are the *ways* one senses, thinks, solves problems, and remembers information. In contrast, *learning modalities*, refer to one’s senses: *visual, auditory, and tactile (including kinesthetic)*. Neuroscience, however, has revealed that “ninety percent of learning is visual with eighty-five percent of the brain wired for visual processing” (Lucas, 2004, pp. 8, as cited in Clemons, 2005); one’s *primary* learning modality, therefore, is *visual*.

The most significant variable in terms of one’s retention of learning is one’s attachment of meaning to what is learned. Retention is generally independent of the modality used to acquire whatever is learned (Willingham, 2005). Nevertheless, it should be noted that retention can be

reinforced to some degree when learning occurs through a combination of text and images rather than through text alone (Mayer & Moreno, 2003). Furthermore, adding images to verbal (textual or auditory) learning can result in significant gains in basic and higher-order learning (Multimodal Learning Through Media, 2008).

Unquestionably, some individuals excel over others at aural, visual, or kinesthetic tasks. But our brain does not work in a way that differentiates types of information received through the senses. The brain seeks for meaning, pattern interconnectedness, relevance, and usefulness of applications (Greenleaf, 2003). It does this by storing information into memory *collectively*, not *separately*. With respect to working memory, verbal/text memory and visual/spatial memory work together, without interference, into a framework (or *schema*) of understanding. Consequently, the development of schemata requires students to learn topics in ways that are relevant and meaningful to them, regardless of the modality (Multimodal Learning Through Media: What the Research Says, 2008). This is supported by Clark and Mayer (2008) where they state, according to the cognitive theory of multimedia learning, that “all people have separate channels for processing verbal and pictorial material”, and “learners actively attempt to build pictorial and verbal models from the presented material and build connections between them” (p. 121).

### **Differentiation Between Learning Styles and Cognitive Styles**

Research has revealed a wide disparity in the definition of *learning styles* and their relationship to *cognitive styles*. The term *cognitive style* has been introduced and reintroduced into psychological literature since the writings of the German psychologists at the turn of the century. The term has been used most recently to denote consistencies in individual modes of functioning in a variety of behavioral situations. Specifically, cognitive style refers to the preferred way one processes information (Kagan, Moss, & Sigel, 1963). It is viewed as a bipolar dimension representing one’s typical or *habitual* mode of problem-solving, thinking, perceiving, and remembering; it is considered stable over time, and is related to theoretical or academic research (Cognitive/Learning Styles, n.d.).

Although there are numerous definitions of *learning styles*, the more common ones see these styles as being “multidimensional.” They are generally not “either-or” extremes. They are characterized by how information is preferentially perceived (sensory or intuitive), organized (inductive or deductive), processed (active or reflective), and received (visual, aural, or kinesthetic). In other words, a learning style or modality describes how information enters the brain: visually, aurally, or tactically, whereas cognitive style refers to how the information is processed once the information gets to the brain. Perhaps the most cited definition is by Keefe (1979) who defines “learning styles [as] the composite of characteristic cognitive, affective, and physiological factors that serve as relatively stable indicators of how a learner perceives, interacts with, and responds to the learning environment” (as cited in Merrill, 2000).

### **Conclusion**

The human dynamics of learning are a complex, multi-dimensional process, with cognitive science revealing that learners differ in their abilities with different modalities. Teaching to a learner’s best modality, however, does not affect his or her educational achievement. What does matter is whether the learner is taught in the *content’s* best modality (Willingham, 2005); learning is facilitated when content drives the choice of modality.

If a focus on learning styles does not work, what does work? Through the systematic design of instruction, integrating cognitive learning strategies that help learners link new information to prior knowledge should be a fundamental consideration. Myron Dembo, Emeritus Professor of

Educational Psychology, may have summed it up best when he stated that educational research supports the teaching of learning strategies that contain scaffolding features and tailored instruction for different levels of prior knowledge (Dembo & Howard, 2007). This focus on instructional strategies is also supported by David M. Merrill (2000), who concludes that “learning style is secondary in selecting the fundamental components of instructional strategy appropriate for and consistent with a given learning goal” (p. 4).

On a final note, the research on how we learn has generally ignored our agility in adapting to different learning environments. We have an intrinsic desire and ability to learn, although some of us are more adept than others. Learning style research, regrettably, has exhibited a tendency to “profile” learners into specific categories, and consequently has understated our individual potential to employ multiple learning “preferences” in our endeavor to learn. Consequently, we, as educators, must never underestimate the learning variable that “trumps” all other variables ...*the will to learn.*

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**Editor's Note:** This is a detailed cost study of distance learning programs offered by a mega open university in India. It should be valuable to compare cost with other programs, to prepare budgets, and to determine tuition cost and other fees.

## **Costing of Distance Learning: A Study of the Indian Mega Open University**

**Ashok Gaba, Santosh Panda and CRK Murthy**

**India**

### **Abstract**

The purpose of this study was to analyse the cost of selected professional programmes offered through distance learning by the Indira Gandhi National Open University (IGNOU), a mega open university from India. The findings of the study have broad implications for policy makers to determine student fees for programmes offered through distance learning.

**Keywords:** Costing, distance education, professional programmes, institutional cost, private cost

### **Introduction**

The educational enterprises, whether public or private supported, cost and costing assume considerable importance. Institutional programme, and student costs depend on a variety of factors, and vary across institutions. In case of programmes offered through distance learning, costing generally depends on (i) the funding policy (Smith and Bramble, 2008; Panda and Gaba, 2008), (ii) the delivery method of distance learning, and (iii) the economic model the institution adopt for offering their respective programmes. Rumble (1997) has extensively discussed cost analysis issues in the design of courses, cost of media and materials, student support services, comparison of costs of distance and traditional (conventional) education system, and financing of distance education. In the recent years, the role of information and communication technology has increased the offer of distance learning programmes, particularly those programmes which are being offered through online or e-learning mode. Hence, costs for traditional distance learning courses and online courses have shown significant differences because the cost of instructors for online courses is higher than the cost of course development in distance learning programmes. In addition, an important factor is increase in student numbers that reduces the unit cost. It is imperative that comparative studies on institutional and student costs for distance learning are undertaken at regular intervals so as to inform decision-making and facilitate the distance learners.

Cost incurred at the institutional level is called 'institutional cost'. The institutional cost categories include: (a) variable costs and fixed costs, (b) recurring and non-recurring costs, and (c) current and capital costs. Generally, in case of formal classroom teaching, teaching costs are treated as variable costs and are directly related to output of learners. Also, the fixed costs (those that are not directly related to output) in relation to total costs are more in case of classroom teaching when compared to that of open and distance learning (ODL). In ODL, expenditure is incurred on printing of learning materials, audios, videos, utilization of other ICT, and learner support. Therefore, cost calculation in the ODL system is based on various activities within the system itself: development, production and delivery of print and audio/video materials, student support services, assessment and evaluation, etc.

Student costs or private costs are those costs of education incurred by a learner or by his/her parents and guardians. These costs are of two types: direct and indirect. Direct costs are visible, like expenditure on tuition fees, purchase of books, transport, etc. Indirect costs are those costs which are not directly visible, called opportunity costs or foregone earning.

In the present research, we had analyzed institutional costs (recurring) and student costs (direct cost) for three professional programmes being offered by Indira Gandhi National Open University (IGNOU), the mega university of India. IGNOU started operation in 1986 and offered two academic programmes in management and distance education with 4528 students in 1987. These have increased to 468 programmes and 3 million students respectively in 2011. The university unlike any university of the world has two functions: it acts as an open university and also as the apex national accrediting body for distance education in the country through its Distance Education Council. Though the university has a cost model available for programme design, development and delivery (Pillai and Naidu, 1997a), there are not many studies to facilitate contemporary decision making on funding and expenditure. The present study is a noted contribution towards this.

## Review of literature

Studies conducted in this area in India through a few, pertain to analysis of sources of income and expenditure of the system, and unit cost analysis in relation to the operations of the ODL system. It has been found that the major source of finance in ODL institutions was 'student fees' and sometimes funds raised through grants from other sources (Biswal, 1979; Sahoo 1985; Datt, 1994; Gaba, 1997). In respect of costing of distance learning, Pillai and Naidu (1997b) analyzed the unit costs of IGNOU and found that faculty salary consumed the major portion of the cost and economies of scale could be maintained up to an enrolment of figure 300,000 students. In other studies, it was found that unit costs of correspondence courses were much lower than those of the regular courses (Pandey, 1980; Ram 1984; Gupta, 1985; Gaba, 1997). Datt (1988) pointed out that both unit cost and state subsidy were lower in the case of ODL. The per student cost of distance education was merely 15 to 20 per cent of the cost in the formal system (Ansari, 1987). In another study, Datt (1994) calculated the break up of costs into: academic costs non-academic costs and other costs, and concluded that larger variance was found in academic costs in different correspondence institutions in India.

In another study on a dual-mode institution, Kishore (1997) indicated that the University of Madras was highly cost effective from the point of view of the society. The significant feature was that the major proportion of the cost was recovered through student fees (i.e. private cost), making the system highly economical institutionally. A study at IGNOU on cost analysis (including private cost) of different programmes (Naidu, 2001) found that, on average, the MCA students spent the maximum, followed by B.Sc., B.A. and PG Diploma in Higher Education students. Kulindiaswamy (2002) analysed the capital and operating costs of IGNOU and found that capital expenditure on buildings and campus development had been reduced over the years. On the other hand, expenditure on equipment, furniture and library had increased. The study also suggested that expenditure on development and production of course material remained almost constant at the level of 28 percent, though the percentage expenditure on student support services almost doubled from 29.8 percent to 57.48 percent. The salary component was approximately 25 percent of the total recurring expenditure from 1990-91 to 2000-01. In the years 2001-02 and 2002-03, this declined to 20 percent and 18 percent respectively. The study concluded that the share of costs for development, production and maintenance of courses accounted for about 30 percent, whereas the remaining costs were shared by student support services and overhead cost. Delivery costs were expected to be met from the student fees, and the remainder could be subsidized through government funds and other internal resources (Naidu, 2005). Datt and Gaba (2006) found that the per student cost of dual-mode distance teaching institutions was less than the single mode distance teaching institutions in India because the former did not adopting proper pedagogy for the distance education system.

Studies conducted by international scholars on different aspects of economics for open and distance learning show that researchers adopted different sets of cost functions in their institutional cost studies. Wagner (1972) found that the United Kingdom Open University (UKOU) produced undergraduates at about one fourth cost of the conventional universities. Further studies on the same theme indicated that they produced graduates at something over half the cost of other universities in 1981. Distance education programmes in both Sri Lanka and Indonesia were significantly lower in cost than conventional teaching in the classroom (Nielsen et al, 1991). The cost per graduate at Allama Iqbal Open University was 45 to 70 per cent of the cost of conventional universities (Neil and Roberts, 2004). Richardson (2006) analyzed a comparative costing of pre-service (conventional) and in-service (distance learning) teacher training programmes and found that the unit costs were lower for distance learning than for the conventional programme. Mensah (2006), in an analysis of the cost efficiency ratio in Namibia found that the distance education system was more efficient than the conventional system. In a study at the secondary school level, Rumble (1998) found Open and Distant Learning (ODL) to be more expensive than the traditional system where lesser number of students were enrolled.

Studies conducted on various aspects of costing of various media in education (Wells, 1976; Jamison et al, 1978; Eicher, 1980; Perraton, 1982; Fwu et al., 1992; Chambers, 1994; Bates, 1994) found that the production costs were higher for film and lower for radio; fixed costs for transmission were much higher for television than for radio; audio cassettes were likely to be cheaper than radio where the viewership was restricted; and that the cost structure of open and distance learning differs from traditional classroom teaching. Wagner (1972) and Mace (1978) pointed out that these costs could change significantly if the media mix is changed. Eicher (1982) summarized factors that affect cost levels in media-based distance-learning programmes and pointed out that the design and production costs are generally much higher than the costs of transmission and reception. On the other hand, radio has an advantage over TV and other media in respect of the audience size. Charbonneau and Cunningham (1993) found that at Athabasca University, video-conferencing resulted in three types of saving: travel costs, 50 percent reduction in instructional time and costs, and an increase in faculty productivity due to not traveling. Stahmer (1995) analyzed the cost of computer-based training in comparison to classroom-based training, and found that the cost per student of computer-based training was roughly half the cost of the latter.

A few studies have also been conducted to assess the cost-effectiveness of online education. These studies reported that online teaching was more cost-effective than classroom teaching mainly due to the potential to deliver courses to a larger number of students. The development of online courses by both traditional campus based and ODL institutions has raised many questions concerning the costs of online teaching. Hulsmann (2000) found that costs were forty times as much to produce interactive multimedia materials as in print. The author stated that marking of assignments had the highest unit cost for one-to-one communication; and tutoring through video-conferencing had a higher per student cost than classroom tutoring. Jung (2005) found that online teacher training was more cost-effective than teacher training in a classroom, mainly due to the lower opportunity cost of the participants. She concluded that the total cost of online training was approximately 59 percent that of face-to-face training when learners' opportunity costs were included. The cost per enrolled student for online training was approximately 43 percent that of classroom training. In another study, Belawati (2006) estimated costs for academic activities as: learner support (44%), course development (36%), student assessment and evaluation (13%), and research (7%). If an institution is planning to shift to online learning, it does not assure a reduction in costs, especially where there is a high delivery cost (Inglis, 2008). On the other hand, virtual universities need to find ways to reduce cost- per-graduate by improving the graduate/course completion rate (Jung, 2008).

The selected studies reviewed above suggest that the ODL system is generally more cost-effective compared to the traditional classroom system of teaching and has the advantage of economy of scale. In India, there has been a dearth of studies on media-intensive distance learning. The review reveals that most studies were conducted on cost comparison between distance and conventional education systems, unit costs, and funding pattern of the distance education system. Very few attempts have been made to estimate *institutional costs* and *students costs* together within the ODL system. The present study attempts to address this in a mega open university, i.e. IGNOU.

## Objectives of the Study

The objectives of this study were to:

- estimate institutional (recurring) costs for three selected professional programmes: Master of Business Administration (MBA), Master of Computer Application (MCA), and Bachelor of Computer Application (BCA) offered at the National Open University in India.
- find out the student costs (i.e. private costs) for MBA, MCA, and BCA programmes; and
- estimate the total costs ( institutional and student costs) for MBA, MCA and BCA programmes. An implicit objective of the study was to deduce implications for policy decisions for professional programmes at the mega open university.

**Research Design** The study was based on primary and secondary sources of data. Published and unpublished documents of IGNOU were used for the analysis. For the institutional cost, the main focus was to analyze the existing data, i.e. IGNOU's published annual budget for the year 2003-04. The Bachelor in Computer Application (BCA), Master of Computer Application (MCA), and Master of Business Administration (MBA) enrolments were subject to analysis. Due to non-availability of detailed financial data for various programmes, calculation based on information available in the institution and the concerned schools of studies was done by taking into consideration the programme-wide recurring cost of selected items at current prices. For calculating student cost (private costs), the survey technique was adopted. For this, a student questionnaire was developed that consisted 16 items on private cost e.g. (a) registration fees, (b) additional books, (c) stationery items, (d) private coaching (additional tuition), (e) transportation, (f) preparation of assignments, and project, and (g) use of web/telephone/internet. For estimating student costs, 400 learners from each of the MBA, MCA and BCA programmes were randomly selected, and the private cost questionnaire was dispatched to all the 1200 sampled students during May, 2006 (Table 1).

**Table 1**  
**Sample size and response rate of the respondents**

Programmes	Number of students enrolled (2003)	Questionnaire dispatched sample cohort (2006)	Filled in questionnaire received	Response rate
BCA	20,914	400	36	9%
MCA	15267	400	48	12%
MBA	15216	400	122	31%
Total	151397	1200	206	17%

The sample was selected keeping in mind students' geographical/regional centre and gender representation. These three programmes were selected because of their professional nature and

great demand in the market through the ODL system. Out of a total of 1200 questionnaires dispatched to sampled students (who had enrolled in 2003 cohort) in 2006, 206 complete sets were received back (an average of 17% response rate, varying from 9% for BCA to 31% for MBA). In 2006, the BCA students had completed two of the three years of study, and MCA and MBA students had completed their two years of study.

### **Methodology for cost estimation**

Scholars vary in their opinion with respect to methodologies adopted for cost calculation. Jamison et al (1978), Mack (1978), Rumble (1997), Hulsmann (2000) and Naidu (2001) defined a costing model based on operation of the open university system and student costs. Rumble emphasizes activities-based costing, well accepted in the literature on costing information and instructional technology usage. Two case studies conducted by Bartolic-Zlomislic and Bates (1999) and Bartolic-Zlomislic and Brett (1999) used costing models such as (i) capital and recurrent costs, (ii) production and delivery costs, and (iii) fixed and variable costs. The cost structure of each technology was analyzed and the unit cost per learner was measured.

Various factors are responsible for estimated cost in ODL. Since distance education maximizes accessibility to educational opportunities, a variety of media, like print material, radio, TV, CDs, Internet, telephone and fax are used for instruction. The costs of teaching through different media vary, due mainly to the influence of factors like fixed and variable costs, the composition of which significantly varies for different media. For instance: fixed costs are much higher for TV than for radio. It can be lowered if existing broadcasting installations are used. In addition to these variables, the organizational structure of an open university is an important factor, which affects the costs within the ODL system. In case of small audience size, small media like slide projector or tape recorder have greater cost advantages than the big media like TV and computer based instruction or Internet. The choice of media mix is very crucial for promoting the distance teaching-learning process. For taking a decision on media choice, other socio-cultural and political objectives of imparting education are also taken into account besides the economic costs.

From the foregoing discussion, it is apparent that the cost of ODL depends on the extent of the resources utilized, the types of technology used, the size of enrolment, and the number of courses offered. It also depends on the quality and quantity of paper used for print media, the quality of equipment for electronic media, and the extent of multimedia use in computer-based instruction.

### **Total costs of ODL programmes**

The sum of student costs and institutional costs is called the total costs of a particular educational programme. Institutional costs include recurring and non-recurring expenditures on different items. It is summarized in the following equation:

$$TC = C_s + C_i$$

Where,

TC = Total costs

C<sub>s</sub> = Student costs

C<sub>i</sub> = Institutional costs

The following variables were taken into account for calculation of institutional (recurring) cost in the present study:

- Expenditure on printing of self-learning materials;
- Salary of academic and nonacademic staff;

- Expenditure on delivery of self-learning materials; and
- Remuneration paid to the evaluators of assignments and term-end answer scripts.

Student (private) cost was calculated on the basis of students' actual expenditure on: (a) registration fees, (b), (c) additional books, (d) stationery items, (e) private coaching (additional tuition), (f) transportation, (g) preparation of assignments and project(s), and (h) use of web/telephone/internet.

### **Limitations for the Present Study**

This study has limitations. We estimated recurring institutional costs for one year, 2003-04. This year was selected because of the availability of the actual data at current prices. The number of students enrolled in all the three programmes for this year were used to calculate total institutional expenditure. We assumed that all the students started study in their respective programmes immediately after enrolment. We did not analyze fixed costs and capital costs of these programmes because categorical institutional data was not available. The number of courses (1 course = 5 to 6 credit, 1 credit = 30 student study hours) varied from programme to programme. For estimating the programme cost, we chose the first eight courses of each programme for uniform analysis, because students had to complete two semesters comprising 8 courses in a year in each of the three programmes.

The recurring cost for MBA, MCA and BCA programmes did not include support services for the delivery of television, teleconferencing, audio, video programmes and counselling because data was not available. Expenditure to conduct term-end examinations was not estimated because examinations were conducted together for all programmes (about 125 in that year at above 3000 exam centers) of the university including the selected three programmes for the present study. Expenditure on printing of assignments, production of audio/video/teleconferencing /interactive radio counseling was also excluded for the three programmes for the same reasons. And for students' cost, as noted above, we calculated direct costs only.

## **Results**

### ***i) Institutional Data Analysis***

#### **Expenditure on staff salaries (teaching and non-teaching staff)**

The expenditure on salaries of teaching and non-teaching staff of all the three programmes was estimated on the basis of the then existing actual pay scales of the staff in 2003-04 at current prices. The allowances and other benefits were also calculated by multiplying the number of staff existing at respective schools of studies of IGNOU during the same year. Expenditure on salaries of the teaching staff was calculated on the bases of the existing number of faculty members i.e lecturers, readers and professors who were on the job in 2003-04 and were coordinating their programmes respectively. The minimum gross salary (basic and allowances) was taken into account while calculating the total expenditure on teaching staff which was Indian Rupees 349.9 thousand. The School of Management Studies of IGNOU was coordinating two programmes i.e. Commerce and Management Studies in 2003-04. The allocation of teaching staff in the School was as per each programme (discipline-wise), which was not the case for support staff (which was providing support across programmes within the school). Therefore, expenditure on non-teaching staff salaries was calculated as a proportion of the total expenditure (actual) on salaries of such staff incurred during 2003-04. We have adopted the 'percentage of courses' approach to calculate the expenditure on salaries of the non-teaching staff (see Table 2) by assuming that the staff helped the faculty in maintaining the courses. Hence, the total expenditure on non-teaching staff for the MBA programme was calculated proportionally as share of percentage of courses.

We had taken into consideration for MBA 75% of the total salary of non-teaching staff during 2003-04 and it was Rs.121.8 thousand.

**Table 2**  
**Share of courses of commerce and MBA programmes**

	No of courses	% of courses
Commerce	17	25
MBA	52	75
Total	69	100

Similarly, recurring expenditure on salaries of staff of BCA and MCA programmes was calculated on the basis of percentage share of courses as in the case of MBA programmes. The School of Computer and Information Science was running three programmes in 2003-04: Bachelor of Computer Application (BCA), Master in Computer Application (MCA), and Certificate in Computing (CIC). Therefore, we had given weight to BCA and MCA based on the number of courses for calculating expenditure on the cost of salaries of the non-teaching staff of BCA and MCA programmes (see Table 3).

**Table 3**  
**Share of courses of MCA and BCA programmes**

Programmes	Courses	%
MCA	31	49
BCA	27	43
CIC	5	8
Total	63	100

All the faculty members were maintaining the courses of the three programmes every year. Therefore, the expenditure on the teaching staff salaries was calculated on the basis of the percentages of courses. The total expenditures on the salaries of the teaching staff of BCA and MCA programme were calculated to be Rs. 115.9 thousand (MCA) and Rs. 101.7 thousand (BCA) respectively. Expenditure on non-teaching staff was also calculated based on the same methods: Rs. 75.6 thousands for MCA and 66.3 thousands for BCA.

### ***Expenditure on printing of self-learning materials (SLMs)***

A clarification on terminologies used for the programme and courses is needed before proceeding to present the cost analysis. A programme refer to the curriculum or combination of courses in a particular field of study (e.g. certificate, diploma and degree). It is used to describe the teaching materials (print and non-print) and other components of study (couselling, assignments, projects, hands on if any). A course consists of a number of booklets (or blocks/modules) of printed material, and also audio and video materials. As mentioned earlier, a course may be of 4, 6, 8 credits where 1 credit is equal to 30 student study hours. The block appears in the form of a booklet (textbook) of around 60 to 85 printed pages. Generally each block presents one combined theme. There are 3-5 units in a block, and each unit is of 4000- 6000 words. There have been deviations to this too, depending on the need of an individual course. The expenditure on printing of SLMs was calculated on the basis of expenditure per block. As mentioned earlier, the development cost of SLMs had been excluded in the present context. The block printing cost was calculated on the basis of information provided by the Material Production and Distribution

Division (MPDD) of IGNOU as per their prescribed formula (See appendix 1). The cost of each block was calculated as per their formula and it was found, on an average, to be Rs. 212.12 during 2003-04. We assumed that all one-year programmes contained 8 blocks. The expenditure on printing of study material of all the programmes was calculated in 2003 on the basis of: the number of students enrolled in the respective programme X Rs.212.12 X number of blocks (i.e. 8). In each of MBA and BCA programmes, there were 32 blocks of total in comparison to 36 blocks in MCA programme. The total expenditure on SLMs was Rs. 17213.7 thousands for MBA, Rs. 14136.6 thousands for MCA, and Rs. 12523.9 thousands for BCA.

#### ***Expenditure on delivery of self-learning materials***

As mentioned earlier, we estimated expenditure on the basis of eight courses for each of three programmes. Therefore, the delivery cost was calculated on the basis of the actual per package postage costs i.e Rs. 50 per packet during 2003-04. Each eight credit course sent in two packets). Therefore, we assumed that all 8 blocks of the three programmes 8 credit course were dispatched in six packets. Hence, the per student dispatch cost was Rs. 300 (Rs. 50 X 6 =300). The total expenditure on delivery of SLMs for each programme was calculated on the basis of: number of students X per student dispatch cost (which was Rs. 627. 4 thousands for MBA, Rs. 458.0 thousands for MCA, and Rs. 380.4 thousands for BCA).

#### ***Expenditure on evaluation of assignments***

The requirement of assignments to be done by a student varied from programme to programme. For the MBA programme each student had to submit three assignments as per IGNOU norms in 2003-04 of which the best two were considered for inclusion of grades in the final grade card. Therefore, we had considered two assignments per course while calculating the total expenditure on evaluation of assignments. Hence, the total expenditure was: 16 assignments (8 courses x 2 assignments) X per assignment rate (@ Rs 15 per assignment) X number of students enrolled in each programme, which was Rs. 501.9 thousands. Similarly, in the MCA programme each student had to submit 12 assignments in a two-semester course and the total expenditure was Rs. 274.8 thousands. For the BCA programme, each student had to submit four assignments in a year for two semester courses, and the total expenditure incurred was Rs. 91.2 thousands.

#### ***Expenditure on evaluation of answer sheets***

Expenditure on evaluation of the answer sheets of term-end examinations was calculated for all the three programmes on the basis of: number of students enrolled in 2003-04 for each programme X 8 courses X Rs. 15 (i.e. the rate of payment for evaluation of one answer scripts). The total expenditure was Rs. 251.9 thousands for MBA, Rs. 183.2 thousands for MCA, and Rs 182.5 thousands for BCA.

#### ***Total recurring expenditure***

It may be observed from the above analysis that the major recurring expenditure for all the three programmes was on printing of self learning materials (more than 90%), followed by dispatch of these materials to the students (about 3%). Expenditure on other items was much less than printing and delivery costs (Table 4). As we had mentioned earlier that due to non-availability of baseline data we had excluded the expenditure on students support services which included expenditure on counselling and also the expenditure on the development and telecasting/broadcasting radio/video programmes. If these recurring expenditures were included in our analysis, then the percentage of printing and delivery of the SLMs to the total recurring expenditure would have been lower.

**Table 4**  
**Item-wise expenditure for all the programmes (Rupees in thousand)**

Sr. No.	Items	MBA		MCA		BCA	
		Amount (In Rs.)	%	Amount (In Rs.)	%	Amount (In Rs.)	%
1.	Salary of the teaching staff	349.9	1.84	116.0	0.76	101.8	0.76
2.	Salary of the non-teaching staff	121.8	0.64	75.6	0.50	66.3	0.50
3.	Printing self-learning material	17213.7	90.29	14136.6	92.73	12523.9	93.84
4.	Delivery of self-learning material	607.4	3.29	458.0	3.00	380.4	2.85
5.	Evaluation of assignments	501.9	2.63	274.8	1.80	91.2	0.68
6.	Expenditure on evaluation of term-end examination sheets	250.9	1.32	183.2	1.20	182.5	1.37
	Total	19065.8	100.00	15244.2	100.00	13346.1	100.00

### **(ii) Student Costs**

For calculation of the student costs, we obtained information from the students on the expenditure which they incurred on their respective programmes while studying in IGNOU. A structured questionnaire consisting of 16 questions relating to the objectives of the study was developed and posted to randomly selected students enrolled in the three programmes during May, 2006 (400 students of each programme). Of the total 1200 students, 206 students (17%) sent back filled in questionnaires.

### **Profile of the respondents**

- Most of the respondents (63%) belonged to urban areas; were male (80%); in the age group 26-30 years (57%); and married (59%).
- More than 75% of respondents of the BCA programme were unmarried in comparison to those in MCA (58%) and MBA (68%) programmes.
- More than 95% respondents of the MBA programme were employed in comparison to those in BCA (63%) and MCA (43%) programmes.

We had calculated the student cost on the basis of information provided by them. Their expenses were categorized into three stages at which each student incurred some expenses while study through the distance education mode: (a) pre-entry stage; (b) entry stage; (c) post-entry stage (Table 5).

**Table 5**  
**Stages of student's expenditure while studying through distance mode**

<p><b>Pre- entry stage</b></p> <p>Expenditure incurred by a student on:</p> <ul style="list-style-type: none"> <li>▪ Prospectus</li> <li>▪ Registration fees</li> <li>▪ Transportation (visited study centre/regional centers for purchasing prospectus, admission enquiry etc.)</li> <li>▪ News paper</li> <li>▪ Browsing web/email</li> </ul>	<p><b>Entry-stage</b></p> <p>Expenditure incurred by a student on:</p> <ul style="list-style-type: none"> <li>▪ Purchase of additional books</li> <li>▪ Private coaching</li> <li>▪ Stationery items</li> <li>▪ Transportation (for submission of assignments/project reports/attend counselling sessions etc.)</li> <li>▪ Project preparation</li> </ul>
<p><b>Post-entry stage</b></p> <p>Expenditure incurred by a student on:</p> <ul style="list-style-type: none"> <li>▪ Transportation (for visiting study centers(SCs)/ regional centers (RCs)/ and head quarters (HQs) for collecting assignment results, incorporation of assignments and project marks in Grade Card, filling the registration form for the next semester etc.</li> </ul>	

In addition to the above variables, a few students (2% of the total respondents) visited study centers, regional centers, and head quarter for not receiving the study materials on time. This has not been taken into account while calculating the student expenditure because responses to this item were very few. Hence, the total student cost (at all stages) was calculated for all the three programmes for items like: (a) transportation (for purchasing and submission of registration form, attending counselling sessions, submission of assignments, appearing in term-end examination); (b) registration fees; (c) private coaching; (d) purchase of additional books; (e) stationery items; and (f) telephones/browsing web mails. The information provided by the students was heterogeneous; it varied from student to student. Therefore, we had calculated the average cost on each item incurred by them during the three stages of their entry while studying in IGNOU.

### **Pre-entry stage**

On an average, students of the BCA programme spent more (Rs. 17,816) in comparison to MCA (Rs. 16,701) and MBA (Rs. 8,601) programmes during the pre-entry stage (Table 6).

**Table 6**  
**Programme-wise (pre-entry stage) student costs ( In Rs)**

Items	MBA		MCA		BCA	
	Amount	%	Amount	%	Amount	%
Transportation	1,429	16.61	1,418	8.49	2,290	12.85
Registration	5,810	67.55	1,1461	68.62	13,074	73.38
Prospectus	385	4.48	70	0.42	340	1.91
Web/Email	350	4.07	2,692	16.12	890	5.00
Others	627	7.29	1,060	6.35	1,222	6.86
Total	8,601	100.00	16,701	100.00	17,816	100.00

For all the programmes, most students spent about 67% (and above) of their total expenditure on registration fees before entering into their respective programmes. Students of the MBA programme spent the highest (16.16%) on transportation for obtaining prospectus and submitting registration fees in comparison to the students of BCA (12.85%) and MCA (8.49%) programmes. The students of the MCA programme spent more (16.12%) on browsing IGNOU's web page and checking emails than students of BCA (5.00%) and MBA (4.07%) programmes.

### **Entry stage**

Table 7 indicates that most of the MBA students spent more (52.06%) on transportation in comparison to MCA (33.27%) and BCA (23.63%) students during the entry stage. They had incurred expenditure on transportation for attending counseling sessions, practical and teleconferencing sessions, submission of assignments and appearing in term-end examination for which they visited SCs/RCs and HQs. As noted earlier, we had excluded the expenditure on viewing audio and video programmes, submission of examination form and receiving the study material while calculating the transport cost because most of the students did not respond to this item. The students of the BCA programme spent more (25.41% of their total expenditure) on private coaching during the entry stage in comparison to MCA (21.60%) and MBA (4.09%) students. Among the three programmes BCA students spent more (Rs. 20,139) in comparison to MCA (Rs.19,940) and MBA (Rs.14, 753) students while studying at IGNOU (Table 7).

**Table 7**  
**Programme-wise (entry stage) student costs (In Rs.)**

Items	MBA		MCA		BCA	
	Amount	%	Amount	%	Amount	%
Purchase of additional books	1774	12.02	2895	16.14	2804	13.92
Private coaching	603	4.09	3875	21.60	5117	25.41
Stationery	1476	10.00	1533	8.55	2002	9.94
Transportation	7680	52.06	5969	33.27	4758	23.63
Project/assignment Preparation	2758	18.69	2348	13.09	3408	16.92
Web/email/telephone	462	3.13	1320	7.36	2050	10.18
Total	14753	100.00	17940	100.00	20139	100.00

### **Post-entry stage**

During the post-entry stage most of the students of all the three programmes spent money on transportation. The students of the MCA spent more (Rs. 2008) in comparison to the BCA (Rs. 1790) and the MBA (Rs. 1289) students. They visited SCs/RCs/HQs for the following reasons:

- know the results of their respective programmes (52%);
- find out the delay in the despatch of the non-receiving the Grade Card (26%);
- find out non-incorporation of the assignments marks in the final Grade Card (38%); and
- For submission of the registration form for the next course (64%).

### **Student cost at all stages**

We had calculated students' total expenditure on items like (a) registration fee; (b) transportation; (c) prospectus; (d) purchase of additional books; (e) private coaching; (f) assignment/project preparation; and (g) stationery items.

The expenditure of students of the BCA programme (Rs.39,745) was higher than that of the MCA (Rs. 36,649) and MBA (Rs. 24,633) programmes (Table 8). The major proportion of expenditure of students of the BCA (Rs.13, 074) and MCA (Rs.11, 461) programmes was on 'registration fees' than the MBA (Rs. 5, 810) programme. It is understandable because the BCA programme was a three year programme. However, the actual registration fees for all the three programmes for the two-semester course was Rs. 6,200 (BCA), Rs. 11, 000 (MCA) and Rs.9, 600 (MBA) respectively during 2003-04. It is interesting to note here that most of the students of the MBA programme incurred more expenditure (42.19%) on 'transportation' for visiting SCs/RCS/HQs than the students of BCA (22.24%) and MCA (25.63%) programmes (Table 8).

**Table 8**  
**Total student costs (In Rs.)**

Items	BCA		MCA		MBA	
	Amount	%	Amount	%	Amount	%
Registration Fees	13074	32.89	11461	31.26	5810	23.58
Transportation	8838	22.24	9395	25.63	10398	42.19
Prospectus	340	0.86	70	0.19	385	1.56
Purchase of Additional Books	2804	7.05	2895	7.90	1774	7.20
Private Coaching	5117	12.87	3875	10.57	603	2.45
Project Preparation	3408	8.57	2348	6.40	2758	11.19
Stationery Items	2002	5.04	1533	4.18	1476	5.99
Others	4162	10.47	5072	13.84	1439	5.84
<b>Total</b>	<b>39745</b>	<b>100.00</b>	<b>36649</b>	<b>99.97</b>	<b>24643</b>	<b>100.00</b>

### (iii) Total Costs

As was already noted:

$$TC = C_i + C_s$$

Where, TC = Total cost

$C_i$  = Institutional costs

$C_s$  = Student cost

The total costs of BCA, MCA and MBA programmes are presented in Table 9. It is seen that the total cost of the MBA programme was higher (Rs. 19, 068.3 thousand) in comparison to that of MCA (Rs. 15, 247.8 thousands) and BCA (Rs. 13, 350.1 thousands) programmes.

**Table 9**  
**Total costs of ODL Programmes ( Indian Rs.)**

Programmes	Institutional costs (Rs. in million)	Students costs (Rs. in thousands)	Total costs (Rs. in million)	Number of students enrolled in 2003-04	Per student cost (In Rs.)
BCA	133.4	40	133.50	15216	8,774
MCA	152.44	36	152.47	15217	10,020
MBA	190.65	25	190.68	20914	9,117

## Conclusion

The following are the summary of the main findings of the present study:

- The recurring expenditure (institutional cost) of the MBA programme (institutional cost) was higher than that of MCA and the BCA programmes.
- The students of the BCA programme incurred more expenditure (private cost) than the students of MCA and MBA programmes.
- The per student total cost (institutional and private) of the MCA programme was higher than that of the MBA and BCA programmes.

One of the objectives of setting up ODL institutions in India was to provide cost effective programmes to those who couldn't get their education due to one reason or another. The above analysis of institutional and student cost has shown that private (student) costs have significant contribution to the total costs. This suggests that the financial burden of the ODL system is gradually being transferred to the students. They had to pay for their tuition and other fees and had to spend a lot in order to obtain their degrees. Arguably, this is against the objectives of any ODL system i.e provision for equality in educational opportunities. In view of the fact that ODL is of crucial importance in ensuring equality of educational opportunity as well as providing education at lower costs especially in developing countries like India, it is imperative for the policy makers and institutional leaders to devise mechanisms whereby either the institutions take care of expenses on a lot of institutional activities from within the collected student fees, or that programme design should be such that students will have flexibility in meeting programme objectives without incurring much from their own purse. Further, even if the findings show that the institutional cost was highest for the MBA programme and private cost was highest for the BCA programme, the total cost was highest for MBA (though the MBA students spent the least of all). This suggests that institutional attempt should be geared towards significant institutional provision towards educational facilitation whereby the students have to spend the least. Student fees for various professional programmes need to be determined in such a way that there is a balance between institutional and student costs, even if at the end of the day the institution can obtain a no profit no loss balance sheet by manipulating the costs structures of various programmes if offers.

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**APPENDIX -1****Expenditure on printing of self-learning materials**

1.	Course details	Number/Amount
2.	No. of Pages	<b>124</b>
3.	First edition/revised edition	<b>1<sup>st</sup> edition</b>
4.	Cost details (In Rupees) a. Comprising & arts work b. Processing/Scanning c. Plate Making d. Lamination (if any)	<b>Rs. 13801.00</b> <b>Rs. 33451.00</b> <b>Rs. 7797.00</b> -
5.	Print Order	<b>1000 copies</b>
6.	Cost of: a) Printing b) Binding c) Packing & Forwarding	<b>Rs.6400.00</b> <b>Rs.224.00</b> <b>Rs.85.00</b>
7 (i).	<u>Cost of text paper</u> (a) Total reams used: 16 (61x 86cms/70GSM (b) Cost of text paper @ Rs. 613 per ream (c) Total expenditure on text paper (613 X 16	Rs. 9808.00
7(ii)	<u>Cost of sheets</u> (a) Total sheets used = 463 (b) Cost of the sheet @ Rs. 1.22 per sheet (c) Total expenditure on sheets (1.22 X 463)	Rs. 546.86
7 (iii)	<u>Cost of Art Card</u> (d) Total Art Card used= Gross1 (62 x 88 cm) (e) Cost of Art Card @ 739/- per gross (f) Total expenditure on art card (739 X 1)	Rs. 739.00
7 (iv)	(ii) <u>Cost of sheets</u> (a) Total sheets used= 124 (b) Cost per sheet= @ 5.13 per sheet (c) Total expenditure on sheets	Rs. 636.12
	Total production cost (From 4 to 7 (iv)	Rs.73487.98

Source: *Material production and distribution division, IGNOU*

**Price of per block (textbook) = Total production cost x 3.50**

$$= \frac{73487.98 \times 3.50}{1000}$$

$$= \text{Rs. 257.21}$$

Note: weightage price of all the programmes are multiplied by 2.75 times for general programme



**Editor's Note:** The quality of a distance learning program depends on many factors: clearly stated goals, and successful integration of elements that support teaching and learning: instructional design (assess, design, develop, implement, evaluate); interactive multimedia, web design; and technology; instructors and instructor training (mentor, tutor, coach, advisor); and supporting services (learning management system, evaluation, feedback, and technical support). Optimum performance requires excellence in design, implementation and evaluation.

## **Exponential Growth and Pain: Implementing eLearning at a Higher Education Institution**

**Juliet Stoltenkamp, Tasneem Taliep, and Norina Braaf**  
South Africa

### **Abstract**

The use of technology in higher education has realized unprecedented developments across the globe. This has resulted in educational institutions committing much resources and time to enhance their infrastructure in readiness for the increased demand for education, improved modes of delivery and the unprecedented influx of students seeking skills for the job market. This has resulted in exponential growth of the application of e-learning within Higher Education Institutions (HEIs).

The exponential growth of eLearning at the University of the Western Cape (UWC) has also come with exponential pain; specifically in the area of dedicated back-end support. An eLearning front-end support domain has been the main driver for growing eLearning initiatives in a unique environment, where there has been a strong sponsorship for a home-grown open source Learning Management System (LMS). Conversely, this support unit has experienced a lack of a sound infrastructural foundation; including the lack of processes and management thereof. In this specific case, an analysis of collated documentation from 2005 to 2010, with regards to LMS bug and feature requests; and several appeals for sound infrastructural support, is presented. The study notes that a lack of sound back-end LMS management processes for an open source home-grown system could lead to a break-down of the eLearning front-end support structure. The paper provides lessons of experience in addressing challenges raised.

### **Introduction**

eLearning has surfaced from recent needs based on the knowledge era; therefore, educational technologies such as discussion forums and chat synchronous tools and knowledge databases that include search keyword facilities have been adjusted to eLearning environments (Wong 2003). As a result, eLearning is frequently publicised as the “magic agent” that will produce changes to schools and HEIs, especially in terms of changing student learning processes; however there is a need for educators to substantiate the relevance of eLearning and its impact (Woodhead, 2003). Hence, there are examples of emerging strategies such as the *Information Technology for Learning in a New Era: Five-year Strategy - 1998/99 to 2002/03* which aims to assist higher education with curriculum transformation; and support for educators to adopt eLearning practices to enhance their teaching-and-learning practices (Woodhead, 2003); and to consider flexible methodologies of practice; which include asynchronous and synchronous tools (Wong 2003).

Equally important, these pressures and emerging strategies, as a result of changing higher education, is testimony to the growing design and development of open source software that integrates “innovation, new knowledge, building, application and implementation” (Shoshana, 1998:31). In the meantime, as managers, theorists and academics have, for the last three decades, engaged in discussions around crucial technological changes that connect people to their

institutions and communities; there has been increasing development of open source software to establish new structures “of centres of power” within institutions (Shoshana (1998:31).

This paper captures technological developments at the University of the Western Cape (UWC), as the institution grapples with challenges emanating from its use of elearning as a mode of instruction. The paper reflects on specific systems such as the LMS and Open Source which the authors perceive have made contributions to teaching and learning experiences at the institution.

## Background to eLearning at UWC

The University of the Western Cape (UWC) is a tertiary institution that embraces previously disadvantaged communities within its fold. The resulting influx of students brought about the need for the institution to review its mode of delivery and adopt technology for teaching and learning purposes. However the institution soon found itself faced with challenges on how to implement the technological aspect of their e-learning deliverables and at the same time make decisions about the use of ICT in training and learning. In 2000, a home-grown open source LMS, Knowledge Environment for Web-based Learning (KEWL), was officially implemented at UWC. A Teaching and Learning Technologies Unit (TLTU) was established to support the system and promote eLearning. Technological development tended to outpace the development of the eLearning community of educators and support staff which resulted in a lack of communication and integration between the developers and the support division (TLTU). Attempts to promote use of KEWL were seen by many educators as a form of evangelism rather than a genuine response to teaching and learning needs. In addition, academics in the institution who refer to the previous version of the eLearning system as the ‘old KEWL’, attempted to use it for marks administration purpose, as it was integrated with the marks administration system (MAS).

According to the Wikipedia page initiated and mostly authored by members of the KEWL development team, the home-grown online learning environment Knowledge Environment for Web-based Learning (KEWL) has undergone several phases of open source development in order to keep abreast of what was happening in the rest of the world (Wikipedia, 2007).

The next generation of KEWL, known as Kewl.NextGen (KNG), was launched in January 2005, offering interactive and collaborative features that could enliven and enrich online teaching and learning. The latest generation, KEWL 3.0, is part of a larger trend towards mainstream use of Open Source software at UWC. These initiatives demonstrate that open source development allows communities to compete in a market that was not previously accessible [Online: Open Standards in South Africa , 2004].<sup>1</sup>

Ultimately the university needed a structure and processes for the effective support of users (facilitators, teaching assistants, tutors and learners) of its learning management system (LMS). The institution also had to re-evaluate the nature and role of eLearning support structures, hence the establishment of the eLearning Development and Support Unit (eDSU) in 2005 by the eLearning Manager - an attempt as Bradach (1996:1) states, providing a “blue print for designing organisations, fitting the pieces of the organisation together to guide the behaviour of the people-often large numbers of people-toward the accomplishment of the organisation’s objectives”. In this case, eDSU has the responsibility of ensuring that academics understand the importance of ICT in education and how it can be used to enhance their face-to-face teaching and learning.

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<sup>11</sup> FLOFree/Libre & Open Source Software and Open Standards in South Africa Addressing the digital divide 2004 [www.naci.org.za/pdfs/floss\\_v2\\_6\\_9.pdf](http://www.naci.org.za/pdfs/floss_v2_6_9.pdf)

## Literature Review

It is necessary for the authors to reflect on the collaborative development of Open Source software in the African context in terms of capacity building in software engineering; and more specifically within the South African context where there has been an increasing use of LMSs within the Western Cape; both proprietary and open source systems. Moreover the authors reflect on actual experiences with regards to the use of a home-grown Open Source LMS at the University of the Western Cape (UWC). However, UWC has not operated in a silo but has shared its experiences with other HEIs and in some cases engaged in collaborative efforts to promote and enhance the use of elearning on their campuses.

### ***Open Source software in the African context***

The African Virtual Open Initiatives and Resources (AVOIR) build capacity in software engineering in Africa using Free Software (Open Source) as the vehicle; consisting of a partnership of sixteen (16) African universities, including South Africa, in an alliance which includes partners in North America, Europe, Kabul and Afghanistan.<sup>2</sup> AVOIR is a network with a node in each member institution, participating in the development, deployment and support of software; and moreover in the support of their institutional requirements, claiming to participate actively in communication and collaboration activities.<sup>3</sup>

The collaborative development and networking of these universities has resulted in the creation of the Chisimba framework, which is “a Web 2.0 enabled rapid application development framework for creating web applications that are platform independent...consisting of ..., over 100 modules of functionality which are already available; and these can be used out of the box to create a Content Management System; a group-based collaboration platform; a blogging system that allows posting from mobile phones; and a feature-rich eLearning platform...”<sup>4</sup>

Depow (2003) highlighted that LMSs (referred to as eLearning platforms above) are now available and aim to reduce the gulf of understanding and ability – whereby some teachers develop and use advanced web-enhanced learning materials effortlessly; whilst others struggle to acquire basic computer literacy skills. The authors deem it necessary to reflect on LMS adoption in HEIs in South Africa, and specifically in the Western Cape.

### ***LMS adoption in Higher Education Institutions within the Western Cape***

Mlitwa (2005:6) reflects on examples of the usage and adoption of ICT in HEIs in the Western Cape, and deliberates on the situation whereby there is evidence of higher levels of technology attainment and less evidence of usage. The author further employs this evidence to make a case of a much needed “socio-technical network between humans (educators, students, administrators), structures (learning groups, educator groups, institutions, policies), and technology (a Learning Management System -LMS)”.

As follows a reflection on the implementation of various LMS within the Western Cape (Czerniewicz and Brown, 2005; Mlitwa, 2005) was necessary. At the University of Stellenbosch the option to employ a proprietary LMS, namely, WebCT was engaged by top leadership structures and forced on educators, resulting in extensive adoption due to a coercive approach with little stakeholder engagement; along with the provision of incentives (Van der Merwe, 2004:46). Even though the same proprietary LMS (WebCT) is used at the Cape Peninsula University of Technology, a lack of strategy formulation and a forum which enables stakeholder

<sup>2</sup> African Virtual Open Initiatives Resources (AVOIR) 2009 <http://avoir.uwc.ac.za/>

<sup>3</sup> African Virtual Open Initiatives Resources (AVOIR) 2009 <http://avoir.uwc.ac.za/>

<sup>4</sup> African Virtual Open Initiatives Resources (AVOIR) 2009 <http://avoir.uwc.ac.za/>

engagement was observed. Moreover both higher education institutions at that time were using the LMS just as a means of transporting learning material (Mlitwa, 2005:56).

In contrast to a coercive approach, the University of Cape Town (UCT) has engaged in an open consultative approach with educators and students regarding their usage and decisions. (Czerniewicz and Brown, 2005:98). At the time of this claim, educators within the institution had a choice between proprietary (WebCT) and open source home-grown systems (e.g. Connect); or even the choice of not using any system at all. The study further highlights that the extent of adoption had not been determined; and moreover that the educators do not have enough time to engage with pedagogical issues (Czerniewicz and Brown, 2005:98). Recent eLearning developments at UCT reflect an institution that has joined the Open Source Consortium, Sakai (with other South African HEIs such as UNISA and the University of KwaZulu-Natal). The Sakai Open Source Consortium is linked to a big brand name, namely the Massachusetts Institute of Technology (MIT).

Similarly, at the University of the Western Cape (UWC), users make use of an Open Source LMS; however this is a home-grown open source system that was driven by a champion, Professor Derek Keats, the Executive Director of Information and Communication Services (ICS) (Mlitwa, 2005:57). At the time of Mlitwa's study (2005:57), there were challenges related to adoption and usage; and moreover that it was unclear whether the system and the potential it offers to eLearning is understood by all academics. Stoltenkamp et.al (2006) elaborated on this home-grown Open Source learning management systems and focused in particular on the development and launch of a new version of the eLearning platform, Kewl.NextGen (KNG); as well as the establishment of an eLearning support unit at UWC in May 2005 with the aim to offer training and support to academic staff and students across all faculties of the institution (Stoltenkamp and Kies, 2007; Stoltenkamp, Kies and Njenga, 2006).

Hence, the following discussion reflects on open source software development in relation to a home-grown open source learning management system; and actual experiences impacting the front-end eLearning support domain at the University of the Western Cape.

## Discussion

The authors are able to reflect on supporting quantitative measures, indicative of the exponential growth of eLearning (September 2005- February 2010) at UWC, where there is evidence of a number of academics who have changed their teaching methodologies by supplementing face-to-face instruction with the use of various eTools (mainly uploading course documents, and making use of online assessment tools). This has resulted from a continuous eLearning awareness campaign which also includes a recent blog marketing strategy (November, 2008); resulting in an increased number of academics adopting eLearning practices. The table below depicts the number of lecturers (across all faculties) who voluntarily adopted new teaching methodologies; and contacted the eLearning team for support and training.

**Table 1**  
**Accumulative number of lecturers who adopted eLearning practices**  
**for period Sept. 2005-March 2010**

Year	Face-to-face scheduled training	One-on-one office consultation
2005	89	53
2006	75	63
2007	26	55
2008	21	63
2009	55	129
2010	26	22
<b>Total</b>	<b>292</b>	<b>384</b>
<b>Grand Total</b>	<b>664</b>	

However it should be highlighted that despite evidence of increased adoption, there are many who still have not engaged in any eLearning initiatives; and moreover are calling for the abandonment of the home-grown learning management system at UWC (Stoltenkamp and Kasuto, 2009). This has largely resulted from a situation whereby an eLearning support unit and the campus community have been exposed to frustrating experiences due to unstable version releases of a home-grown open source LMS since 2000.

These experiences stem from a history of the LMS, where the first version, 'old KEWL' -proved to be unstable; a new version- KEWLNext.Gen (KNG) also proved to be unstable leading to an eLearning 'Rescue Project' in 2007. Subsequently, the institution was promised a stable Chisimba framework by the Free Software Innovation Unit (FSIU) - the main developers based at the institution. This led to the launch of KEWL3.0, an upgraded, user-friendly and more aesthetically pleasing version of the home-grown eLearning system in May 2008. It should be highlighted that the eLearning Manager and Instructional Design team had invested much in the new version in terms of contributing to layout and design; and the testing of the tools. Testing involved stakeholders from various areas of development, application support, eLearning front-end support and external experts – leading to a pilot online programme, targeted at a Faculty within the institution. However, when rolled-out to the entire end-user community, this version of the LMS crashed in early February 2009; and no effective online teaching-and-learning could take place on this current version of KEWL. This unfortunate situation links to the earlier work of Stalder and Hirsh (2002), stating that although a number of programmes and blended Open Source business models and operations have been acknowledged in Southern Africa; however it has been difficult to influence the connections in order for them to be more impactful in their domains.

To date (May, 2011) most of the educators use the previous version, KEWLNextGen (KNG) – a number of 940 courses currently active on this version of the LMS. Hence there currently remain 68 active courses on the upgraded Chisimba framework. It should be highlighted that many lecturers who have migrated their courses to the Chisimba framework reverted to the older more 'trustworthy' version (KNG), due to evidence of an unstable platform.

Consequently, eLearning within UWC is severely compromised because of an unstable eLearning platform (technology). There is currently a backlash from academic departments concerning the

functionality and stability of the latest, upgraded Kewl3.0 version of the LMS. This situation is in contrast to Depow (2003) who highlighted that apparent emerging open source options represent a vital and viable alternative to the costly, proprietary LMS software programs previously available; and moreover claim to produce the same or even more enhanced products that their proprietary counterparts.

The eLearning Support and Development Unit (EDSU) has lost a huge amount of credibility due to the unstable eLearning system; and this may stunt the further growth of eLearning at UWC. The authors identify key issues; and examples thereof -affecting the growth of eLearning practices:

### ***Lack of back-end communication processes***

One of the most vital aspects of a sound working infrastructure is effective back-end communication and support processes. Without this in place decisions made in haste can often cause chaos, as experienced in 2009. Due to an increase number of users, the KEWL3.0 version experienced extreme load problems. During the first quarter (Feb-March 2009) - first year Statistics students were engaged in completing their online statistics tutorials on the eTeaching site (Kewl3.0 - Chisimba framework). It only came to light in April 2009, that none of the students' marks could be retrieved. This led to a back-end investigation by IT operational staff; and entailed a 'server move' without consulting the necessary stakeholders; resulting in the loss of all Statistics tutorials data.

### ***Unstable eLearning System: Recurring bugs***

A worse-case scenario unfolded in 2009, whereby the eLearning Manager was informed by a main developer of the Chisimba framework that the version KEWL3.0 was actually version KEWL2.0, riddled with bugs and holes. Implementing the development of new modules on this site proved challenging, as the speed and stability of the system failed to ensure effective use by students and lecturers for various reasons. Both network related as well as infrastructural and development issues were identified as reasons for the system not performing optimally. Thus, this prompted the initial talks and implementation of the *Server Move Project: Move of eTeaching to new improved server*. It was proposed that the upgrade to the 'actual version' of KEWL3.0 would rid the system of a number of bugs, seriously impacting teaching-and-learning processes.

Evidence of serious bugs and other infrastructural issues remain a challenge for the eLearning unit; and ultimately the university community as a whole. Hence the authors are able to reflect on the repeated versions of an unstable Open Source eLearning system presented on a time-line below; and further examples of how it actually affected online teaching-and-learning activities in 2009:

### ***Duplicate Accounts***

Students were not able to access their online courses due to the system creating duplicate accounts on their initial login. It should be noted that this same issue occurred in the previous KNG system in 2005; and to-date some students face the same problem on adhoc basis. The front-end (Instructional Design) team has established a 'work-around' for this particular issue.

### ***Access Settings: 'Open' and 'Public Courses'***

The eLearning platform enables a lecturer to select course access settings, namely, an open, public or private setting. These settings were not functional; hence a student was not able to view an 'open course'. Lecturers were only able to use this function optimally on the 27 February 2009; four weeks into a new quarter. It should be highlighted that this bug had been recurring before the 'final fix'.



**2000 - 2010 : Appeals for sound infrastructure and dedicated back-end support**

**Kewl - Knowledge Environment for Web based Learning**

**UAT - User Acceptance Testing**

**MAS - Marks Administration System**

### ***User-Permissions***

The system is designed allowing specific permissions according to student; lecturer and guest groupings. In contrast, early February 2009, students were able to create their own courses, add and edit course content; and assessment tasks. These rights are usually assigned to a lecturer or administrator only. Further leading to students being able to edit a lecturer's course; and hindering course creation processes. Moreover, lecturers who had created courses were suddenly removed as authors and members of their courses. This issue was only resolved in mid-Feb, 2009. By March 2009, the bug recurred further leading to guest users (usually only able to view course content) with editing rights

### ***Statistics Tutorial eTool***

The Statistics Tutorial (a department specific eTool), initially hosted on the 'oldkewl' platform, has caused problems for the Stats Department at UWC –leading to its move to the latest version of the LMS in 2009. However, since the move, a number of challenges were experienced; including: LMS login problems; marks not captured within LMS; internet browser problems; software installation; and the extreme slowness of the site

### ***Instructional Designers becoming a daily HELP-DESK***

The Instructional Design team currently supports the entire academic community who has voluntarily adopted eLearning teaching-and-learning practices. However, it is becoming increasingly difficult to adequately support the needs and demands of the campus community due to infrastructural constraints. This has led to an Instructional Design team who has gone beyond the call of ePedagogy training and support; and now responsible for logging all bugs encountered in the system. Furthermore, this has evolved into an intensive back-end support process requiring the logging of bugs into a bug tracking system; daily communication with back-end support via Skype and the Support Mailing List; and intensive testing of fixed bugs.

### ***Change of Processes - no adherence with regards to established processes***

The eLearning support team is expected to log bugs and feature requests. For some time (2006-2009) the back-end support team had not been able to clearly stipulate an actual bug-tracking process which enables the front-end support team to adhere to established processes. This led to a dire situation whereby sixty (60) logged bugs and feature requests logged within a tracking system were left unattended.

Consequently the eLearning front-end support team has been faced with repeated process changes on the back-end due to various disputes. Only, recently (2010) evidence of a support and development communication plan has emerged, including definite processes with regards and bug tracking and systems maintenance.

### ***Lack of Service Level Agreements (SLAs)***

There is a clear indication that there are neither SLAs nor accountability with regard to bugs reported, even though all processes are followed through by front-end support. Also notable, is a lack of management of the Bug Tracking system, resulting in a situation whereby back-end support needs constant reminders to acknowledge the logged request; and to deliver timeously. Following, the Instructional Design team collated a report (2008) highlighting problematic areas of accountability and communication.

Consequently, this paper has explored the difficult situation whereby the literature rightfully depicts the Free Software Innovation Unit (FSIU) at UWC as being at the forefront of the Chisimba framework innovation; and also how the developers of the Chisimba framework claims

that it works efficiently at several AVOIR institutions<sup>5</sup>. However, in contrast users at the University of the Western Cape (UWC) have experienced an unstable framework; and some have since called for the abandonment of the framework, and more specifically the recent version of an eLearning platform which is built on this framework. This evidence is aligned to the fact that reviews founded on the quantity of attributes, may not be indicative of users' feedback; and the educational usefulness of the product; hence a large amount of tool incorporation may actually be worthless for online learning activities (Hotrum; Ludwig and Baggeley, 2005). Moreover, if the core features necessary for effective online teaching-and-learning are not appropriately tested and quality-assured, the users will not be interested and have no faith when any new exciting features are presented to them.

Hence, this specific case of Open source development initiatives at UWC seems to be in contrast with the latest claims of Marinela and Traian (2009) – that Open source initiatives has demonstrated that it can provide high-quality software.

## Findings and Predictions: Quantitative and Qualitative Measurements

### *eLearning Staff Training:*

**Table 2**  
**Accumulative number of lecturers who adopted eLearning practices**  
**for period Sept. 2005- March 2011**

Year	Face-to-face scheduled training	One-on-one office consultation
2005	89	53
2006	73	63
2007	26	60
2008	21	63
2009	55	129
2010	43	85
2011	30	41
<b>Total</b>	<b>337</b>	<b>497</b>
<b>Grand Total</b>	<b>834</b>	

From the inception of the eLearning unit in September 2005, the eLearning team (Instructional Design) has sent out emails to the campus community, inviting all interested parties to eLearning training workshops. During the period (September 2005 – March 2011), three-hundred and thirty-seven (337) academics voluntarily requested eLearning training. During these face-to-face scheduled and one-on-one office consultations, the lecturers are advised on the use of eTools to supplement their face-to-face traditional instruction. Table 2 below depicts the number of lecturers who voluntarily contacted the eLearning team for one-on-one office consultations and training during the period (2005- March 2011):

<sup>5</sup> African Virtual Open Initiatives Resources (AVOIR) 2003  
[http://avoir.uwc.ac.za/index.php?module=news&action=viewstory&id=gen14Srv6Nme27\\_6555\\_12205957](http://avoir.uwc.ac.za/index.php?module=news&action=viewstory&id=gen14Srv6Nme27_6555_12205957)  
29

**Reflections on Student Training:**

Since 2006, student training has been offered to the students at the University of the Western Cape. From 2006-2011 a number of 18717 students have been offered training on the use of the various eTools. Due to a lack of adequate computer labs to accommodate students during teaching time the team decided to offer eLearning demonstration during the lecture time as an interim solution. This demonstration would take 10-15 minutes before the face-to-face lecture starts or at the end. This has been very successful as many lecturers are not able or willing to have of their teaching time taken away.

However, although the demonstration sessions have been welcomed the team has found that is problematic when students are not able to fully engage with the tools. We have had a number of eLearning lecture demonstration sessions for 2010 – 2011 but are encouraging lecturers to dedicate at least one period of their class time for student eLearning training.

**eLearning Student Training:**

**Table 3**  
**Accumulative number of students who received training and support for period 2005-March 2011**

Year	Face-to-face scheduled training	Demonstrations	Support	Invigilation
2006	2259			
2007	4018			
2008	3235			
2009	3637			
2010	4300	19	341	256
2011	1268	10	215	
Total	18717			
Grand Total	19558			

**Table 4**  
**Accumulative number of students who received Turnitin training for period 2010-March 2011**

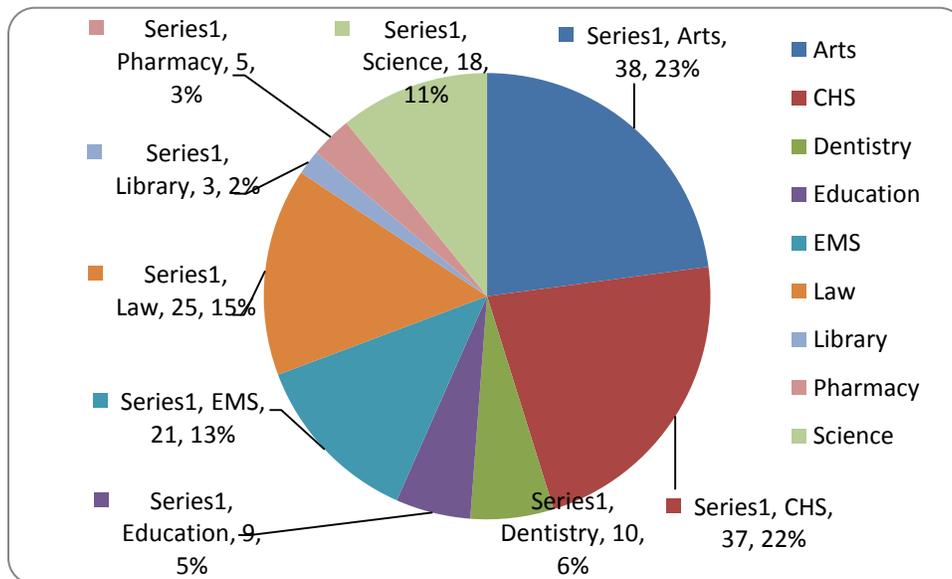
Faculty	Number of Students
Science	210
EMS	86
Arts	29
Education	41
Other: PLAAS	19
Total	385

### Uptake and adoption of new blogging strategy

Since the inception of a new marketing strategy, on 11 November 2008 – whereby the eLearning Manager embarked on the new blog marketing strategy, a number of one-hundred-and-sixty-six (166) academics contacted the eLearning team for personal one-on-one office consultations to discuss the provision of support on the start of their eLearning journey which will encompass training, selection of tools and the pedagogical value of the eTools to supplement their traditional face-to-face instruction. Table 5, below depicts an increase in the number of lecturers who have decided to supplement their traditional face-to-face instruction with various eTools for the period January 2009 – July 2010.

**Table 5**  
**Increased number of office consultations for the period**

January 2009 - July 2010 Faculty	Consultations per Faculty
Arts	38
CHS	37
Dentistry	10
Education	9
EMS	21
Law	25
Library	3
Pharmacy	5
Science	18
	<b>166</b>



**Figure 2. Office Consultations by Department**

**Number of courses online:**

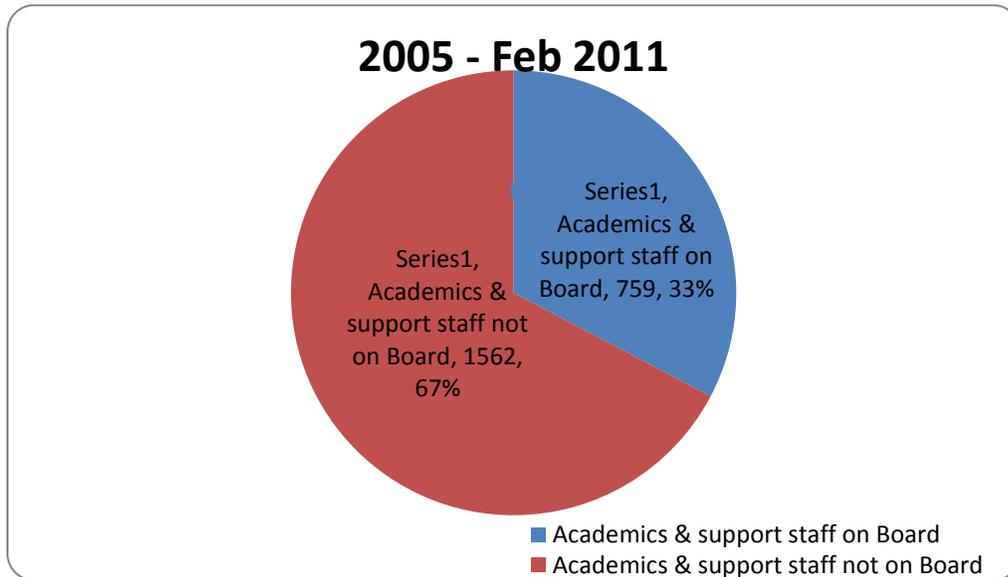
To date (March, 2011) most of the educators are still active within the previous version, KEWLNextGen (KNG) – a number of 1004 courses currently active on this version of the LMS. Hence there currently remain 156 active courses on the upgraded Chisimba framework. It should be highlighted that many lecturers who have migrated their courses to the Chisimba framework reverted to the older more ‘trustworthy’ version (KNG), due to evidence of an unstable platform.

**Table 6**  
**Active Courses on Previous Version and Chisimba Framework**

eLearning (previous version)	1004
eTeaching (Chisimba)	156
<b>Total</b>	<b>1160</b>

**Table 7**  
**Academics on Board**

From ID Overall stats	Academics on Board	759
From HR Overall stats	Academic & Support Staff not on Board	1562
	<b>Total</b>	<b>2321</b>



**Figure 3. Involvement of faculty and staff.**

**Conclusion**

Increased demands for higher education, skills and skills development have necessitated the use of ICTs in general and in eLearning in particular. The Open Source/Proprietary debate has also increased in intensity where it became obvious that Open Source was becoming popular because of its ability to enable students and researchers unrestricted access to information. Despite shortages of resources to propel and promote ICTs and eLearning in the developing countries, it appears as if Open Source has ameliorated the situation for the better as information becomes

readily available through Open Source provision. However, the paper has also depicted that despite existing debates about the benefits of Open Source software for HEIs; and increased accessibility by learners there are challenges regarding the buy-in of eLearning at the University of the Western Cape; and specifically with regards to the dedicated back-end support for the Open Source home-grown learning management system (LMS).

There remains an expansive higher education landscape to be explored in terms of the prospective of eLearning (Czerniewicz et al; 2007: 97); hence the authors of this paper explored the challenges regarding a lack of communication; and the dire need for process management within the back-end support domain of an open source LMS which has had affects on the front-end eLearning support team; and the campus community. Evidence of a continuum (2005-2010) highlighting repeated eLearning system crashes is presented; and further emphasising how an Instructional Design team is dependent on sound infrastructure in order to deliver effective ePedagogy training and support. Moreover lecturers who have become offé with other LMSs are placing pressure on an eLearning support team to either purchase Proprietary systems; or use more stable Open Source LMS.

This paper does not seek to present a critique of open source software in LMS delivery but rather to outline, amongst other things, the significance of enabling mechanisms for sound back-end support processes. It is evident through an exploration of benchmarked open source LMS delivery in HEIs that a responsive back-end support consortium can address the challenges of front-end support services such as those experienced by eDSU at the University of the Western Cape.

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**Editor's Note:** Brick-and-mortar based educational institutions are slow and expensive to build and not easily scalable to fluctuations in demand. eLearning adds flexibility for rapid growth or reduction in different programs of study to meet changing demands.

## **Promoting Computer-Assisted Instruction in Higher Education Institutions (HEIs) to Enhance Learning: Case study of the University of the Western Cape, South Africa**

**Jephias Mapuva**  
South Africa

### **Abstract**

The advent of globalisation has brought with it different innovations that include improved ways of communication. In Higher Education Institutions (HEIs), the impetus brought about by globalisation has seen HEIs craving for the assimilation of Information & Communication Technologies (ICTs) within their constituencies. Increased student numbers bestowed upon HEIs has necessitated lecturers to re-align and change their teaching approaches and opt for e-learning; its advantage over the traditional mode of instruction enables HEIs to contend with the high influx of students seeking higher education opportunities.

This paper provides a case study of the University of the Western Cape, which has made inroads into the adoption of e-learning among its students and staff. The University has also embarked on a number of initiatives to enhance assimilation of e-learning among the university population, through use of e-tools used previously as part-time discourses and employed them for educational purposes. Various teams in the E-Learning Department have also embarked on a collaborative approach to promote the use of ICTs to enhance learning and provide an opportunity for a paradigm shift from the traditional mode of instruction to computer-assisted instruction.

**Keywords:** e-learning, instruction, enhance, promoting, education, collaborative, institution, e-tools.

### **Introduction**

e-Learning has become an indispensable and an essential component of education as well as a learning and business tool. Globalization, the proliferation of information available on the Internet and the importance of knowledge-based economies have added a whole new dimension to teaching and learning (Holmes and Gardner, 2007:8). Volery (2000:36) concurs that if universities do not embrace e-learning technology that is readily available, they will be left behind in the pursuit for globalisation. Ribiero (2002:4) argues that if universities are to maximise the potential of e-learning as a means of delivering higher education, they must be fully aware of the critical success factors concerned with introducing online models of education. This has resulted in a scramble for more efficient and effective ways of information dissemination, as more tutors, students and trainees, and institutions adopt online learning where there has risen a sudden need for ICTs and other resources that will examine and inform this field. In the HEIs, e-learning has helped to transform education and has become associated with, and construed in a variety of contexts, such as distance learning, online learning and networked learning (Wilson 2001:67). Volery (2000:32) argues that the fast expansion of the Internet and related technological advancements, in conjunction with limited budgets and social demands for improved access to higher education, has produced a substantial incentive for universities to introduce e-learning courses. In the context of this paper all of these instances will be considered, as well as complementary strategies that the University of the Western Cape's E-Learning Department has put in place to enhance e-learning among its staff and students. The thrust of this paper is to highlight how various e-tools and teams have collaborated to complement the

institutions' efforts at provide higher education to students and how it has attempted to equip academic staff to execute their teaching in an environment where technology is increasingly gaining momentum as a collaborative component of the whole learning process. Numerous e-tools and strategies, such as team-work, are explored in this paper and how this has facilitated the provision of higher education to students at UWC. The author hopes that the findings and recommendations that have been cited for UWC can equally be applicable to, and adopted in other HEIs in developing and developed countries.

## Methodology

The paper will also seek to address the research question which reads: *To what extent and with what results have ICTs and specific e-tools such as wikis, chat-rooms, discussion forums and podcasts have been utilised and manipulated at UWC for educational purposes to enhance teaching and learning?* In an attempt to answer this question, the author undertook a survey among 50 post and undergraduate students, mostly those employed in the e-Learning Department, to assess the depth of their comprehension of e-tools available to them that they can use for educational purposes. The authors collected information for this paper through interviews, questionnaires as well as observation of students who used these tools. The authors interviewed 50 students on the applicability of various e-tools in a learning situation and how these students and their peers have manipulated these tools in learning situations. In addition, the author distributed questionnaires on which participants were required to express their personal experience in using podcasts, chat rooms, wikis, blogs, face book, discussion forums as learning tools. The observation method was also used on students as they used these e-tools to facilitate interaction with fellow students. In addition to the above cited e-tools, the author interviewed senior students on how wireless Internet facility and institutional initiatives such as the e-teaching and e-learning portals can enhance learning at the institution.

## Learning as computer-assisted instruction

In an attempt to explore the significance of ICTs in education, this paper presents e-learning in the context of computer-assisted instruction, herein referred to as e-learning. E-learning, as understood by most, is a self-regulated or facilitated mode of learning making use of ICT. It has been envisioned that, through the Education Reform and the Curriculum Reform in many countries, students should possess the necessary skills and be sufficiently motivated to learn by way of e-learning, thus breaking the physical barrier of classroom learning and sparing precious school hours for other equally pressing and worthy activities conducive to students' development (Resnick and Resnick, 1992:23).

Today's economy is characterized by industrial change, globalization, increased intensive competition, knowledge sharing and transfer, and a revolution in information technology (Zhang & Nunamaker, 2003:186). The authors further point out that in order to succeed in such an economy, one must commit to a regimen of lifelong learning. This insatiable demand for continuous knowledge has resulted in a dramatic increase in the utilization of technology as an educational tool with which to convey information to the learner, a trend that can be witnessed in both institutions of higher education as well as the corporate world (Zhang & Nunamaker, 2003:186). Historically, there have been two common e-learning modes: distance learning and computer-assisted instruction. Distance learning uses information technology to deliver instruction to learners who are at remote locations from a central site. Computer-assisted instruction (also called computer-based learning and computer-based training) uses computers to aid in the delivery of stand-alone multimedia packages for learning and teaching (Ruiz, 2006:207). These two modes are subsumed under e-learning as the Internet becomes the integrating technology (Ruiz, 2006:207).

## **Enhancing teaching and learning at a HEI: Case study of UWC**

In line with global trends in utilising ICTs in education to improve and supplement learning in HEIs, the University of the Western Cape put into motion its own E-Learning whose main objective would be to buttress the delivery of instruction to the student population, as well as impart skills for the academic staff so that they could have confidence in the use of technology for teaching and learning purposes. This gave rise to the notion of, and introduction of an E-Learning Department in 2005.

Since its inception, the E-Learning Department at UWC has thrived to facilitate the adoption and promotion of e-learning within the institution. Programmes and training courses have been carried out for academic staff to enable them adopt e-learning in the execution of their core duties: that of information dissemination to students. The E-Learning Department has also endeavoured to equip both staff and students with skills that would enable them to access information online and to manipulate the presence of Internet and technology for teaching, research and learning purposes. This paper attempts to give a critique of attempts and efforts that have been made by various players at UWC to enhance teaching and learning.

### ***4.1 Creation of e-teaching and e-learning portals***

The creation of institutional websites to facilitate student/lecturer and student-student interaction has gone a long way in enhancing learning and teaching at UWC. The websites are the e-teaching and e-learning facilities which students and lecturers can access on the main institutional website. Despite such challenges as the crashing of the Internet system and other black-outs, the university has gone all out to ensure that the Internet is always available to the university community and that appropriate infrastructure and resources are available. Students can post their assignments online, lecturers can post notes and notices that pertaining to students learning, tutorials and tutorial questions can be posted online to facilitate advance preparation by students. Past examination papers are availed to students through the online facility to help students have a feel of the examination environment and questioning techniques.

In an attempt to keep abreast of electronic developments, UWC has not been found wanting in technological innovation, especially those pertaining to the enhancement of learning. This resulted in the introduction of E-teaching and e-learning portal. The e-learning is the older version of the Learning Management Systems (LMSs) within the institution. The e-learning version of the LMS sought to provide introductory lessons to the application of online learning. Due to the fact that it was getting outdated, the institution is in the process of phasing it out in preference to e-teaching. However during its tenure, it has nurtured both students and academic staff alike on the use of technology for learning purposes. Academic staff could upload learning content and allow students to download such material. Students could still access assignments and even write online tests and examinations.

On the other hand the e-teaching portal enables academic staff to upload notes for students to access. In addition to uploading of notes, academic staff can also post notices, assignments, tests and tutorial material. The academic staff can also issue out instruction to students and reading material which students can download and read in preparation for lectures. Academic staff can also make use of this e-learning portal to write internal emails to students or groups of students or classes on any subject pertaining to their specific subject area. However, in recent months, the thrust has shifted to e-teaching over e-learning where it has been observed that equipping lecturers would benefit students more than focusing on e-learning which did not give the pre-requisite attention to the training needs of academic staff. This has seen the migration of documents previously uploaded by lecturers for students' consumption to e-teaching which is an upgraded version of the e-learning portal. It is envisaged that this development will spell the demise of e-learning facility in preference to the e-teaching facility, as the former is phased out.

## 4.2 Creation of a home-grown e-learning initiative

The University of the Western Cape has come up with its own home-grown Free Software which is an open source e-learning facility, known as KEWL. The system was developed in collaboration with a consortium of universities, commonly known as the African Virtual Open Initiatives and Resources (AVOIR) which has become a brand name in building capacity in software engineering in Africa. Some of the Universities in the consortium are Catholic University (Mozambique); Jomo Kenyatta University of Agriculture and Technology (Kenya); Makerere University (Uganda); Uganda Martyrs University; National University of Rwanda; University of Dar es Salaam; University of Eduardo Mondlane and University of Ghana; University of Jos. This has enabled students at UWC to expand their horizons by this collaboration with other tertiary institutions. The AVOIR has facilitated the creation of KEWL3.0 which is built within the Chisimba framework and hosts the institution's e-teaching site as well as a wide range of advanced communication; content creation and assessment tools.

The African Virtual Open Initiatives and Resources (AVOIR) build capacity in software engineering in Africa using Free Software (Open Source) as the vehicle. A partnership of 16 African Universities in an alliance that includes partners in North America, Europe, and Kabul, Afghanistan, AVOIR is a network with a node in each member institution. Each node participates in the development, deployment and support of software, seeks business and partnership opportunities that lead to sustainability, implements software in support of their institutional requirements, participates actively in communication and collaboration activities, and helps to market the network and its products and services. AVOIR has created the Chisimba framework and applications based on it, and will be offering a *Masters Degree in Free and Open Source Software* at UWC, starting in early 2009<sup>6</sup>. This development would further encourage students to undertake advanced studies in ICT-related disciplines which would inculcate in them a culture of appreciating the indisputable importance of ICTs in the ever changing world.

## 4.3 Utilisation of e-Tools

In addition to the available e-Teaching and e-Learning Learning Management Systems (LMS), students have also tended to make use of other available e-tools such as, podcast, wikis, blogs, discussion forums, chats, face book, e-books, manuals, to enhance learning within the institution. Those interviewed expressed that the use of these-tools is converting fun to learning because ordinarily these tools are used for having fun and other exchange with friends.

Respondents to the survey expressed the view that podcasts are a valuable storage facility that can facilitate the re-playing of a lecture for the sake of those who will have missed it or those who might want to review it. This is in line with the concept of reinforcement which in education is considered as significant for recall purposes as it reinforces desired behaviour in students. For educators the most relevant homology in learning is operant conditioning which is the simple idea that reinforcing a behaviour increases the probability of that behaviour recurring (Flora, 2004:5). Many respondents alluded to the advantageous nature of podcasts, with one respondent confessing that podcasts help to liven lectures as students could "*capture all the lectures and put them on podcast in order to view them, even those who will have missed classes*". Another respondent expressed the view that podcasts are a positive development to learning because they are able to present both video and audio captions of a learning episode as well as uploading and downloading materials that can equally be used for learning purposes.

Discussion forums were also cited by the majority of respondents as been able to provide live discussions on issues of vital importance, including discussions on topical issues of concern to

<sup>6</sup> Brief Overview of AVOIR (Available on [http://avoir.uwc.ac.za/index.php?module=news&action=viewcategory&id=gen14Srv6Nme27\\_3464\\_1219321674](http://avoir.uwc.ac.za/index.php?module=news&action=viewcategory&id=gen14Srv6Nme27_3464_1219321674))

students. The same advantages were cited for chat rooms which enable students and any participants to partake in discussions of topical issues. Blogs were viewed as important in that they enable student to place information and material online for access by other viewers. One respondent noted that blogs can “enable students to post content that they feel might be helpful to the rest of the student community”. The vital importance of wikis was summarised by one respondent who expressed the view that wikis provide an “information sharing platform” had room for updates and contributions from other users. Wikis have also been credited for their ability to broaden students’ horizons in areas outside their specialisms. They increase students’ general knowledge base.

The use of the Facebook facility at UWC, just like anywhere else, has assumed unprecedented levels both by the student population and others beyond it. Although Face book cannot be categorised as belonging to the e-learning stable, its use as an interactional tool among the predominantly student population has further popularised the use of technology for communication and interaction, which in turn has further brought to the fore the indispensable nature of ICTs in everyday life. It has provided an opportunity for students to have fun through the exchange of photos, notes and chats, which has manifested itself in the everyday lives of students and other members of the public.

Face book has also enabled users to explore new opportunities, such as seeking new friends and getting connected to old ones. This has provided for a much-needed break from the students’ “*busy academic schedules*”. A snap survey of 50 undergraduate and postgraduate students at UWC, most of whom work part-time in the E-learning Department expressed the view that the face book facility has become an indispensable way of not only seeking old friends and acquiring new ones, but enhances learning through the exchange of study notes and information about courses that their friends are pursuing and those offered at various universities across the globe and how these courses are comparable to those offered at UWC. Some have even indicated that through friends at other universities, they were able to compare and share notes on courses offered at their respective universities. This has tended to enlighten them about prospects of further studies elsewhere where there may be centres of excellence in their respective areas of study. Such information dissemination have enabled some students, especially those intending to pursue postgraduate studies elsewhere, to start contemplating whether they would like to pursue further studies at UWC or at another university outside South Africa. This exposure to other universities outside South Africa through face-book has been an enriching experience to students as they will be able to make informed decisions about their next destination or job opportunities after their studies at UWC.

#### **4.4 Wireless Internet and GroupWise Intranet facilities**

The ever growing demand for data and multimedia content has seen a surge in evolutionary wireless networking (Amimo-Rayolla, 2007:5). This growth, largely driven by the success of data and media streaming over the all-encompassing communication medium, the Internet, and ubiquitous availability of digital multimedia technology, has seen a sudden influx of partly complementary, partly substitutive network technologies such as HSPA, WLAN, WI-FI, Flash-OFDM, DVB-H and Bluetooth, bringing with them an upsurge in throughput (in Mbs) (Amimo-Rayolla et al,2007:6).<sup>7</sup>

The Wireless Internet facility aims to provide access to methodologies and technologies that will enable collaboration amongst learners and teachers, while providing for video and audio

<sup>7</sup> Otieno Amimo-Rayolla, Anish Kurien, Marcel Odhiambo “ Wireless Broadband: Comparative Analysis of HSDPA vs. WiMAX” Southern African Telecommunication Networks and Applications Conference (SATNAC, 2007)

communications over what is essentially a wide area network. This will provide learners and teachers with access to information resources and communications tools. The University of the Western Cape has also rolled-out a secure wireless network to many buildings on campus. This network requires that students authenticate using their UWC username (usually with your student number, staff number or third-party number) and password. The wireless network is “uwc-secure”. Given that the wireless network has been available at strategic point such as the Student Centre enables students, even over week-ends to utilise this facility to do their studies. This has encouraged students to make maximum use of the wireless and subsequently enhanced learning within the institution.

For easy and hassle-free communication, UWC has its own intranet facility, GroupWise that enables students and staff at UWC ease of communication, especially on matters of academic concern. To avoid congestion, the GroupWise portal has three releases (GroupWise1, 2 & 3) which would decongest the system and make it convenient for users to communicate and post messages as well as access assignments and test questions online, even at a time when Internet reception is poor. It acts as a forum where all registered students can interact. Notices can also be posted on this intranet facility for the benefit of students, primarily those registered with the University. Faculty or Department-specific notices can be posted by appropriate lecturers to relevant students. Student personal details such as contact details, courses being pursued can be accessed by fellow students, especially in the event they want to share notes and other reading material. This has also enhanced interaction among the student population at UWC. The most vital aspect of the GroupWise facility is that even in the event that the network is down or offline, students can still access the facility and be able to interact. It is also on GroupWise that employment or scholarship opportunities are flighted for students to respond to.

#### **4.5 e-Book, Open Source and Virtual Library**

The e-book and open source as well as virtual library, coupled with the availability of a reliable Internet network have been contributory factors that have enabled students to access journals and other privileged online documents. All this has contributed to the creation of a conducive climate for knowledge acquisition and has enhanced learning through facilitating students’ ability to independent research on issues that are connected to their studies. Inter-library loans on specific reading materials are also available to students. Students just need to access the UWC library portal which will subsequently show the consortium of libraries in the neighbourhood where books or items that they want can be found. The consortium includes the Universities of Cape Town, Stellenbosch and Cape Peninsula University of Technology. To access borrowing privileges to these universities, students from any of the institutions simply get an introductory letter from their host institution and they become members of the respective libraries with borrowing privileges. The student can then acquire a letter of introduction from UWC library and immediately they become members of the sister university’s library and enjoy borrowing powers and privileges. All these factors have contributed to increased information accessibility to students and academic staff, thereby enhancing learning and easing the burden of teaching.

#### **4.6 e-Learning Incentives for Academics**

One of the most conspicuous institutional innovations that the university has come up with to incite academic staff into incorporating e-learning in their teaching has been the provision of incentives in the form of laptops. Laffont and Martimort (2006) present the incentives theory and central to this theory is a simple question as pivotal to modern-day management as it is to economics research: What makes people act in a particular way in an economic or business situation has become a baffling question for psychologists. Laffont and Martmot (2006:2) have cited the need for incentives “to work hard, to produce good quality products, to study, to invest and to save...”. The neo-classical approach to the incentive theory portrays incentive as aligning the objectives of its various members, such as workers, supervisors and managers with profit

maximization. For this purpose, maximization would come in the form of exhorting academic staff to make maximum utilisation of e-tools for learning purposes. The purpose of incentive is to motivate those involved. According to Hassoubah, and Izhab (2005:2) motivation is a hypothetical construct that has indicated its impact on the process of learning. Educationists argue that of all the personal and psychological variables that have attracted researchers in this area of educational achievement, motivation seems to be gaining more popularity and leading other variables (Tella, 2003:8). Hall (1989:12) expresses the opinion that “Motivation raises question on why people behave in the way they do it”. The University of the Western Cape has devised ways to encourage lecturers to incorporate e-learning within their teaching. As an incentive for lecturers who incorporate e-learning in their teaching, the university has provided laptops as a way of showing its commitment and support for those lecturers who use e-learning in the delivery of lectures. At this institution, lecturers have been encouraged to work towards the acquisition of an e-learning incentive, namely a laptop. In this case, lecturers are bound to take the good gesture of a laptop in positive terms and are therefore likely to behave positively towards adopting e-learning in their teaching. Their performance has been measured against a set rubric which depicts outcomes that lecturers are supposed to achieve in order for them to gain access to the incentive. The set of rubrics that has been used as a target range from participating in a face-to-face e-learning training session, developing an interactive online course, allowing students access to e-learning training to ensure that they are able to navigate the system effectively; participating in lunch-time class presentations at e-learning seminars, as well as having to share their online experiences and challenges with the greater campus community. All these activities require commitment on the part of the academic staff. This venture has enabled the e-Learning Department within the institution to market itself as a centre of excellence in the use of ICTs in HEIs.

#### ***4.7 Adopting Teamwork as a collaborative Approach to [e]learning at UWC***

Endeavours have been made by the E-Learning Department’s various teams to address the needs of both students and academic staff in an effort to make e-learning the mode and medium of instruction and information dissemination within the institution. Through the adoption of a collaborative approach various teams within the unit have been able to make complementary to make the promotion of e-learning come to fruition. The different teams have re-aligned their objectives to complement the effort of each other. In addition to collaboration among these teams, there is also collaboration with various departments and faculties within the institution as well as stakeholders. The teams in question comprise the Instructional Designers’ Team; the e-Learning Student Support Team; the ICT Staff Training Team; the Digital Media Team; the Material Development Team, the eLearning Development and Support Team (EDSU) Research Team and the Digital Academic Literacy Team. The task of each of these teams contributes to the building of a broader picture on e-learning success at the institution.

The e-Learning Student Support Team conducts Learning Management System student training where both lecturers and students from different faculties and departments are taught on how to use the LMS. This has resulted in some of the faculties offering online courses in collaboration with universities and experts from other parts of the world.

The ICT Staff Training Team provides training, support and one-on-one consultations to both students and staff in using the Learning Management Systems (LMSs). Schuler & Jackson (2006:34) highlight that training and developmental initiatives could enhance the knowledge and skills necessary for work related performance, however the most proficient employee needs to be motivated in order to function competently.

The e-Learning Support Team assists and guides staff and students in adapting and converting courses to web-based delivery. They also assist staff with integrating various technologies to

improve the design and delivery of course content. At the beginning of every year, the Education Development and Support Unit undertake orientation sessions for first year students, in collaboration with the Office of Student Support Services. During the orientation sessions, students are shown how to access the e-learning system, navigate online modules, change their profile pictures and access their emails, including showing students how to create narrated PowerPoints presentations using the Audacity Software that enables users to add voice to their presentations. This also allows users to create mini podcasts for assessment purposes.

The Digital Academic Literacy Team provides computer literacy student training to students and staff. The Digital Academic Literacy course has been designed for novice computer users to become empowered within their first semester with general computer skills - mainly word-processing for academic purposes. The students also acquire search engine skills, learning how to use the Internet effectively and to distribute information according to the approved procedures at the university. Whilst many students come to the computer skills classes, support team considered these an opportunity to introduce relevant and useful content, focusing on themes around citizenship within a national and international context and more importantly on the HIV/AIDS pandemic.

The team tasked with the development of teaching and learning materials, the Materials Development Team (MDT) assists with the creation and development of suitable learning materials as well as working with e-learning practitioners creating manuals, simulations and other educational materials for their courses. Currently, the MDT is working towards a FOSS environment, producing training and online manuals and simulations. Users need to receive documentation that enables the facilitators and administrators of the system to understand the various application tools in use.

The Instructional Designers (IDs) team has a major responsibility toward the academics that need training and support in order for them to engage effectively with the E-learning tools and enhance the teaching and learning process within the institution. The IDs ultimate responsibility of the team is to help the lecturers and facilitators at UWC to develop the necessary computer skills, perspectives and confidence to incorporate e-learning as a complimentary mode of instruction for the students. The team delivers face-to-face training on a weekly basis using the university's LMS during which lecturers are trained on how to use the core functions of the system which include; creating an online course, assessing and evaluating the progress of students and effectively communicating with students online. These training sessions start as a one-on-one consultation lecturers' respective office and are sustained through ongoing e-mail and telephonic support. To date, over 156 lecturers have voluntarily secured training across faculties, with an increasing number of lecturers showing enthusiasm to get training on how to enhance their teaching through the adoption of different e-tools.

The EDSU Research Team, commonly referred to as the Research Team undertakes research in niche areas within the E-Learning Department and endeavours to make publications of their findings in peer-reviewed journals. This team forms the core of the E-Learning Unit's research component and strives to promote publication of articles and to make presentations at national, regional and international conferences. The team was involved in the editing of a manual for academic staff to facilitate their adoption and utilisation of e-learning, providing an easy DIY guide to teaching and learning through the use of e-learning. The manual provides a number of e-tools which academics like to use in their teaching, and attempt to simplify technical terminology which those academics who are non-technical would easily contend with.

#### ***4.8 Inculcating complementarity through team-building outings***

In addition to the complementary and supplementary formal functions of different teams within the E-Learning Department, informal social outings for the sake of team-building and such

activities have been held at regular intervals where members of different teams come together and interact on an informal basis. At such informal gatherings, members from different teams get the much-needed opportunity to intermingle and share notes on different work-related and social issues and in a more relaxed atmosphere. This instills a sense of confidence and togetherness, and holds the propensity to promote close working relations. This is confirmed by Masters and Heath (2006:2) who note that "*Teams that play well together will work well together*". This helps to inculcate and build a spirit of oneness and togetherness, as well as improve sociability among the members from different teams such that being able to approach each other on work-related issues becomes easier. Such endeavours, though seemingly unimportant, are a vital tool in enhancing learning as the complementarity of teams would equally be buttressed. Long and Hadden (2002:5), have extended socialization to every part of human social life where they point out that in socialization everyone becomes both a socializing agent in all encounters with others.

#### **4.9 Conclusion**

Given the various efforts and strides that the institution has made, UWC has the potential to be a leader in the use of ICTs in education. It has already proved that it leads the pack of those HEIs that are currently using ICTs for educational purposes because it is among the very few countries on the globe to have come up with a home-grown open source (as opposed to proprietary) programme. Its ability to nurture its students on the maximal use of e-tools ordinarily used for fun has also put the institution on the world map of those HEIs that have endeavoured to explore and manipulate ICTs for educational purposes. The drive to transform the pedagogical approaches used by its academics has also enhanced the delivery of instruction to students and to effect a paradigm shift from the traditional mode of instruction to the computer-assisted learning. The institutional leadership's commitment to maximise e-learning has been shown through the provision of state-of-the-art infrastructure and resources.

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