Video Broadcast Courses at the Islamic Azad University Karaj Branch (Case Study)

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Abstract

Distance educators are increasingly adopting both synchronous and asynchronous ICT-based modes of communication to enhance distance learning environment. With the use of ICT-based modes, distance learners are now able to participate in class in real time; interact with their lecturer and peers; and access course and external information/resources at their own convenient time, place and pace.This paper seeks to assess the extent to which video broadcast enhances learning environment for distance learners at the Islamic Azad University Karaj Branch. Apart from print, video broadcast is also used as a delivery mode and modes such as audio and video conferencing, and WebCT(tools) are used to supplement distance learning. This paper employs a multi-perspective evaluation design with survey questionnaires as the main and interviews as the supplementary technique of data collection. Results suggest that video broadcast mode at Islamic Azad University Karaj Branch enriches the distance learning environment. ICT-based attributes such as tele-presence, interaction and flexibility emerge as being enhanced by video broadcast mode.

Keywords: Tele-presence, Webct, Video conferencing, ICT-based mode, Video Broadcast, Synchronous, Asychronous

Introduction

Information and communication technology (ICT), which refers to the convergence of telecommunication networks and personal computer technology, has the capacity to reach across the globe to those connected to the Internet. The increasing use of ICT in distance education is seen as transforming distance education. This paper focuses on third and fourth generations of distance education, which are seen to be causing a paradigm shift in distance education. The third generation of distance education or the tele-learning model refers to distance education enabled by ICT-based synchronous modes of communication such as video broadcast and video conferencing.

The fourth generation, which is also known as the flexible learning model, refers to distance education enabled by ICT-based asynchronous modes of communication such as email and computer conferencing tools. Using the tele-learning and flexible learning models as a framework, this paper seeks to assess video broadcast, video conferencing, email and WebCT homepages for their ability to enhance learning environment for distance learners at USP by creating flexibility, interaction and tele-presence.

Distance Education

Distance Education refers to education where instruction and communication between the teacher and learners are mediated through a mode of communication other than face-to-face. Due to the sole reliance of distance education on modes of communication enabled by technology, distance education has always been in a stage of transition. Based on the use of various modes of communication, Taylor (2001) categorized distance education into five generations or models. These are correspondence model, multimedia model, tele-learning model, flexible learning model and intelligent flexible learning model.

The first generation of distance education is also referred to as correspondence model. During this generation, predominantly print-based modes of communication were used for delivery of instruction and communication between the teacher and students. While the correspondence model provides flexibility in term of place, it allowed minimal interaction. The second generation of distance education, which is also known as multimedia model, is marked by the rise of the Open University and the use of other modes of communication in conjunction of print. Along with print mode, other modes such as interactive videos, audiocassettes and videocassettes were also introduced during the multimedia model.

According to Taylor (2001), Computer-based learning tools such as Computer-Mediated Learning (CML) and Computer Aided Learning (CAL) were also introduced during this period. Tele-learning and flexible learning models, also known as the third and fourth generation distance education are discussed separately in the next section. The modes of communication studied in this paper fall within the framework of these models. Finally, the intelligent flexible learning model or the fifth generation of distance education refers to the use of more sophisticated technology such as intelligent agents, which also enable content-content interaction.

Tele-learning model According to Bates (1995), Kaye (1990), Mason & Kaye (1990) and Peters (2000), tele-learning model or the third generation of distance education is causing a paradigm shift in distance education. This model has brought about a significant structural change in distance education. Tele-learning is made possible with the help of ICT-based synchronous modes of communication such as video broadcast, audio conferencing and video conferencing. With the use of these synchronous modes distance learners receive 'live' instruction and are able to participate in class in real time. Bates (1995) claims that synchronous mode of communication enable distance learners to be in direct contact with their lecturer or the author of the course. With the use of ICT-based synchronous modes the course lecturer delivers lectures whereas in print-based distance education lecturer-student communication and interaction is absent or minimal. Since the course lecturer delivers lectures, Collis (1996) argues that the pedagogical design of tele-learning remains same as 'face-to-face' classroom presentation of lectures. The difference is that ICT-based synchronous modes of communication extend these lectures to distance learners. Video broadcast enables one-way communication and is normally used for delivery of lectures. Video conferencing enables two-way communication and is normally used for tutorials. Actually, video conferencing is seen as providing an effective interactive tool in distance education. Satellite-based video conferencing is even seen as offering the "next best thing to being there" (Johnson, Kemp et al 2002, 2).

Apart from enabling distance learners to attend class in real time, Collis (1996), Mason (1998) and Peters (2003) claim that ICT-based synchronous modes of communication create a sense of presence or 'tele-presence' for distance learners. Mason describes tele-presence as the "real time interaction with its opportunity to convey tone and nuance helps to develop group cohesion and

the sense of being part of a learning community" (1998, 31). ICT-based modes of communication such as video broadcast, which normally involve a large group of learners, are seen to create a sense of belonging and presence of others. Video conferencing, on the other hand, involves a small group, which is seen as creating a greater presence sense or 'tele-presence' (Bates 2000, Collis 1996, Johnson, Kemp et al 2002, Mason 1994).

According to Mason (1998), a greater sense of presence of other learners keeps distance learners up with their peers and thus, the pace of the course. Both, video broadcast and conferencing allow distance learners to see their lecturer and peers through the screen, which creates a sense of belonging and learning together for them.

Flexible Learning Model

Like the tele-learning model, flexible learning model or the fourth generation of distance education is also seen as causing changes to distance education. However, flexible learning refers to the use of asynchronous modes of communication such as computer conferencing tools and email. Modes used in flexible learning model allow distance learners to interact and communicate with their lecturer and peers, and access course materials and external resources at a place, time and pace convenient to them. While both synchronous and asynchronous modes allow distance learners flexibility in terms of place, only asynchronous modes provide flexibility in terms of time and pace. Flexibility in terms of place is a central concept in distance education regardless of the mode of communication used.

Flexibility in studying from own place allows distance learners to carry on with their education without having to go to classroom for face-to-face education. Though flexibility in terms of place is enabled by all modes of communication, including print, the use of ICT-based modes of communication, enable synchronous/live delivery, which is a major structural change in distance education. In the case of communication between the lecturer and students and amongst students, synchronous mode such as video conferencing enables live interaction, and email and computer conferencing tools, on the other hand, enable time-delayed interaction. Both the modes provide spontaneous and fast communication than in print-based correspondence model.

Flexibility in terms of time and pace are fostered by the use of asynchronous ICT-based modes of communication. Flexibility in terms of time allows distance learners to access course materials and external resources, and communicate with their lecturer and peers at a time convenient to them (Blurton 1999, Harasim 1990). Flexibility in time also allows distance learners the time to read; understand; and refer to the original information before providing their response (Collis 1996, Harasim 1990, Harasim, Hiltz, et al 1996).

Similar to flexibility in time, flexibility in terms of pace also allows distance learners to read, understand, respond and study at their own pace. (Harasim, Hiltz, et al 1996, Mason 1998).ICT-based mode such as computer conferencing encourages and allows flexibility in terms of time and pace. Apart from fostering flexibility, the use of computer conferencing tools and email also enable distance learners to interact and communicate with their lecturer and peers at a fast pace (Harasim, Hiltz et al 1996, Mason 1998).

Research Design

The literature on tele-learning and flexible learning models discussed above is used as a framework in this paper to evaluate the use of video broadcast, video conferencing, email and WebCT-based

homepages at Islamic Azad University Karaj Branch(IAUZ-KB). Table 1 provides the modes and the dimensions used to evaluate their ability to foster flexibility, interaction and tele-presence. The matrix provided in Table 1 is used to collect and analyze data from six video broadcast courses selected for this study. Video broadcast mode made a jump start in 2010. In the second semester of 2010, 38 on-campus courses were broadcast to the region for the benefit of on-campus students. The number of courses offered through video broadcast has gradually increased from 3 courses in semester I, 2010 to 10 courses in Semester II, 2010. Six out of the 10 courses offered in Semester II 2010 were selected for this study. These courses were computer science, education, geography, history/politics, physics and sociology. All of these courses were offered through video broadcast and had provision for the use of email and WebCT-based homepages. Geography and physics courses used video conferencing for weekly tutorials, while sociology used video conferencing for tutorial on an irregular basis. Large courses such as computer science and education had weekly local tutorials conducted by tutors at the regional centers.

Table 1: *Modes, dimensions and attributes matrix*

	Flexibility	**Interaction**	**Tele-presence**
Video broadcast	Study at own place, time and pace	N/A	Part of large class Learning with others Acknowledged by the lecturer
Video conferencing	N/A	Lecturer	Part of learning community Learning with others Acknowledged by the lecturer Noticed by others Need to keep up with course readings
Email	Communicate with lecturer and peers at own place, time and pace	Communicate with lecturer, peers and friends/relatives	N/A
WebCT homepage	Access notes, assignment tips, etc at own place, time and pace	N/A	N/A

This evaluation study employed both quantitative and qualitative methods of data collection. Survey questionnaire was used as the main method of data collection while interviews were used to supplement the main method. The survey questionnaire was sent out to all 292 distance students enrolled in the six courses across the region. Of the 292 distance students approached, 195 returned completed surveys giving a response rate of 67%. For the interview, 59 out of 211 distance students were selected.

Findings

Table 2 provides the profile of survey respondents, which shows a pattern based on gender, occupation and age component of the respondents per course.

Table 2: *Profile of survey respondents per course*

	Total	Male	Female	Students	Teachers	Age Range
Computer Science	60	62%	38 %	67 %	17 %	52% (under21) 35% (21-30)
Education	69	38 %	62%	4 %	94 %	36% (21-30) 51% (31-40)
Geography	17	47 %	53 %	35 %	59 %	41% (21-30) 35% (31-40)
History/Politics	8	50 %	50 %	75 %	-	38% (under21) 38% (21-30) 25% (31-40)
Physics	31	68 %	32 %	87 %	10 %	52% (under 21) 48% (21-30)
Sociology	10	30 %	70 %	60 %	20 %	30% (under21) 20% (21-30) 30% (31-40) 20% (41-50)

The pattern shown by computer science and physics courses in Table 2 reflects the traditionally gender-based representation in science and technology courses. A majority of computer science and physics respondents were male, young and full-time students. This can be explained by the fact that both the courses are first year degree science courses attracting predominantly male students from high school. Education course, on the other hand, shows an opposite pattern. There were more female than male and more mature than younger student respondents in education course. Education course is a third year degree course and a majority (94%) of the respondents were school teachers, this can be explained by the fact that this course is one of the compulsory courses for the teacher training programme. Similar to education, geography course also has more females and teachers. History/politics with small course number had equal percentage of male and female respondents and a fair distribution of young and mature respondents. Sociology course had more females, fulltime students but a fair distribution of young and mature students. Like history/politics, sociology is a small course. The pattern shown in Table 2 is also reflected in the course-based analysis and discussion of the study findings, which is discussed according to the three ICT-based attributes: a)flexibility b)interaction c) tele-presence.

a) Flexibility

Response from distance students in all the six courses suggests that video broadcast courses provided them flexibility by enabling them to study traditionally on-campus courses, while keeping their jobs and staying with their families. Response derived from interviews also confirmed this claim.

Despite problems such as limited access to personal computers and the Internet; low bandwidth; and poor quality sound and picture highlighted by the respondents from all the courses, majority appreciated the offering of traditionally on-campus courses for distance students. Though video broadcast as a synchronous mode of delivery did not provide flexibility in terms of time, recorded lectures allowed flexibility in terms of time and pace. Though all the course lectures were delivered live from Campus, they were also recorded at the centres. Figure 1 shows the percentage of respondents who received live and/or recorded lectures per course.
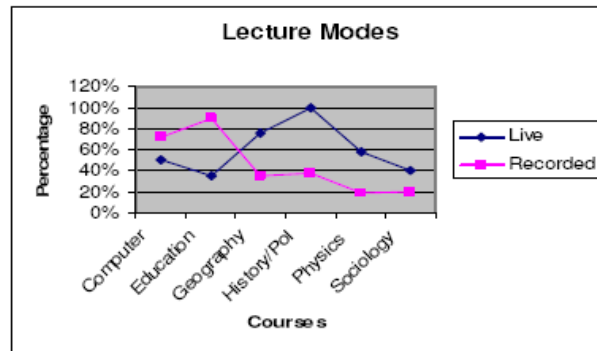
Figure 1: Video broadcast lecture modes per course

In computer and education courses a higher percentage of respondents received recorded than live lectures. These lectures were during the day and a majority of education course respondents teach during the day. Despite live video broadcast of computer and education lectures, both the courses had Saturday sessions during which the recorded tapes were screened at the regional centers. Screening of recorded tapes on Saturdays was also accompanied by tutorials conducted by local tutor. In the case of geography course, though a majority of respondents were teachers, they did attend live video broadcast lectures because their lectures were in the evenings. In some cases, respondents attended live lectures and borrowed recorded tapes for viewing as well. Respondents across the courses who borrowed and viewed videotapes of lectures in their own time acknowledged the flexibility they experienced by being able to viewed lectures in their own time.

All distance students enrolled in video broadcast courses had access to email and WebCT. Through email, students were able to communicate with their lecturer and peers, at a convenient time to them.

Access to WebCT-based homepages, on the other hand, enabled distance students to access lecture notes, assignment tips and other relevant information in their own time. However, though distance students had flexibility in being able to access email and WebCT homepages, flexibility was limited by the access to the Internet. Therefore for a majority (79%) of distance students access to the Internet was limited by the opening hours of the Computer Labs

A high percentage of respondents from education course reported access to the Internet as one of the major obstacles. This can be explained by the fact that teachers could only travel to their respective centre after school hours compared to either computer science or physics distance students, who were predominantly full time and accessed the Internet during the day. In a similar way, the extent of flexibility in terms of working at own pace was also limited by the factors influencing flexibility in terms of time discussed above.

b) Interaction

Interaction is the second theme that emerged from the analysis of the data. Video broadcast, video conferencing and email are discussed in this section in relation to their ability to foster an interactive learning environment for distance learners. Though video broadcast allowed only one-way communication, distance students response suggest that lecture delivered through video broadcast enabled students to understand lectures and complete assignments. A majority of

distance students reported that they found lectures through video broadcast (either live or recorded) similar to face-to-face lessons where lecturer explains concepts and formulas and thus, is easier to understand.

Since these were the first video broadcast courses for most of them, their response appear to reflect a comparison with print-based courses that they have been engaged in. Students also reported that video broadcast allowed them to watch, hear and recognize the lecturer. They found knowing/recognizing the lecturer through video screen helped them to associate with the lecturer, which also gave them encouragement to contact the lecturer through email.

Like video broadcast, video conferencing was also found to be an effective and interactive mode of communication. Geography and physics courses used video conferencing for weekly tutorials conducted by the course lecturers based at the campus. Students in these courses found video conferencing useful and liken it to 'face-to-face tutorial'. Like video broadcast geography lecture, video conferencing tutorial was also in the evenings, which enabled school teachers and other working students to attend it live.Physics distance students also had weekly tutorials with their lecturer through video conferencing and found it very useful.

Finally, the use of email enabled distance students to communicate with their lecturer, peers and friends/relatives. Though most of the video broadcast courses selected in this study did not have pedagogical design in place to encourage and ensure proper utilization of email for interaction purposes, distance students did use email. Therefore, email was mostly used to communicate with the lecturer, peers, friends/relatives. In the case of email to the lecturer, distance students mostly enquired about information regarding lecture notes, assignments, tests and marks. Students also communicated with their peers around the region and on-campus peers for clarifications, notes and assignment tips. Results also show students in the six courses used email differently.
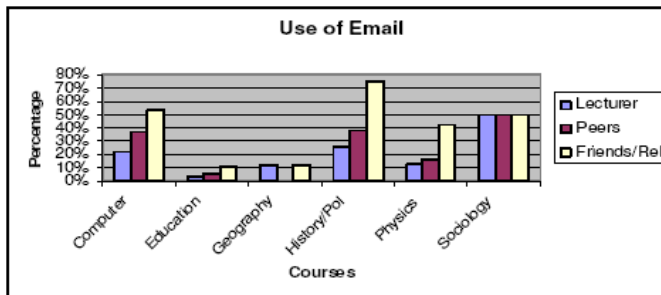

Figure 2: Use of email per course

It is clear from Figure 2 that distance students enrolled in computer science, history/politics and sociology courses made higher use of email than students in the other courses. Another apparent pattern from Figure 2 is that the use of email to friends/relatives is either same or higher than email to the lecturer and/or peers across all the courses. This is even evident from very low use of email by students in education and geography courses. The very low usage of email by education students, as stated earlier, can be attributed to the fact that most of the students were working and attended Saturday sessions to view recorded video tapes rather than live lectures. It is also a reflection of the limited access to the Internet for education students. Education distance students

at one of the centers with a large (48) student number had additional constraint of inadequate venue/facilities. Due to the unavailability of classroom at this centre, education course Saturday sessions were conducted at a nearby secondary school, which did not have the Internet access:

Apart from the problem of limited access to the Internet, the absence of appropriate pedagogical design embedded into the use of email is also an obstacle. Sociology is the only course, where the lecturer allocated 10% marks for online participation. This is obvious from the response of sociology students, who used email to communicate with the lecturer and peers as same as for friends/relatives. For most of the other courses, the use of email to communicate with friends/relatives has the upper edge. In the case of geography, students reported that they interacted and had discussion with their lecturer weekly through video conferencing and therefore, there was no need to use email. Finally, despite the limitations, results suggest that the use of video broadcast, video conferencing and email fostered an interactive learning environment for distance learners at Islamic Azad University Karaj Branch.

c) Tele-presence

Tele-presence is the third theme derived from the analysis of the data. Results show that the use of video broadcast as a delivery mode and video conferencing as a supplementary mode suggest the presences of the different dimensions of tele-presence. Figure 3 provides student response regarding the four dimensions of tele-presence.
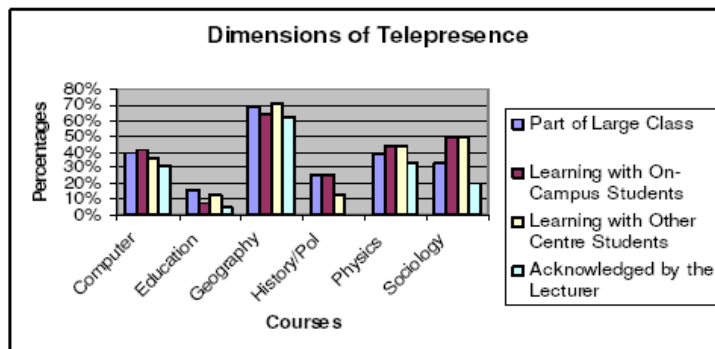

Figure 3: Dimensions of telepresence

According to Figure 3, geography course data shows the highest percent of students indicating the presence of the dimensions of tele-presence. This can be explained by the fact that geography course also had a high percentage of students attending live video broadcast lectures. On the other hand, education course, where a high percentage of students viewed recorded lectures, shows the lowest percent of students indicating the presence of the dimensions of tele-presence. The overall result; however, shows that students felt positively towards the four dimensions of tele-presence.

Geography and physics courses used video conferencing on a weekly basis for tutorial and students from both the courses reported that they felt positive about the dimensions of tele-presence such as 'part of the learning community'; 'learning with students from other centres'; 'acknowledged by the lecturer'; 'noticed by other students'; and 'need to keep up with course readings'. This claim was also supported by student response from the interview. Students pointed

out that they prepared themselves before tutorials, therefore this shows that they were conscious of their lecturer and peers. The analysis of data clearly suggests the emergence of four themes i.e. interaction, tele-presence and limited access to the Internet.

Discussion and Conclusion

Despite the obstacles such as limited access to the Internet, poor quality sound and picture, and low bandwidth highlighted by distance learners, the data suggests that video broadcast, email and WebCT homepages created a flexible learning environment for distance learners. The fact that video broadcast brought traditionally on-campus course live to the doorsteps of distance students suggest flexibility in terms of place. Furthermore, along with flexibility in terms of place, recorded video broadcast lectures provide flexibility in terms of time and pace. This result not only demonstrates changes brought about to distance education at Islamic Azad University Karaj Branch, but it also supports the literature that synchronous modes of communication enables distance learners to receive live lectures. Apart from video broadcast, the use of email and WebCT homepages also created a flexible learning environment for distance learners. Although distance students felt that these modes created flexibility, it should be noted that flexibility in this regard was limited by the access to the Internet and does not support that literature mentioned asynchronous modes of communication allow distance learners to interact with their lecturer and peers, and access resources at any place, time and pace convenient to them.

Moreover, results show that video broadcast courses and the use of video conference and email foster an interactive distance learning environment. Though video broadcast mode allows only one-way communication, results show that distance students found studying through video broadcast enhanced their learning environment. This concept was not identified in the literature or foreseen to be incorporated into the matrix in Table1 but distance students reveal two aspects in support of this claim. First, students felt that by being able to watch and hear the lecturer deliver the lectures, it was easier to understand lectures and particularly computer programming concepts and physics formulas. This supports Collis' claim (1996) that synchronous modes extend classroom type 'face-to-face' lectures to distance learners. Secondly, students found that the lecturer are accessible after watching and hearing him/her on the screen. By recognizing their lecturer from the screen, students felt more comfortable asking questions and/or clarifying doubts through video conferencing or email.

Most of the distance students viewed video broadcast courses in comparison to print- based distance courses, where the lecturer was not in direct contact with students and where they did not have access to video conferencing tutorials and email.

Apart from video broadcast course in general, results suggest that the use of video conferencing also created an interactive learning environment for distance learners. Video conferencing was reported to be a useful and effective means of communication and interaction with the lecturer. It was liken to 'face-to-face' tutorials. In the case of one of the courses, video conferencing was apparently being favored against the use of email. This further supports the literature by Johnson and others (2002) that video conferencing can offer the "next best thing to being there". Finally, the data reveals that email enabled distance learners to communicate and interact with their lecturer, peers and friends/relatives. While the use of email to communicate with friends/relatives had an upper edge over lecturer and peers can be explained by the fact that though students in most of the courses had access to the email, the use of email was not incorporated into their course design. Moreover, the use of email in different courses differed,

which reflects the restriction caused by the limitation of access to the Internet as well as course design to incorporate the use of email. This suggests that though email has potential to create interaction between the lecturer , students and amongst students, the access to the Internet and course design to be embedded into the use of email are important factors in determining the effectiveness of interaction.

Finally, distance students felt positive about the dimensions of tele-presence during video broadcast lectures and video conferencing tutorials. Despite the limitations imposed by the access, speed and quality of technology, distance students felt positive about the dimensions of tele-presence. This supports the claim by Collis (1996), Johnson & others (2002), Mason (1998) and Peters (2003) that synchronous modes create a sense of presence or tele-presence. In the case of video conferencing tutorial students also reported that they had to keep up with course readings and attend tutorials prepared so that they were able to respond to the lecturer's questions. This suggests that students felt the presence of other students. The synchronous and asynchronous modes of communication enabled by the use of ICT modes at have duly caused changes to the structure of distance education at Islamic Azad University Karaj Branch, which also supports the literature that tele-learning and flexible learning models are causing a paradigm shift in distance education. While results suggest that the use of ICT modes enabled flexibility, interaction and tele-presence, it is equally important to note that access to the Internet and lack of appropriate course design to incorporate the use of the modes were raised as two major constraints.

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