COMMUNICATION MODEL TO KNOWLEDGE CONSTRUCTION MODEL: OUSL TEACHERS' EXPERIENCE OF ONLINE EDUCATION

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Abstract

This study explores the intentions, strategies adopted and challenges faced by the teachers of the Open University of Sri Lanka (OUSL) who have undergone transition from using a communication model to knowledge construction model of online education. The structured open-ended questionnaires were used to collect information from twenty nine OUSL teachers who initiated the delivery of their first online courses using the MOODLE platform during 2007-08. Findings indicated that all the teachers took up this challenge on their own. The majority who started this novel approach were females, experienced teachers who were trained on online education. The lack of time, technical skills, and skills in designing and delivering online courses, and inducing active participation by learners were the major challenges faced by these teachers. Most of the teachers used a content-driven communication model and had focused more on the content. Nevertheless, the remarkable observation seen in this study was that "innovators" and the "early adopters" have tried to become "pedagogical facilitators" in addition to the "managerial" role exhibited by the teachers in the earlier communication model. The ulterior motive of the majority was to bridge the distance and support learners in knowledge construction using interactive activities irrespective of their heavy workload. In order to sustain online education, the "paradigm shift" is required from not only teachers but also from the senior management to formulate institutional policies at the right time, and to create a supportive and enabling environment for teachers to experiment innovative teaching practices. In addition, incentives and promotion system should be tied up with the mechanism in order to sustain these voluntary teachers to engage further on online education and attract "early adopters" from the mainstream for future progression of online education at the OUSL.

Introduction

The Open University of Sri Lanka (OUSL) is the only national university in Sri Lanka, which delivers study programmes exclusively through Open and Distance Learning (ODL) using multiple deliverables. The core delivery medium is print, supplemented with audio-visual material and face-to-face components.

The online learning was first introduced to the OUSL community by a group of six voluntary teachers in 2003 after participating in a training workshop on e-learning organized by the Commonwealth Educational Media Centre for Asia (CEMCA). The initiative was taken by the Director, Information Technology (IT) Division, who was one of the participants, and they designed the online learning

platform (Learning Management System - LMS) using an open source software; "Manhatton". The LMS refers to an electronic environment which serves as a front-end portal that interacts with the student to register and manage all learning activities, services, content and data (Naidu, 2003). The main intention of these teachers was to try out this novel approach and to see the potential of using this technology as an additional communication channel for OUSL learners who are geographically dispersed from one another and from teachers (Jayatilleke, 2005).

Subsequently, another voluntary staff member from the IT Division introduced "MOODLE" as a LMS to the OUSL in 2005 and showed the potential of using it for teaching and learning. Later, LMS was officially approved as the OUSL LMS. With assistance from the OUSL-Capacity Enhancement (OUSL-CE) component of Distance Education Modernisation Project (DEMP – 2003-2009), LMS was further developed and three types of online formats were introduced after considering the nature of the target audience, percentage of compulsory components and type of interactions; namely supplementary (no compulsory components) blended (20% compulsory online assessment) and online plus (more than 20 % compulsory assessments). Capacity building workshops for the OUSL staff on designing and delivering of online courses were also conducted by the OUSL-CE. Concurrently, the National Online Distance Education Service (NODES) component of the DEMP strengthened the infrastructure facilities at the OUSL regional and study centers and developed twenty out of twenty six NODES Access Centers (NAC) at the premises of all regional and many study centers around the country.

With the increasing number of online courses, a mechanism for designing, delivering and monitoring of OUSL online courses was set up in 2008, assigning the Educational Technology (ET) Division of the OUSL, the mandate of creating templates for online courses, reviewing, uploading online courses to NODES and conducting capacity building programmes on designing and delivering of online courses for the OUSL academic staff.

This study investigates the perceptions of OUSL teachers who first embarked on this journey; to deliver courses using MOODLE platform. The structure of the paper is as follows: first, the theoretical background supporting the study is examined; second, the methodology followed to conduct the study is described; third,the results of the study are reported and finally, the paper ends with a discussion of the results and a conclusion.

Objectives of the Research Study

The objectives of this research study are to identify the:

- reasons for initiating the delivery of online course/s using this platform

- components used in the online courses
- method of facilitating the learning process
- challenges faced by teachers during design and delivery of online course/s

benefits received as a result of this experience.

Research Issue and Study Framework

The term online learning describes the process of "learning over the Internet". It is synonymous with the commonly employed terms such as e-learning, computer-mediated learning, computer-mediated communication, virtual education, virtual classroom, internet-based education, web-based education, web-based learning, web-mediated education, online learning-education, cyberspace education and virtual learning environments.

According to Gayol (2010, p. 198), online learning is the result of incidental (learning without our knowledge) or intentional (with a purpose) knowledge appropriation that occurs in the human-computer (networked) interaction. She firmly believes that if the teaching and learning is facilitated by an instructor, then it is more appropriate to use the term "online education" rather than "online learning". Since OUSL online courses are facilitated by teachers, the term "online education" would be more suitable, and therefore, will be used throughout this paper.

Distance Education evolved gradually with the emergence of technologies starting from print, broadcast media such as Radio and Television, audio cassettes, video cassettes, computer and Information and Communication Technologies (ICT). Hence, some researchers classify these stages of development as generations. Nipper (1989) and Kaufman (1989) identified three generation of distance education: the first generation is characterized by the predominant use of a single technology and lack of direct student interaction with the teacher (correspondence). Second generation distance education refers to an integrated, multiple-media approach, with specially designed learning material. Flexible learning based on asynchronous communication through Internet and World Wide Web is referred to as the third generation distance education. Taylor (1995, 2001) also classifies distance education as generations and his first and second generations are identical to that of Nipper's and Kaufman's first and second. His fourth generation equates with the third generation of Nipper's and Kaufman's. However, his third generation refers to two-way, synchronous tele-learning using audio or video conferencing, and it is often used by multi-campus institutions in the West. His fifth generation refers to intelligent flexible learning, which adds a high degree of automation and student control to asynchronous online learning and interactive multimedia and is still at the experimental stage.

The purpose of using these technologies is to mitigate the distance between the learner and the teacher who are separated geographically and temporally. Parallel to the development of technologies, some researchers further considered the psychological dimension of the distance learners and proposed different strategies to overcome the isolation of the distance learner. One of the early attempts was made by Holmberg in his theory of didactic conversation (1960), later reformulated as the theory of teaching and learning conversations (1999) where he successfully tested the incorporation of warm "conversations" in the printed course material at the German distance education institution FernUniversitat. This type of interaction, where the learner interacts with the content, is one of the three interactions identified by Moore (1989) in order to maintain the quality in teaching and learning. The other two interactions were learner-learner and learner-teacher interactions. Hansen (1996, cited in Curtis & Lawson, 2001) identified another interaction when delivering courses online – the interaction of both the teacher and the learner with an interface stressing the importance of user-friendly and attractive interface.

However, in online education, all these "interactions" take place within the online environment. Thus, the transition from distance teaching to online education requires "a paradigm shift or a change" in the teacher's roles and responsibilities" to suit the learning environment. Therefore, Gunawardena (1992, p. 66) pointed out that "*the role of the distance teacher has expanded and those who teach at a distance must wear many hats: that of facilitator, supporter, communicator, instructional designer, media expert and coordinator*".

Reflecting her own experience, she pointed out that online teachers have to master a different set of skills such as:

- ability to use the technology
- ability to design effective instruction for two-way interactive experiences
- ability to use the technology effectively to communicate with distance learners.

Collins & Berge (1996, cited in Curtis & Lawson, 2001) categorized online instructional roles into four general areas: pedagogical, social, managerial and technical. This framework could be applied to the required set of skills put forward by Gunawardena (1992).

- ability to use the technology (technical)
- ability to design effective instruction for two-way interactive experiences (pedagogical)
- ability to use the technology effectively to communicate with distance learners (pedagogical, managerial and social).

Emphasizing on the pedagogical role of online teachers, Garrison and Cleveland-Inne (2005) pointed out that students' approach to learning can be directed towards deep learning by designing courses to encourage deep learning approaches together with teacher's interactions directed towards cognitive outcomes. This highlights the importance of the structure of online courses and the type of interactions carried out by the teachers.

The next section focuses on the methodology used for this research study.

Methodology

This study was exploratory and attempted to capture the experience of online education among OUSL teachers. Structured open-ended questionnaires were used to collect information from twenty nine OUSL teachers who initiated the delivery of their first online courses through NODES during 2007-08.

A print version of the questionnaire was delivered by internal post to all the subjects. An online version of the questionnaire was made available to the subjects who favored online submission.

There were 11 closed questions and 14 open-ended questions in the questionnaire. The baseline data pertaining to online courses were obtained from the ET Division. Frequencies were calculated for the closed-questions while content analysis was used to analyze the responses for the open-ended questions; first determining categories of responses and from those categories identifying the major themes.

Findings

The rate of response for the questionnaire was 90%. Three teachers did not send in the completed questionnaires even with frequent reminders. Findings indicated that the majority who initiated this novel approach were females (56%), experienced teachers who had been employed by the university for more than 10 years (56%) who belonged to the age group of over 40 years (78%), and had undergone training in designing online courses (85%). All these teachers took up this challenge taking their own initiative.

Out of 29 teachers, 27 were main teachers and two were assisting online plus courses. More than half were represented by the Faculty of Engineering (14), followed by seven from the Faculty of Natural Sciences, five from HSS, two from the Faculty of Education and one from the Educational Technology Division. From the responses, 12 teachers have delivered a single course, 10 have delivered two courses, 2 have delivered three courses and 2 have delivered more than 3 online courses. Two teachers who have delivered more than 3 courses (5 courses and 6 courses respectively) were from the same faculty; Engineering Technology, and belonged to the same department; Textile and Apparel Technology.

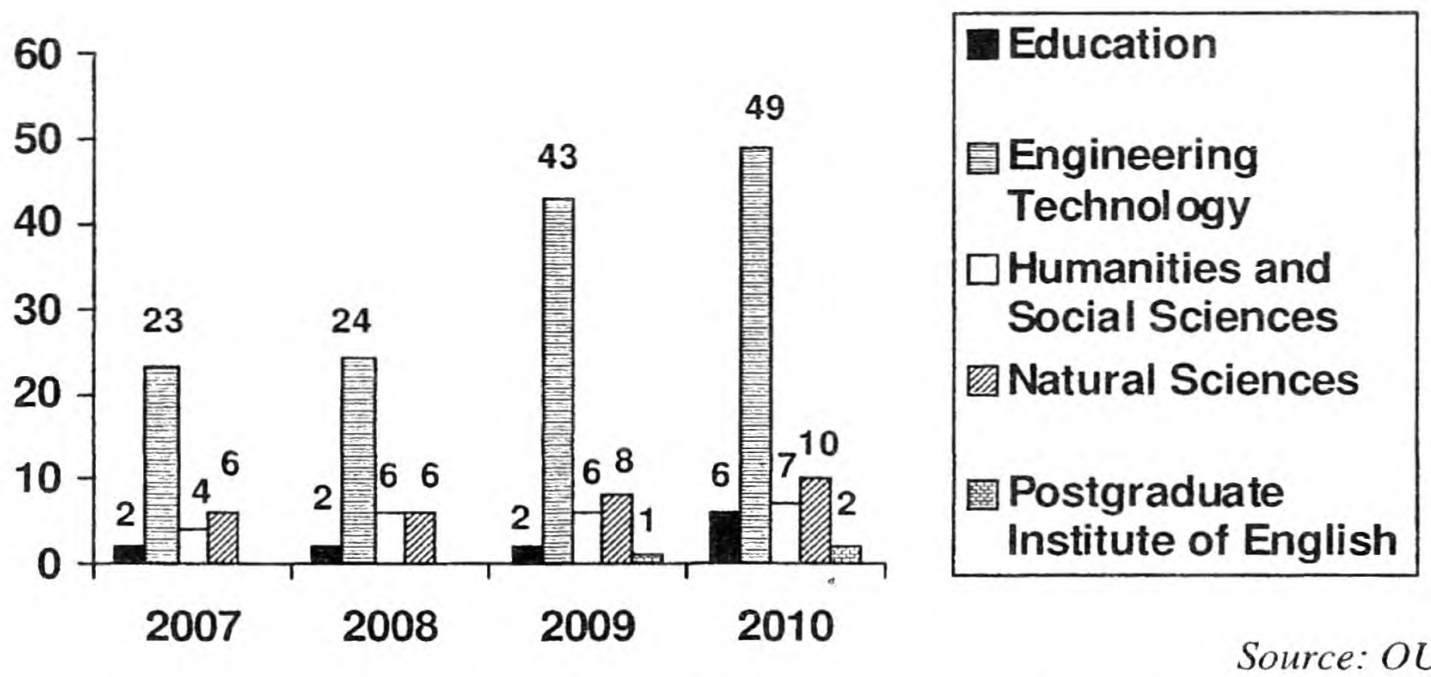
Number of online courses

There were 42 online courses delivered in 2005 using Manhatton (Jayatilleke, 2005). With the transition from Manhatton LMS to MOODLE LMS in 2007, the number of online courses was reduced to 35. Subsequently, there was a gradual increase from 38 online courses in 2008 to 60 in 2009 and to 74 in 2010 - Table 1.

Table 1 - Number of Online Courses

Manhatton		Moodle			
2003	2005	2007	2008	2009	2010
6	42 (in May)	35	38	60	74 (in December)

Figure 1 – Online courses delivered through NODES (2007-10)



Source: OUSL data

Reasons for initiating the delivery of online course/s

Findings indicated that teachers use the online medium for different purposes (giving more than one reason) and can be categorized into following reasons;

- Institutional specific reasons such as to reduce the time taken for administration (11%) and as an institutional requirement (7%),
- course specific reasons: to reach the remote students quickly (48%), facilitate knowledge construction (26%), provide additional support (22%), provide additional resources (15%); introduce online education to learners (19%), help learners to manage studies (7%), increase participation (7%), encourage peer learning (4%) and
- personal reasons - own interest in online learning (7%).

Components used in the online course/s

All the teachers have used motivational strategies such as images and/or animations to capture the attention of learners and to retain their interest throughout the learning process in addition to the minimum quality assurance requirements. These requirements are to include an announcement, course information, at least one learning resource, an assignment and a teacher-led discussion forum. All teachers have used both teacher-centered strategies such as providing content in different formats {course material (56%), PowerPoint slides (36%), additional resources as PDF or DOC format (56%), web-links (52%), audio clips (4%), animations (20%), video clips (12%) and a summary (20%), and student centered strategies such as discussions (all of them as it is a requirement) and chats (20%). Interactive activities such as glossary (20%) and quizzes (40%) were also used by certain teachers.

One teacher in particular had gone to the extent of conducting online assessment tests in nine NAC Centers available at that time (in 2007); however only nine centers (Colombo, Kandy, Matara, Ratnapura, Kurunegala and Batticaloa) were used by the learners for this purpose.

In addition, most of the teachers have provided past examination papers (52%), model answers (4%) and Continuous Assessments Marks (Open Book Test/Close Book Test marks (4%)) as strategies to capture the interest of the learners and to motivate them to use this online mode as these courses are not compulsory.

All the teachers had designed "independent" activities such as completing individual assignments, but none had designed "interdependent" activities such as group activities using group interactive forums or chats in their supplementary online courses.

Teachers who had been involved in designing two stand-alone online plus courses had used a weekly format structure to pace the course for six months and continuous assessments have been integrated into the online course throughout. They have used more variety using different media components such as audio, video and animations (one course) to deliver the content and used different interactive learning strategies such as quizzes (both courses), puzzles, online debate, competitions and producing knowledge artifacts (one course), maintaining reflective journals (both courses) to help the learner to construct knowledge and facilitate the learning process by motivating them not only to start the course but also to stimulate active participation throughout the course (Karunananayaka, 2009; De Silva & Kulasekera, 2010).

Facilitating the learning process

All the teachers have used forums unlike in the earlier LMS which was used only for communication purposes. The intention of opening discussions varies

with teachers and categorized using Collins & Berge (1996) framework. Technical and social roles of the teachers were not clearly reflected from the findings.

Pedagogical role

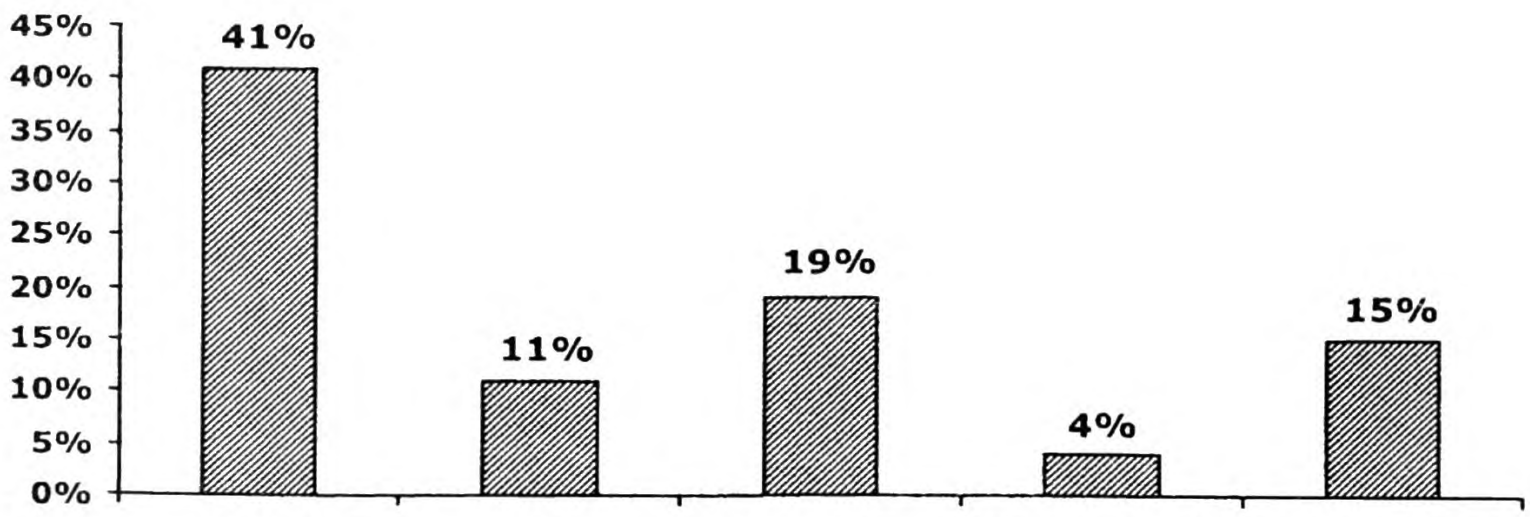
- clarifying difficulties and giving feedback (23%),
- developing critical and analytical skills (8%),
- discussing important concepts (8%),
- assisting in answering questions (4%),
- ascertaining whether learners have understood the concepts (4%)

Managerial role

- stimulating learners to engage with the content (15%),
- encouraging peer interactions and collaborative learning (15%),
- monitoring the progress of research (4%),
- providing a flexible and communication channel for learning (4%).

When teachers were asked as to how often they log-on to their online courses, the responses varied from daily to "not so often" (daily -41%, 2-3 times per week - 11%, weekly – 19%, once in three weeks - 4%, and not so often -15%).

Figure 2 – Teachers' log-on data



Source: Survey data

Challenges faced by the teachers during designing and delivering of online course/s

The challenges faced by teachers when designing and delivering the online course were to find time in addition to their normal academic tasks (41%), lack of skills (computer/technical skills -11% and designing innovative learning experiences - 4%) and lack of infrastructure facilities (limited internet facilities 8%, and lack of resources - 4%).

The other challenge faced when delivering the online courses was motivating learners to participate in online discussions as 30% of teachers reported the poor participation of learners.

Benefits received as a teacher

The collective view expressed by all these voluntary teachers was that the amount of time and effort that goes into designing, developing and delivering online courses have not been recognized by the institution. This may be the reason that one teacher specifically stressed that he received "no benefit" from engaging in online education.

However, one teacher observed the *"self-satisfaction of being of service to empower distance learners"*, emphasizing the satisfaction as the main reward that she received from this endeavor.

Having reflected on their teaching experience, one teacher commented that his experience broadened his capacity as a teacher. Another teacher indicated that by using this online medium, *she got quite close to the learners who participated,* indicating the "social presence" of online education and how online education could be used to bridge the distance of the teacher and the learner.

Discussion

The OUSL has more than seven years of experience in delivering online courses; initiated as a mere communication model using Manhatton LMS and then gradually transformed to a knowledge construction model using MOODLE LMS. However, the progression was not so pronounced from six online courses in 2003 to seventy four in 2010. This is not an extraordinary situation with regard to innovative applications of technology. According to Roger's (1995) Theory of Individual Innovativeness, "Diffusion of Innovation" takes place very slowly and individual adoption rates of innovation are usually distributed along a bell shaped curve; initiated by innovators (2.5% of the population) and readily accepted and utilized by the early adopters (13.5% of the population). Afterward, early and late majority (34% of the population in each) will adopt the innovation. However, 16% of the population will be resistant to change and will remain as "Laggards" who are consistently unwilling and need pressure to undergo change.

Accordingly, the OUSL is still at the early adopting stage as the penetration of early majority is not remarkably visible. The experienced and mature teachers (females outnumbered males) had innovated the technology and adopted and acted as 'role models" for the mainstream "early and late majority". Donovan (1999) highlighted five factors that would influence the "diffusion of technology" in an institution.

- Advantages - Does the innovation indicate an advantage over current ways of doing things?
- Compatibility - Is the innovation compatible with existing needs and expectations?
- Complexity- Does the innovation make life simpler or at least not contribute more complexity?
- Trialability - Can the innovation be tried without a commitment to completely change the current practices?
- Observability - Is the innovation observable and visible to potential adopters?

The potential adopters of the OUSL may not have seen the "complexity" and the "observability" of this innovation yet. They may have seen only the hindrances such as additional work, limited resources and support from the institution, lack of recognition, no policy to encourage online education and slowness in responding to the innovative changes by the institution. Gunawardena (1992, p.70) in her study also highlighted the lack of recognition by the institution for the time and effort spent on this venture.

The majority (48%) indicated that they initiated online courses in order to reach the outreach as a communication model. However, some had the intention of helping learners in cognitive development by facilitating knowledge construction (26%), providing additional support (22%) and helping learners to manage their studies (7%). Thus, 71% of teachers, irrespective of their heavy workload, have logged in at least in a weekly basis (daily -41%, 2-3 times per week - 11%, weekly - 19%,) and tried to motivate learners to use this medium and facilitate knowledge construction adhering to the "pedagogical" and "managerial" roles. However, their roles as "technical" and "social" were not so pronounced. In the OUSL, "technical" aspects of online courses delivered via NODES were handled by the "Programme Coordinator" of the ET Division. This may be the reason that the technical role was not exhibited among teachers using MOODLE platform unlike in the earlier study where the responsibility of attending to the technical matters were also carried out by the individual teachers.

Finding time (41%), lack of technical skills (11%) and lack of skills in designing and delivering online courses were the major challenges faced by these teachers

when developing their courses. These findings were supported by Gunawardena (1992) where she reflected her own experience when moving from distance teacher to an online facilitator.

Most of the teachers used a content-driven communication model and had focused more on the content when looking at the components used in their online courses. 15% have stated that they have "not so often" logged on to their course, suggesting that they have not interacted adequately with students in order to help them in knowledge construction. Conrad (2004) also reported the initial experience of online teachers and stated that they were content-oriented and *"they wanted to ensure that they found ways for their learners to "get enough" of the content"* (Conrad, 2004, p. 42). It is also apparent that the OUSL teachers were also adhering to their traditional roles and not "letting go" of their old paradigms like in the previous studies (Gunawardena, 1992; Conrad, 2004).

Conclusion

With 30 years of experience as a premier ODL institution, the OUSL has reached the fourth generation Distance Education since 2003 using a flexi-model. However, "diffusion of technology" is not so pronounced". Nevertheless, the remarkable observation seen in this study was that "innovators" and the "early adopters" have tried to become "pedagogical facilitators" in addition to the "managerial" role exhibited by the teachers in the earlier communication model. The ulterior motive of the majority was to bridge the distance and support learners in knowledge construction using interactive activities irrespective of their heavy workload.

The study revealed the necessity of an institutional policy considering the workload of academics, which can formulate a realistic mechanism which clearly articulates into faculty policy structure. In addition, it should be tied up with incentives and promotion system, and a supportive and enabling environment to sustain these voluntary teachers to engage further on online education and attract "early adopters" from the mainstream for future progression of online education at the OUSL.

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