DESIGNING WEB-BASED COURSES IN DISTANCE EDUCATION:
ARE WE READY?

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ABSTRAK

Sejak tahun 2001, Universitas Terbuka (UT) telah berinisiatif untuk menyelenggarakan tutorial berbasis jaringan. Pada mulanya dikembangkan 7 matakuliah berbasis jaringan yang didukung oleh IDRC Research Grant. Melanjutkan upaya tersebut, tiga matakuliah juga dikembangkan untuk tutorial berbasis jaringan, khususnya untuk program kependidikan. Artikel ini membahas persepsi para staf akademik UT sebagai pengembang tutorial berbasis jaringan, faktor yang mendukung kesuksesan mereka sebagai pengembang matakuliah berbasis jaringan yang dimulai dari tahap perencanaan sampai dengan tahap uji coba. Selain itu dibahas juga beberapa hambatan yang dihadapi oleh para akademik staf dari awal mula keterlibatan mereka dalam upaya pengembangan tutorial berbasis jaringan sampai dengan tahap produksi termasuk uji cobanya.

Kata kunci: pendidikan jarak jauh, tutorial berbasis jaringan.

The advancement of ICT has influenced the growth and development of distance education in Indonesia, from its first generation as a form of education for teachers and pupils developed into formal degree granting institutions, and growing into second, third, fourth, even fifth generation of distance education offering continuing education programs based on the emerging learning needs. Since 1997 Universitas Terbuka (UT) utilizes ICT to provide web-based information services for general academic and administrative information services, such as program catalogues as well as regulations about registration and credit transfer. In the subsequent years, the service has been expanded to include online publication of research reports of the UT academic staff, dissemination of information on Indonesian studies (1998), announcement of examination results and distribution of course supplementary materials (1998), and distribution of take home examination sets (2000). In 1999 the development of tutorial services (tutorial online) through internet and fax-internet were also started, based on the assumption that the fax internet services could significantly extend students access to UT’s services (Hardhono & Belawati, 1999).

In 2000, it was found that students response toward the use of ICT is still far from the expectation. There were only 15,000 hits to UT’s web site per day, mostly from students of the School of Management residing in Jakarta and urban areas, and the least from students of School of Education, i.e., student- teachers (as reported by the UT’s Multimedia Research Center, 2000).
In 2001, the result of a trial run of online tutorials indicated a discouraging profile. It showed that from the 40 courses offered only 28 (70%) are accessed by the students, with very low interaction between tutor and the students: tutor to students 1 – 2 interactions, and students to tutor 1 - 4 interactions (Anggoro et al, 2001). The reason stated by students for not sending email, are: (1) feeling embarrassed since they do not master the content of the course; (2) they do not know how to send e-mail; (3) the courses offered are not the ones they are registered for; (4) they do not know the email address of their tutor (Anggoro, et al, 2001).

Some of the latest developments on web-based course in UT are UT-Online consisting online lecture, online counselling and online lecture-on-video. UT-Online was launched on September 10, 2002. Online lecture is a trial run project of 7 selected UT courses, which are converted into web-based courses. UT-Online can be accessed through any access points including the internet kiosks, to extend access points to UT’s students in remote areas. For this purpose UT has made an agreement with 2616 internet kiosks. The service is made available at 6 cities, i.e: Jakarta, Medan, Makasar, Surabaya, Semarang dan Bandung. UT students who reside in those cities can get a reduced rate of 50% if they access the UT-Online from the appointed internet kiosks.

The 7 selected courses were converted into web-based courses with the support from the IDRC Research Grant. Following to the effort, in 2003, three web-based courses were also developed, specifically for teachers-training program. Within those efforts, it has been noted that there were several emerging problems including software, hardware, infrastructure, HR, and culture of the academicians.

In terms of software, it is considerably expensive to use licenced software in any level - macro and micro design, back office as well as front office (user interface). Thus, computer techies in UT are aiming at LINUX and free opensource softwares. However, these softwares are very fragile, and if we do not have ICT techies who work 24 hours in developing and maintaining it, then the security of the programs can be troublesome. In terms of hardware, the problem is related to the life cycle of ICT hardware which is (at the most) three years. While the development process in on its way, the hardware has already gone obsolete. If we have to change the hardware, then we talk about very expensive matters. In terms of infrastructure we cannot use fiber optics when we talk about "across the sea" communication and linkages, then VSAT must be used. However, VSAT is not inexpensive.

Nevertheless, the human factor is the most important element required for building the e-learning in Indonesia. Human resources (computer technicians, operators, supervisors, designers, etc.) are very rare in UT and the supply is not enough to answer the needs. Furthermore, emerging new roles and responsibilities of faculty members in preparing, maintaining, and carrying out the e-learning process, while keeping up with the present responsibilities of the existing system is a tough challenge for UT’s faculty members. The e-learning culture needs to be acquired by each faculty member, which means reliable preplanning activities, timely schedule, virtual thinking (versus concrete, spacious and lateral thinking), computer and net literate, use of computer and net in everyday life. Past values, beliefs, and assumptions in teaching and learning behavior and tradition are challenged. Learning cannot derive from presentation of a stack of learning materials delivered online by the faculty members, learning is not the result of the memorization of concepts, theorems, rules of any subject matter, and the result of learning process does not mean merely a course grade and or a piece of certificate. This
The paper discusses the perception of academic staff members of UT as they embarked to be e-course developers, in terms of factors supporting their success in developing web-based courses from the planning stage up to the pilot test stage. In addition, some constraints faced by staff members from the very start of their involvement in the development effort up to the production stage are also noted.

**THE PROMISE OF E-LEARNING**

Appropriately targeted and skillfully designed, the e-learning is able to address the development of skills needed by the workforce of this age in any countries, i.e., good communication skills, ability to learn independently, social skills, teamwork skills, ability to adapt to changing circumstances, thinking skills, knowledge navigation. In addition, e-learning is highly potential in empowering the learner. Knowledge navigation is actually a part of the learner empowerment, since it removes the image of the teacher as the sole source of information, and allows the learner to explore other sources. However, the most significant aspect of empowerment lies in the cultivation of learning to learn skills, thinking skills, and communication skills. The e-learning, using computer mediated communication (CMC) has the capability to effect such learning by incorporating course activities which require student initiative, student discussion, student reflection, and iterative attempts to improve student work. Well-designed e-discussion can elicit more student participation. Done asynchronously, there would be no awkward pauses while waiting for student response. Students have more time to give well thought out responses. At the same time, there is pressure to do so considering that the responses are recorded and therefore subject to closer scrutiny by others. E-learning allow teamwork even if the students are geographically distant. Even the cultivation of social skills can also be facilitated through the e-learning (Padolina, 2001). Diagram 1 shows the premis of e-learning.

![Diagram 1. Premis of E-learning](adapted from Rekkedal, et.al., 2003)

Based on the diagram, in e-learning, students’ and lecturers’ interaction is based on autonomy and collaboration to freely access learning resources – various content and medium, across time and space at each own pacing to achieve the meaningful learning outcome.
In short, e-learning propagates the creation and distribution not just information but also knowledge, the analysis and application of the technology, for the betterment of the society. Nevertheless, as in many other types of learning process, the design of learning experiences is significantly required to achieve the expected outcome. The design of e-learning experiences involves exploration of the premises of e-learning – to achieve optimal outcome. In this case, it is clear that the premises of e-learning alone is not enough for learning to take place, unless there is a design attached into it, for the e-learning to become a reality.

THE DESIGN PROCESS OF WEB-BASED COURSES
Based on the promises of e-learning, UT then decided to embark on designing web-based courses to be part of its e-learning initiative. The design of web-based courses in UT, follows three stages, i.e., the planning, the design process, and the follow up process. The planning was started through introduction of e-learning and web-based course to selected faculty members. Faculty members were selected based on their course responsibility. They meet to discuss the current communication tools available and what tools that would be used by UT. Next, the faculty members discuss the course content for the purpose of flowcharting and development of learning objects. All learning objects were to be identified exhaustively. The following meeting was meant to review and check the faculty’s member learning objects and flowchart. In developing the learning objects, the faculty members were given freedom to combine multiple methods of instruction to enhance student learning, including online asynchronous, video streaming, interactive online testing, simulations, etc. These multiple instructional methods were used to also demonstrate how current theories of learning can be incorporated into educational practice, especially e-learning practices.

At the following meeting, the faculty members were introduced to UT’s course management system: Manhattan Virtual Classroom (up until 2003), and Moodle (starting 2004). The changes of CMS were carried out by the Computer Center based on their research into the flexibility of the program and also the comprehensiveness of the features. Although tutored meeting was only once, the faculty members were welcome to the Computer Center to get themselves familiar with the CMS, anytime they needed it, supported by computer technicians.

At the final meeting, the faculty members were to upload their learning objects – designed and developed for their particular course, into the CMS. Computer technicians were aiding the process. The course were then offered to students – on a trial run base.

The development of the 7 course supported by IDRC consumed about 7 months of preparation. The 12 e-course developers for those 7 courses were more concentrated on the development effort, less involvement in other activities. However, the development of the 3 other courses took about 9 months, due to less internet skills of the e-course developers, and also, they were required to be involved in numerous daily activities (no separate time devoted for the development). The latter effort also involved more faculty members, i.e., 12 faculty member for 3 courses. The first 7 courses have been pilot tested, however, the three other courses have not.

THE STUDY
This study involves 20 e-course developers who are faculty members of UT. They were involved either in the development of the first 7 courses or of the 3 latter courses:
Out of 20 sets of open-ended questionnaires, only 14 sets were returned. The open-ended questionnaires were focused on the three stages of e-courses development, i.e., the planning stages, the design process, and the follow up process, and the dimensions of the e-developer’s perception on each stage. The study was meant to reveal the experience of the e-developers while developing web-based course, and to tap emerging problems faced during the development process.

**THE PLANNING STAGE**

The selections of the faculty members to be designers of web-based courses were based on the fact that he/she was the faculty members responsible for the course. The courses were selected randomly in each faculty, based on the needs of the course to be presented in a multimedia format. It was assumed that faculty members have already had good computing skills.

It turned out that at this planning stage, faculty members did not yet have any idea about a web-based course. They (n=5) claimed that a web-based course is a course delivered through the internet for easy access by the students. One of them also said that a web-based course has similar function to an e-mail. The majority of them stated clearly that they did not have any idea at all about a web-based course, they never heard of it before they were involved in the web-based course development. Only one of them reported that he had heard about it five years ago, but still he did not know anything. Despite the condition, faculty members had very positive perception toward a web-based course, as they said that it will be a good alternative medium of instruction for UT, a positive image building vehicle for UT and its students, a good learning experience for students (especially active students). Some were more sceptical as they claimed that it will be good, if UT can work it out well. They also claimed that they were ready to be e-course developers provided that they were given training before hand.

At this planning stage, faculty members also found out that in order for them to be able to design a web-based course, they:
- have to select the course carefully, only the course that needs to be delivered through multimedia.  
- have to have good knowledge on the subject matter area 
- have to work collaboratively, from time to time, with an instructional designer and an computer technician  
- have to have familiarity with the software and application being used.
In UT, which is implementing the policy of “outsourcing”, for a faculty member to have a good knowledge on the subject matter area is a problem of itself. UT’s faculty members are mostly course managers, who manage the process of course designing and developing, and evaluation, but are not necessarily a subject matter expert. Therefore, in addition to collaboration with instructional designer and computer technician, collaboration with subject matter expert in developing web-based course is perceived to be highly important. However, working in a team is not always easy. This counts for the length of development time, especially the 3 latter courses.

THE DESIGN PROCESS
During the design process, the faculty members were to develop learning objects and flowchart of the web-based course. The learning objects consist of textual materials, including subject matter information and learning instruction, images, assignments, exercises, formative tests, and audiovisual materials when needed. The flowchart was developed to be the navigation map among learning objects.

For instructional purposes, the faculty members were also introduced to various methods of instruction to enhance students learning. It was expected that faculty members will creatively combine multiple methods of instruction in their course.

In the design process, the faculty members were also introduced to UT’s course management system: Manhattan Virtual Classroom (up until 2003), and Moodle (starting 2004). At the final stage of the design process, the faculty members were to upload their learning objects – designed and developed for their particular course, into the CMS.

Since it was a guided development process, the faculty members were all following the same procedure for developing web-based courses as given by the facilitators – the instructional designers and the computer technicians. Some concerns were reported during the design process, i.e.:

- the instructional designers do not have enough knowledge (detailed knowledge) on the CMS, while the computer technicians do not have knowledge on systematic instruction and learning
- a high frequency of communication between developers, instructional designers, and computer technicians are required and it took time
- some faculty members do not have the skills to “draw” using computer – while finding the right images are not easy
- some faculty members feel that their computer knowledge and internet skills are not adequate, also their knowledge on the subject matter are of the course
- some faculty members feel that their knowledge on the subject matter are of the course is minimal (not enough)
- the logic of hypertext is confusing
- changes of the CMS, especially when applied to the 3 latter courses, have caused faculty members to have to learn two CMSs at the same time
- CMS is frequently stucked (“hang”)
- there is “fatal” virus eating my program!
- access to hardware and software is minimal to faculty members, because some computers in the faculty room are not equipped with the CMS and proper connectivity. Thus, faculty members have to go to Computer Center for the process.
At the end, when they have developed their learning objects and flowchart, and uploaded to the CMS on the web, the faculty members reported that they feel happy they can do it, but they are not yet satisfied with their end-product. They admitted that their product is more of an e-text than a web-based course for an e-learning environment, since they were merely collecting all the pieces of their course in soft-copy format and put them in the CMS. They claimed that they would like to have more time to work on the development process and more (guided) training so that they can be more familiar with the technology and CMS.

In this design process, it seems that many issues should be taken care of, especially the issue of familiarizing oneself with the hardware, software (CMS, hypertext, etc.), and the technology in general. The teamwork issue is another pressing issue, when developing time is relatively limited. In addition to the skills and knowledge (and also attitude) of the e-course developers, lack of access to the technology, and also low quality of support are noted in the design process. Although UT’s demographic data indicates that computers are readily available to the majority of the respondents and that a substantial number of hours have been spent in technology training efforts, the majority of the respondents indicated they want more time to practice what has been taught. In addition, respondents also expressed needs to have solid time away from the “daily press” of their work in order to be able to acquire the skills of an e-course development. Providing additional professional development opportunities for technology training should enable each faculty members to interact with their peers during the development process. The present support system provided by the instructional designers and Computer Centers were perceived not adequate to facilitate the e-course developers in their development process.

THE FOLLOW UP PROCESS

During the follow up process, the first 7 web-based courses were trial run on the web, while the second 3 courses still have to wait to be uploaded, due to changes of CMS. Nevertheless, both groups of developers are concerned with the students issues. They reported that they would have liked to have students perception on their design process, so that they can design their courses optimally based on the students’ needs. They also worried about the utilization of the course by the students who mostly do not have access to technology yet, nor they have appropriate skills to use the web-based course. Some other issues expressed by the e-course developers at this stage are:

- UT’s system (the technology) is not yet ready for implementation of web-based courses, problems of connectivity, access, hardware, software, and facilitators
- The dissemination of the concept (and skills) of web-based courses should be carried out systematically – in carefully designed stages – for all faculty members (not to specific group only)
- the exploration of the CMS features has not been maximal – methods of instruction is relatively simple, and interactivity is still low
- Students are to be equipped with other sources which can assist them in using the web-based course, i.e., announcement, manual.

Although faculty members agreed that UT should continue its efforts in developing web-based courses to support its e-learning initiatives, they requested UT to be more serious in planning and implementing its efforts. They noticed, that thus far, UT has been making the effort on an trial and error basis sporadically. They claimed that, a careful and serious planning is needed for UT to make priority on which courses to be developed (and the underlying reasons for it), to set a reliable,
accessible, and high quality system, and to train its faculty members, technicians, and also instructional designers on e-learning and web-based course.

REMARKS
The ultimate goal of web-based course design on an e-learning initiative is improved student learning. For this to take place, the e-course developers, in UT’s case are the faculty members must view technology in a positive manner, be comfortable with the technology, and use it effectively. Sporadic, unsupported, and unsystematic development effort of web-based courses frequently produces less than desirable effects and products, thus resulting in a one shot case that fails to live up to the e-learning potential.

Even faculty members who hold positive attitudes toward technology may have difficulty transferring these attitudes into productive actions, when the system, i.e., UT, does not provide enough support for them to do the exploration. A huge amount of money placed to technology development (hardware, software, systems) will be in vain unless considerably attention paid to helping faculty members make the transition into a technology-rich learning environment which would, in turn, impact student learning. In this case, one shot case of training does not have any nurturant effect at all, since acquisition of the technical details of the e-learning system requires much times and efforts. Thus, both UT and its faculty members need to be ready for the e-learning venture, not only building the system, or developing the faculty skills, but both should develop together.

As greater numbers of technology utilization occur in education, the demands on faculty members to integrate technology into instruction increase, especially in UT – a distance education university where e-learning is growing at present. From the study, it seems that faculty members do have positive perception on the e-learning venture. This will be a significant asset for UT’s e-learning venture. However, at the macro level, it seems that the e-learning initiative has not been viewed more than a simple skill acquisition on the part of faculty members, when it is supposed to be a change process that affects the behavior of individual faculty members on a very profound level and UT’s education system at large.

The results of the study also indicate the intense personal concerns of faculty members related the application and use of technology, especially technical details of the technology. If these early concerns toward technology (details skills and knowledge) remain intense, faculty members may even attempt to discontinue their effort. Faculty members who receive adequate, personal support for the use of technology tend to use technology more and use it more effectively (Fuller, 2000). If these concerns, and also the prestige of being e-course developers, belong only to a limited number of faculty members, there is no critical mass to enable UT to go further in the e-learning ventures. If UT is hoping to positively impact its quality of education through use of e-learning, it first needs to have a clear stages and systematic plan, to provide a clear demonstration of how the use of instructional technology tools, to address the concerns of faculty members at any aspects. Timely provision of experiences, resources, and support can assist faculty members to alleviate their problems in becoming e-course developers. Providing training or other interventions, especially to the first-timers e-course developers are necessary.
There are a number of adjustments called for on the part of faculty members when they are moving to web-based course environment. This is very often different than the way most faculty members know and do in their daily preparation for their print-based distance education. Not only are the faculty members changing the way they prepare and deliver instruction, but also they are learning how to use these new tools. This preparation and training takes a considerable amount of time. Further, not only faculty members are involved in the change process, but also the institution is required to be in the change process for the e-learning venture.

REFERENCES