

DESIGN CONSIDERATIONS FOR AN ON-LINE COURSE - A CASE STUDY IN MALAYSIA

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Introduction

The Multimedia Development Centre was set up to provide assistance in instructional technology to the academic staff at the University of Malaya. Particularly, the centre's main focus is to provide multimedia as well as web-based training and support.

As the multimedia section of the centre was not fully developed, we embarked on the idea of enabling the academic staff to provide learning support to students through on-line materials. The idea was to create a template that will not take too much of instructor time as well as was easy to understand and implement. According to Harasim et al (1995:12) "Networking technologies can be easy to learn, and using them makes learning and teaching richer and more effective". With these ideals in mind, the staff at the multimedia centre began to brainstorm on the software, hardware capabilities and design considerations for the template. A review of on-line courses was carried out whereby the design aspects, the layout and the download time was considered. One major factor that was deliberated upon in the decision to adopt the template was "less time on training" and "minimal time on layout of the on-line course for the academic staff". Apart from that it was important to consider techno-phobia in technological adoptions. In view of this, the Lotus-Notes software was adopted as the authoring software, which had the capabilities of creating a database of information that, was needed. Within the first six months of 1998, the first version of the template was ready and was pilot tested with forty academic staff with the view of getting feedback for improvement. Subsequently, a few courses were offered to students, however the main aim was to provide students registered on campus with an alternative form of instructional support.

The purpose of this paper is to share some of the design aspects of the Course On-line template. The following sections will discuss the principles of on-line learning, the design aspects of the course on-line template, how the template was received by students and some concerns about using the template.

The Principles of On-line Learning

Both conventional educational processes and innovative facilities are incorporated into the Course On-line (COL). "On-line support can improve upon traditional ways of teaching and learning as well as open entirely new opportunities for communication, collaboration and knowledge building" (Harasim et al, 1995:4). Instructional technology is used to facilitate and enhance the learning process. However, careful attention is needed to secure a design that will enable students to benefit from the technology. Instructional design principles incorporated with the technology will ensure maximal learning. "Attention to instructional design is one of the most critical factors in successful learning networks, whether course activity is delivered totally or partially online or in adjunct mode". (Harasim et al, 1995:125). With the technology, information can be made dynamic thus contributing to increase motivation to learn, and enrichment of the learning process. The COL will enable students to get personally involved and a lot of educational materials will be made available involving less time on task. Apart from that, instructor time on assessment procedures and maintaining management records can be alleviated, especially through the incorporation of computer-managed capabilities and artificial intelligence.

The main focus of COL is interactivity; that is involving the student actively in the learning process. Active learning promotes comprehension, retention and easy recall of content. When learners put ideas or information into written form, the thinking process is activated. A course on-line

coupled with the conventional class interaction provides students with a more wholesome learning experience. The COL supplements educators and students with additional resources. Apart from learning using a "different place, different time" model, students also learn according to the "same place, same time model". Rather than creating a totally new electronic educational environment, it is suggested that the conventional objects of classroom instruction be implemented in electronic form in the electronic classroom (Norman, 1990).

From a review of literature, a number of reasons have been forwarded for the adoption of on-line learning. According to Norman (1997:2), electronic classrooms (COL) can achieve the following goals:

1. Increased interactive learning;
2. Allow hypermedia experiences;
3. Increased student-student and student-teacher interaction and collaboration; and
4. Cater for rich learning experiences.

The Template Design

The template which is called "Kursus On-line" or Course On-line (COL) now in its version 2 format was designed to have the 4 major learning sections that is the notes, tutorial, announcement and discussion. These sections evolved through discussions based on the key question " What activities are normally carried out by instructors in their teaching-learning sessions".

Apart from that, it was also important to ascertain the benefits of COL to students. It has been estimated that adults will spend more time learning and much of this learning will occur outside the traditional classroom. From a review of literature it was found that on-line learning could provide more opportunities to students for convenient interactions either for course materials or peer interactions (Kaye, 1991); combating professional isolation and enhancing the analytical and inquiry skills of students (Honey and Henriquez: 1993). Practical experience has also shown that online materials enabled students to check and balance their learning.

Accessing the Template

Students can access the COL from a personal computer, which has browser capabilities. When the following URL: <http://mdc.um.edu.my:88/mdc/mainmenu.nsf> is typed the system asks for the student's username and password, which is provided to students by their respective lecturers upon registering for the course. Figure 1 shows the layout for the menu screen. The main links *Nota* (notes), *Tutorial* (tutorial), *Pengumuman* (announcements) and *Perbincangan* (on-line discussion) are displayed together with *Panduan* (user guide), *Maklumat Kursus* (course information) and *Maklumat Pensyarah* (about the instructor).



Figure 1: The main menu of Course On-Line

Course Information

The purpose of the course information is to provide students with course information, which includes an overview of the course, the aim and objectives, the lecture room and time, assessment, major references and the schedule for a semester (15 weeks) of instruction. The course information is an important design element as it keeps students oriented to what the learning needs are. Although the structure is predetermined, lecturers however have the flexibility to be creative and effectively present their course materials. For example the Internet in Education (PPGS 6124) course had employed four subheadings that are course content, course outline, references and evaluation. Within the course content the goals, objectives and overview of the course are addressed. However the Computers and Algorithms in Science Education (PMEX 3105) course had utilised the following subheadings: course objectives, course content, references, evaluation, course outline and course requirements. Thus it can be seen that within a suggested structure, lecturers still have the flexibility to decide what is instructionally better for them.

Notes

The purpose of the notes section is to enable students to access the learning materials at their convenience and be more ready for class discussions. The availability of notes on-line has practically changed classroom interactions from those of very teacher focussed to those that enabled open discussions on issues raised through readings. The notes section has the following sub-headings namely: the overview, the learning objectives, content, summary, assignments and references. The sub-headings were created based on the basic teaching and learning processes. However the template also enabled lecturers to freely design their materials in ways suitable for their course content. Apart from the sub-headings, the template also has a "browse" button that enable lecturers to attach documents. These documents could include a whole range of word, presentation, audio, video and graphics documents. In addition, graphics can be linked or made to appear on the page to support textual information. In this section also, lecturers can provide links of other relevant sites to students who want more information. Students on the other hand can read, reflect and construct their knowledge at their own pace.

The notes section is suitable to incorporate some of the instructional design* principles of gaining attention, informing the learner of the objectives, stimulating recall of prerequisite learning, presenting stimulus materials, and providing learning guidance (Gagne & Briggs, 1979).

* Examples will be presented at the conference.

Tutorial

The tutorial was designed to enable learners to have enough practice on the concepts that are taught. Interactions with on-line tutorials enable learners to apply what they have learnt so that teaching is not seen as a memory activity but one of application. The tutorial consists of a variety of question formats such as the multiple-choice question, the true false, and the structured format. The multiple-choice and true false formats are designed with radio button functions and is made easy for lecturers to key in their questions, answers and feedback. All question templates have three sections to it, that is a section to key in the question, a section to key in the answer and a section to key in the feedback. According to the principles of instructional design, (eliciting the performance) practice is a major learning criterion as it helps in the retention and mastery of information. As an additional learning support, feedback regarding the correctness of their response is provided. Sometimes the tutorial doubles up as a test depending on how it is being used. In a course where every student has access to a computer, online testing can be carried out. As the template does not cater for individual names, the lecturer can request for a printout of student test scores.

Discussions

Peer to peer and student to instructor discussions has taken on a new meaning with the availability of the electronic discussion board. In a class where the student numbers are large, it is often very difficult for the lecturer to answer all or most of the questions posed by students. One of the functions of the discussion board is for students and lecturers to pose questions or issues, which then can be addressed by all the students or the instructor. Students or instructors can generate a question or issue. According to Harasim et al (1995), discussions enable the building up of group knowledge and allow for learning with peers, experts and resources whenever you want and need them. Practical experience also shows that discussions provided moral support, motivation and enthusiasm to student learning.

Announcements

Although announcements do not form a major section of the instructional design process, this section was seen as important as in an institution of higher learning, it is often difficult to get students together. The announcement board is seen as a "keeping-updated" board, where urgent and important announcements can be put up and accessed anytime by the students. Such announcements include due dates for assignments, test venues, visits and on-going seminars and talks.

Student Reactions to the COL Template

Students taking the Internet in Education course were surveyed to get feedback on the effectiveness of the instructional support that they received. A total of 10 students responded on the instructional effectiveness of the course and 22 students responded on the web-board discussion and accessibility.

Effectiveness of Instructional Support

Students were asked to fill in an on-line questionnaire to provide feedback on the effectiveness of the on-line instructional support. The following issues were posed to the students:

1. Clarity of learning objectives;
2. If content addressed the objective;
3. Flow of ideas;
4. Quality of notes;
5. Effectiveness of notes;
6. Suitability of assessment methods; and
7. Assessment based on objectives

Table 1 presents the responses gathered for effectiveness of instructional support.

	Very good	Good	Generally good
Clarity of objectives	63.64	27.27	0
Content addressed objectives	63.64	27.27	0
Flow of ideas	27.27	45.45	18.18
Quality of notes	45.45	45.45	0
Effectiveness of notes	36.36	54.55	0
Suitability of assessment	45.45	36.36	9.09
Assessment based on objectives	63.64	27.27	0

Table 1: Student response to effectiveness of instructional support

It can be concluded that on the whole students were satisfied with the support given in the notes section. Students were particularly happy with the ease and flexibility with which they could access the notes. Most of the students found the links very beneficial as responded by one student: "I found that the notes given were sufficient. I especially benefited from the links that were provided as it provide me with alternative forms of references".

Discussion Board

A student found that messages on the discussion board were not well organised. The student suggested that to reduce student time clicking on to get to the latest discussion issues, "the latest page will become the first page, so that time is not wasted clicking through every page that have already being read every time we want to check for new discussion". In the Internet in Education course, it was observed that only some students were very active on the board. Others had to be prompted by ensuring that a certain percentage of the total course marks were allocated for on-line discussions. Sometimes, the instructor had to keep track of student activity and give feedback to the students. One such feedback was:

"Those students who are still inactive, a portion of your 10% is expiring. There are a total of seven students who have not written to the discussion board."- Abtar K

Certain student reactions were found to be beneficial to learner learning. As an example, one student had typed the following message on the discussion board:
"I HAD INTERVIEWED A PROFESSIONAL IN THIS FIELD, THAT IS MRS KOMODHY WHO WORKS IN THE MAIN LIBRARY. SHE TEACHES FIRST YEAR STUDENTS IN INFORMATION SKILLS. SHE LOVES TO USE WEBFERRET" -Vasantha

The feedback on the discussion board was:

1. "When presenting information on the net please use lower case.... otherwise your eyes might ache."- Ganga Uma
2. "Dear Vasantha,
Its interesting to note that there are many web users who are well versed with search engines especially as webferret was something very new to me. How long has Ms Komodhy been using this search engine? Did you ask Ms Komodhy about verification of data obtained from the net? I agree with Ganga that its difficult reading if too many capitals are used and I believe its been labeled as SHOUTING and is a definite no in Internet netiquette. I can see why because the capitals tend to distract one from the actual message being put across"- Charangeet, K
3. "I find it interesting that you'll be applying some of the concepts learned about netiquette esp. Charangeet and Uma. Good response to Vasantha. Vasantha, be careful about upper case! - Abtar K

The message board became very active towards the final weeks of the course. Many students benefited from enhanced collaboration. One student had this to comment: "I benefited from the on-line collaborative activities"

To conclude, students in the Internet in Education's course identified the following benefits:

1. Provided opportunities for collaborative learning (68.2% rank this highest): "I am indebted to my friends who provided the support through on-line discussions."
2. Save travelling time (54.5 ranked this highest)
3. Flexibility in terms of ability to read, reflect and participate in discussions (50% ranked this highest)
4. Equal opportunity in participation (50% ranked highest)
5. Increased learning (60% ranked this highest)

Some concerns

Learners found that there was an information overload for some of the modules especially those with too many links. Sometimes they suffered from communication anxiety in relation to delayed response, or when they were unable to understand messages generated by the server. Students also had high telephone bills to settle, as accessing the COL required them to dial-up to the local telecommunications service provider. In relation to this, a survey carried out found that most of the students accessed the COL from home (84.5%) followed by those who accessed from work place and university (15.5%). Dial-ups (95.5%) were the most common methods of accessing the COL. The number of times the COL was accessed ranged from 1-2 times (63.3%) and 3-5 times (31.8%) a week. Students when interviewed encountered the following problems. The highest rated barriers to effective use of the template were:

1. Accessing the MDC server;
2. Linking up to Jaring;
3. Announcements and notes should ideally be uploaded 2 weeks in advance;
4. Accessibility of computer

Conclusion

On-line learning support can provide immense learning opportunities to students. It allows for more flexibility and efficiency in providing and accessing information. The main concerns that should be given more consideration are the quality of the learning materials, the technicalities of telecommunications and the availability of the facilities. Casual conversations with the academic staff and students at the University of Malaya have pointed to the lack of student support to access the on-line materials.

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