WEB-BASED LEARNING SUPPORT SYSTEM
AT UNIVERSITAS TERBUKA

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ABSTRACT

The recent development of ICT as well as its infrastructure in Indonesia has opened up a possibility for UT to provide its students with a fast, reliable, and affordable two-way communication channel. In accordance with this, the project is aimed at determining, (1) whether the use of ICT within the UT system will address problems of student learning satisfaction and course completion rates and (2) what institutional policies need to be put in place for the project results to be effectively implemented on a system-wide basis for UT.   Specific research objectives include (1) investigating whether students have access to and are willing to take advantage of the ICT-supported academic services (hereafter termed as online services), which include online supplementary learning materials, online tutorials, online counseling, online academic administrative services, etc.; and (2) testing whether student participation in online tutorials increase their course completion rates and their learning satisfaction.

The findings show that students' participation in the online courses and tutorials significantly increases their course completion rates (p<.00). Students also expressed their appreciation and satisfaction of the online services, which was considered as an innovation, appropriate for the characteristics of working students, and useful. However, students also complained about the technical problems that are frequently occurred during their accessing the online services (low speed, error, etc.). Furthermore, students suggested that the online services need to be improved especially in the tutors' responsiveness and its appearances.

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INTRODUCTION

1. Background to the Problem

Providing high quality and timely learning support to students has been a long struggle for Universitas Terbuka (UT). Most students live in rural areas within which qualified tutors are hard to find. Furthermore, since most UT students are working full time, they have difficulties in attending face-to-face meetings within regular scheduled times so that face-to-face tutorial provision is not feasible in most cases (Setijadi, 1988). Nevertheless, the importance of tutorials are significant as data on student academic performance show that students needs for learning support services are real. Low academic achievement as shown by the average individual passing rates, which was approximately 23 percent, suggests that students faced difficulties in their studies (Tim Pengembangan Model Tutorial, 1999). Furthermore, as in any other distance education institution, UT also faces the problem of low completion rates. A study conducted by Belawati (1998) shows that the degree completion rates of UT regular students (excluding students of FKIP) was less than 15%.

The findings of a study about the feasibility of the use of the Internet for counseling (Belawati, 1995) show that the use of Internet-based counseling has enhanced student rates of examination attendance (course completion). Therefore, UT needs to further explore the potential benefit of using the Internet to provide tutorials, as well as counseling, using the available ICT infrastructure. Utilization of the Internet (ICT) is also hypothesized to be effective for supporting radio and televised tutorials by distributing their schedules and full transcripts.

The academic administration and information systems have also been real challenges for UT. As an illustration, students have been complaining about the late distribution of the learning materials and academic-related information, especially distribution of printed learning materials caused by late registration processing, announcement of examination results, and distribution of take-home examination sets. UT has responded to some of these issues by providing web-based academic administration and information services since the beginning of 1997. In the first year, these web-based services included mainly the distribution of general information on UT such as study programs as well as regulations about registration and credit transfer. In the subsequent years, this has been expanded to include publication of research, dissemination of information on Indonesia (1998), announcement of examination results (1999), and distribution of take home examination sets (2001). However, the existing services have not yet addressed the issues of registration. The need to continue and expand these services was also shown by the fact that students do take advantage of the provided services. For example, during the month when the examination results were announced in March 2000, there were 15,000

hits on the examination results server (Hardhono, 2000). Even though 15,000 hits a month is nominally a large number, it is only a small proportion of the UT student population. This, combined with the other two cases previously illustrated clearly indicate that UT needs to develop a network which will bring Internet access, and therefore UT internet-accessible services, closer to its students.

Based on the above background, the project is aimed at determining the feasibility and the effectiveness of the use of ICT (i.e. Internet) within the UT system to address problems related to student course completion rates and their learning satisfaction. The project has been carried ou with the aid of a grant from the International Development and Research Centre (IDRC), Ottawa, Canada.

METHODOLOGY

1. Project Sites

The research project was designed to be carried out through three phases: preparatory, intervention, and data collection and analysis. The preparatory phase was to ensure that students have appropriate access to the Internet and to prepare them to take advantage of this access. The intervention phase involved the development and delivery of web-based course materials, the provision of Internet-based tutorials and counseling, as well as the distribution of student academic records through the Internet. The data collection and analysis phase focused on measuring the effects of the intervention on student learning satisfaction and course completion rates. This phase also identified necessary institutional policy changes for system-wide implementation of the intervention.

2. Research Variables and Operational Definitions

As indicated by the research objectives, there are two dependent variables that will be analyzed in this research project, student learning satisfaction and course completion rates.

Course completion rates refers to the average ratio of examinations written by individual students to the total number of his/her registered courses. Student learning satisfaction refers to students' perception of their learning experiences as a result of the utilization of access to Internet, Internet-based learning materials, tutorials, student counseling, and academic information. This variable will be asked through a questionnaire.

3. Data Collection and Analysis

Data were collected through student records for course completion rates, and questionnaires for student perception of learning satisfaction and the reliability and the efficiency of the Internet-based communication network. The data were analyzed quantitatively (by using both descriptive and inferential statistics) and qualitatively.

PROJECT IMPLEMENTATION AND FINDINGS

1. Project Implementation

Implementation of the Preparation Phase

There were five main activities conducted for the preparation of the project. They were:

a. The signing of MOU with three Internet Access Providers (association and owners of Internet Kiosks better known as Warnet), i.e. KOMITEL (Koperasi Masyarakat Telematika or Cooperation of Telematics Society), Ministry of Research and Technology, and the National Post Corporation (PT. Pos Indonesia).

b. Development and distribution of leaflets and posters on UT-WARNET communication network information.

c. Development and distribution Student Manual for Online Course, Online Tutorial, and Online Counseling (UT Online)

d. Seminars for introducing UT services via WARNET for UT staff and student representatives in regional centers.

e. Training on basic computer and Internet usage for student representatives in 14 regional centers (Jakarta, Medan, Bandung, Semarang, Surabaya, Denpasar, Makassar, Bandar Lampung, Batam, Yogyakarta, Jember, Mataram, Samarinda, and Manado).

It was agreed by the Head Office of all the partners (as it is stated in the MOUs) that WARNETs are supposed to display UT Online poster in their premises, UT Online icon/logo on their PC desktops and to give discounted rate for UT's students. However, in reality, that seems to be difficult to be applied. As a result, only limited number of WARNETs (mostly located in big cities within the area of the sample regional centers) actually follows up the agreement stated in the MOU.

The implementation of the remaining preparation activities includes:.

a. Development and distribution of leaflets (70,000 copies) and posters (4,000 copies) on UT-WARNET communication network information;

b. Development and distribution Student Manual for Online Course, Online Tutorials, and Online Counseling (UT Online);

c. Seminars for introducing UT services via WARNET for staff and student; representatives in 14 Regional Centers, and attended in total by 1,006 students; and

d. Training on basic computer and Internet usage for student representatives in 14 regional centers, and attended in total by 600 students.

The project targeted 100 students attending the promotional seminar of UT Online and of the training in each regional center. However, even though the seminar and training were conducted during the weekend, data show that only 526 students (semester 2002.2) and 480 students (semester 2003.1) actually attended the seminars; and 120 students (semester 2002.2) and 480 students (semester 2003.1) attended the training in all 14 regional centers. This means that on average, the implementation of

the seminars was only attended by 46 students, and the training sessions were only attended by 69 students per Regional Center.

1.2. The Implementation of the Intervention Phase

The intervention phase was completed through several activities as follows:

a. Development and Provision of seven web-based learning materials (online courses) using an open source-based LMS (Manhattan Virtual Classroom);
b. Provision of web-based tutorials (online tutorials) for 160 courses and online counseling services for all the Study Programs;
c. Provision of online video programs related to about 200 courses; and
d. Enhancement of the efficiency of academic information system, which was conducted by developing a secure electronic information system to provide students with access to their examination grades as well as their full academic records.

Initially, the project targeted to reach about 10 percent of registered students. This target was based on data from the survey conducted by APJII, which shows that about 43% of users access Internet from WARNET (APJII cited in International Telecommunication Union, 2002), and the rest accesses Internet from offices (41%), homes (12%), and schools/universities (4%). Therefore, it was assumed that there were sufficient numbers of WARNET that are spread located throughout the country. However, based on participation rates, the average participation rate (of semester 2002.2 and 2003.1) is only about 3.5% of the registered students. Data also show that there are tutorial of three courses that do not have any participant at all.

There are several possible explanation for this low participation rate. Firstly, it seems that the initial expectation was too high considering that the percentage of the total number of Internet users to the total population of Indonesia is only less than 2% (Internet World Stats, 2003). Secondly, the spread of Warnet's location is not as widely as it initially looks. During the implementation of the project, Indonesia went through a severe economic crisis that resulted, among others, in the closing down of a lot of Warnet.

2. Students' Access and Perception

In order to gather information about the access and perception of students about the online academic services, a set of questionnaires were distributed through both mail and online. Out of the distributed questionnaires, 755 questionnaire were returned (both through mail and online -UT's website).

2.1. Access and The Quality of Connection

The questions on this category was intended to see the source of information from where students heard about the online (hereafter termed as UT-Online) service, students' access points, the quality of Internet access, the cost, and the time students

usually accessing the UT Online. UT Online through Internet Kiosks (Warnet, Warintek, or Warposnet), 47.8% from computer facilities at their work places, and 13.71% from their homes. As expected, the quality of connection students have from their access points varies depends on the quality of the Internet facilities available. Responses show that only 101 students (13.38%) claimed that the Internet speed in their access points were considerably fast, the majority of them (41.06%) said that the connection was just moderate (310 students), and 107 students (14.17%) even said it was very slow (> 5 minutes for opening the website only).

Most respondents claimed that they knew about the availability of UT-Online service from UT website (339 students) and from the announcement from the Regional Office (293 students). Some significant number of respondents claimed that they found out about the service from the invitation from the Regional Office to attend the seminar/training of it (93 students), from the distributed leaflet (75 students), and from posters in the Warnet (30 students).

With regard to access point, 38.49% of respondents claimed to access UT Online through Internet Kiosks (Warnet, Warintek, or Warposnet), 47.8% from computer facilities at their work places, and 13.71% from their homes. This data show that only a small portion of UT students accessing the online services from their homes, which is understandable since computer and Internet connection is still very much considered expensive for personal expenses. This profile of access points seems to be different from that in other Asian countries. A survey conducted by Zhang, Perris, and Poon (2002) revealed that in China and Korea, the majority of students of the Guangzhou Radio & Television University (GZTRVU), Shanghai Radio & Television University (SHTVU), and the Korea National Open University (KNOU) accessed the online services from their homes (each respectively 73%, 54%, and 66%). Nevertheless, like in Indonesia, the survey also found that many students in various surveyed countries often use computer facilities in their work places to access online distance learning services.

2.2. Online Services Being Used

This category was also gathering information on the type of applications/services students use in the UT Online, as well as students' perception of the general quality of the UT Online website appearance and user-friendliness. Among all the online services provided by the UT Online, online supplementary learning materials and the announcement of examination grades seem to be the most popular ones as it was claimed to be used by 477 students and 476 students respectively (over 63%), followed by the online tutorials and online courses which combined were participated by 697 students (92.32%). As shown by Appendix 20, the total number of participants of online tutorials itself was higher than what was claimed by the respondents who returned the questionnaire.

2.3. Student Perception on General Appearance and User Friendliness of UT-Online

Students were asked what they think about the general appearance of the UT-Online in UT's website. As data show, 54.7% of students (413 students) said the appearance was just moderately good and about 9.54% of students (50 students) thought it was very good. However, about another 9.54% or 72 students perceived the general appearance of the website to be not good at all.

Nevertheless, despite its unsatisfactory appearance to some students, the navigation system of the online service was considered simple and easy by most students (perceived by 72.32% or 546 students). Only 76 students (10.07%) perceived that the navigation system was complicated and not easy to use, or unfriendly. This perception is somewhat expected since UT's website, which contain the UT-Online services, was designed as simple as possible to facilitate the lowest computer specification possible at the users' ends. Therefore, the appearance of the website could not be designed to be as attractive using a lot of images as we want to. This, of course, something that UT still has to work on.

3. The Findings

The main questions of the project are to see whether the project could increase course completion rates and student learning satisfaction. As stated in the previous section, course completion rates refer to the average ratio of examinations written by individual students to the total number of his/her registered courses. While student learning satisfaction refers to students' perception of their learning experiences as a result of the utilization of the provided online services (online courses, online tutorials, online counseling, and online academic information.

Although the combined number of student participants (i.e. number of student-courses) in the provided online courses and online tutorials for semester 2002.2 and 2003.1 is quite high (5,049 student-courses in 2002.2 and 2,355 student-courses in 2003.1), those data are rough data that still need to be cleaned-up. After removing disqualified data due to various reasons (such as students' in-active registration status and non student status), the number of student participants that could be included in the analysis is only 963 students (442 students in 2002.2 and 522 students in 2003.1) or 5,456 student-courses.

Table 1. Number of Students in the Treatment and Control Groups

Group	Semester		Total
	2002.2	2003.1	
Treatment	443	520	963
Control	500	493	993
Total	943	1,013	1,956

To evaluate whether there is a significant difference between course completion of student participants in the online courses and the online tutorials (hereafter termed as Treatment Group) and that of non-participants (hereafter termed as Control Group), the means of both groups' course completion rate were t-tested. Control Group was randomly selected from all students registered in the same courses who are not participated in the

online courses or the online tutorials. Table 1 shows the frequencies of students in both Treatment and Control Groups per semester (2002.2 and 2003.1).

Table 2. Descriptive Statistics of the Measured Variables

Variable	N	Minimum	Maximum	Sum of Student-Courses	Mean of Student-Courses	Std. Deviation
Number of Registered Courses	1,956	1	12	14,882	7.61	1.71
Number of Course Examination Attended	1,925	1	10	14,285	7.42	1.77
Number of Online Courses/Tutorials Attended	963	1	160	5,456	5.67	9.26
Grade Point Average	1927	.00	4.00	-	1.62	.60

The descriptive statistics of the measured variables including the main dependent variable (course completion rates) and some other variables worth investigating is presented in Table 2 .

Table 3. Cross tab of the Number of Student Participants by The Number of Registered Courses and the Number of the Attended Online Courses/Tutorials

Number of Online Courses/ Tutorials Attended	Number of Registered Courses										Total
	1	2	3	4	5	6	7	8	9	10	
1					12	30	39	40	13	18	152
2				5	28	32	32	22	16	19	154
3			1	12	26	25	32	31	8	11	146
4		3	2	7	18	26	28	15	16	15	130
5		2	2	8	14	14	12	17	10	7	86
6			5	5	6	8	6	6	6	5	47
7		3	5	7	7	10	12	11	7	5	67
8		1	2	5	5	5	7	5	2	6	38
9		2	2	2	4	3	3	4	2	5	27
10		1	1	2		3	4		2	6	19
11			2			4	1	1	2	1	11
12			1	3	1	3	2	1	6	2	19
13	1		1	2	1	3	1	1	1	1	12
14				1		1	1	2	1	2	8
≥15	1	1	2	3	6	4	6	4	5	15	47

As the tables show, 963 students were taking part in the provided online courses and online tutorials. The integration of data of both participants in the online courses and the online tutorials are made because the nature of the services is actually the same, namely asynchronous interaction between the students and the tutors. The only difference was

that the online courses provided also online learning materials whereas the online tutorials did not. It is interesting to note that many students participated in online courses/tutorials of courses that they are not registered for. This is indicated by the frequency of the number of the Attended Online Courses/Tutorials in comparison with the number of their respective registered courses. As Table 6 shows, the maximum number of registered courses was only 10, but the maximum number of online courses/tutorials was 160 courses. Table 3 presents the cross tab data of those two variables.

As seen in Table 3, if students were consistent to only participate in the online courses/tutorials for courses that they have been registered, the data should be located only in the shaded cells. However, the data are spread in the low diagonal as well, which shows that many students do not correlate their participation in the online courses/tutorials with their course registration. This is possible because the registration for participating in the online courses/tutorials was done separately through online system and the data were not matched with students' course registration status. The data of students' participation in the online courses/tutorials of the non-registered courses were then disqualified for further analysis of the impact on course completion.

Impact on Course Completion

One of the major questions in this research project is whether the provision of online services can increase course completion rates of students. The result of the t-test analysis to answer that question is presented in the following Table 4.

Table 4. Results of T-test Analysis on Course Completion Rates

Group	N	Mean	t	df	Sig
Treatment	933	.9901	7.53*	1836	.000
Control	993	.9581	7.47**	1924	.000

* Equal variances not assumed; ** Equal variances assumed

As shown by the table, the difference of means of course completion rates between the Treatment Group and the Control Group is significant, either variances of both groups are assumed equal or not equal. This suggests that students who participated in the online courses and tutorials have higher course completion rates than their peers who did not participated. Table 4 also shows that the average course completion rate of the Treatment Group is almost 100%.

Although there would be other factors affecting students' course completion rates that are not considered in this analysis, random selection of the Control Group would statistically "validate" the findings. This significant difference is consistent with the previous findings of another pilot project conducted in 1998 (Belawati, 1998). The pilot project was intended to provide UT students with a communication channel to contact UT in a fast and reliable way namely the Internet. The project

then provided a specified e-mail address through which students could ask questions or reported any problems they encountered during their study, and a tutor-counselor (who was UT's staff) would answer within 24 hours. As reported by Belawati, the use of that service (termed at that time as *mediated counseling service*) significantly increased student rates of examination attendance (course completion).

With regard to gender differences, Table 5 shows that 1,199 of the sample students (61.27%) are male and only 756 are female. The composition of students in the Treatment Group shows that male students are almost twice as many as the female students. This composition is not proportional to the total UT student body, which is distributed equally between male and female.

The project tries to dig out the reasons behind this through an open question so that students could freely write their experience including barriers to access the provided online services. However, the responses of female students did not reveal any specific or peculiar points that are different from what were written by male students. As will be explained in next section, personal barriers for accessing the Internet are mostly related to time constraints, the lack of computer facilities, the unavailability of Warnet in their nearest area, and cost. Although, of course, the number of female students who returned the questionnaire and specifically shared about their barriers in their responses is less than male students who did (48 male and 16 female).

Table 5. Number of Students in the Treatment and Control
Groups by Gender

| Group | Gender | | | Total |
	Not Informed	Male	Female	
Treatment	2	661	301	964
Control		538	455	993
Total	2	1199	756	1957

Such a difference between male and female students seems to be not specific to UT's context. Although statistics on gender use of ICT are sparse, in few studies reported, the number of women users is much smaller than that of men (Rathgeber, 2002). A survey on use of ICTs by women's organizations in select countries of Asia and the Pacific including Indonesia (Cabrera-Balleza, 2002), found that women and men have not benefited equally. Women, in particular, have to contend with ideological, systemic, and institutional barriers to accessing ICTs.

Table 6. Results of T-test Analysis on Course Completion Rates between
Male and Female Students in the Treatment Group

Group	N	Mean	t	df	Sig

Treatment Group Only					
Male	646	.9957	2.737*	455	.006
Female	285	.9795	2.969**	929	.003
Treatment and Control Group					
Male	1184	.9821	4.560*	1264	.000
Female	740	.9607	4.853**	1922	.000

* Equal variances not assumed; ** Equal variances assumed

The t-test analyses to see if there is a difference in course completion rates between male and female students also resulted in significant differences. Table 6 shows that the comparisons of student completion rates both within students in the Treatment Group only and between those in the Treatment and Control Groups indicate significant differences (p<.006). This means that course completion rates of male students are significantly higher than that of female students, with or without treatment. Nevertheless, it is worth noting that the significance level of means differences within the Treatment Group Only is slightly lower (p<.006 and p<.003) than that between the Treatment and Control Group (p<.000). This suggests that the treatment somehow decreases the difference between course completion rates of male and female students (from 214 point to 162 point of means' difference), even though it is not statistically significant.

The impact of the treatment on gender difference is specifically shown by the result of two-way ANOVA analysis, which depicts that there is no significant interaction effect of treatment and gender on course completion rates (see Table 7 below). These results would lead to an assumption that the significant difference between course completion rates of male and female students is regardless of their gender differences.

Table 7. Interaction Effect of Treatment and Gender of Course Completion Rates

Source	Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	.634	3	.211	24.477	.000
Intercept	1660.014	1	1660.014	192181.100	.000
GROUP	.401	1	.401	46.423	.000
GENDER	.120	1	.120	13.860	.000
GROUP * GENDER	3.299E-05	1	3.299E-05	.004	.951
Error	16.576	1919	8.638E-03		
Total	1841.104	1923			
Corrected Total	17.210	1922			

- R Squared = .037 (Adjusted R Squared = .035)

However, Table 7 also shows that the model's R Squared is only .037, which indicates that the variances of course a completion rate that could be explained by the model (which includes the variables of treatment and gender) is very low namely 3.7%. It means that the other 96.3% of the variances of course completion rates are due to differences of other factors not included in this analysis. Previous studies such as those conducted by Kember (1994), Dunbar (1991), Putra (1993), and

Belawati (1998) have reported that student persistence (such as indicated by course completion rates) is a very complicated phenomenon, and are influenced by various variables. Belawati (1998) for example, reported that persistence rates of UT students were mostly influenced by variables related to student background (e.g. previous education before entering UT, family supports, working status, availability of study time, etc.) and the congruence between students' study habits/traditions and the instructional system used by UT (namely independent learning system).

Impact on Learning Satisfaction

A set of questionnaire, closed and open ended questions, was distributed to students in the Treatment Group (through online as well as regular mail) to gather information about their learning experiences using the online learning services better known as UT-Online, especially the online courses/tutorials, online counseling, and online other academic administrative services. The total number of questionnaires sent to the students was 1200 and a total of 755 were completed and returned by students.

The open ended question gives students the space to write their perception about the online learning services based on their experiences in their own words. The hand-written perceptions were categorized into nine groups according to the common keywords. The summary of students' responses in each category is presented Table 8. With this method, each individual student might write their experiences that fell into more than one category. Similarly, it is worth noting that not every student has something to say about all categories. As in Table 11, the number of students in each response category is different.

Table 8. Students Perception about the Online Learning Supports

Perception About the Online Learning Supports	Number of Students Mentioning the Aspect		
	Male	Female	Total
1. Had some technical problems (e.g. low speed, error, unreachable)	155	66	221
2. Satisfied and found no significant difficulties	124	31	155
3. It lacks tutors' responsiveness	30	12	42
4. It helps the independent learning process	24	5	29
5. It needs more detailed and step-by-step guides on how to navigate within the system	34	12	46
6. It is complicated and unattractive	54	19	73
7. It needs to provide/include online tutorials/online courses for more courses (all courses if possible)	81	49	130
8. Not satisfied with the content (e.g. un-standardized format, too short, not clear, not accurate, out-dated, want more content related to exam items)	47	18	65
9. Had some personal barriers (e.g. limited time availability, cost, limited access point, low quality of Internet	48	16	64

Perception About the Online Learning Supports	Number of Students Mentioning the Aspect		
	Male	Female	Total
connection in the access point)			

Table 8 shows that even though 221 out of 755 students (29%) claimed to experience some technical difficulties, 155 out of 755 students (21%) perceived that the available UT-Online was satisfactory and that the difficulties were not significant. The positive perception was also expressed in a more specific way by twenty nine students who wrote that the UT-ONLINE helps their independent learning process. Among those students who mentioned this, two students considered UT-Online as very suitable for UT students because a lot of UT students are working students (who 'all day long' would usually be in front of a computer anyway). Other positive appreciations were expressed in statements such as:

'UT-Online was an innovation for Indonesian distance learning system'

and

'I was very proud to be UT students knowing that his university was always trying to better serve its students using the most advanced technology'

Table 8 also shows students' dissatisfaction on several aspects of the UT-Online. Those aspects mostly mentioned are related to two main categories namely technical and content. The technical problems seem to be the most significant difficulty as shown by the number of students' who responded related to these technical problems in both the closed and open ended questions (221 and 155 students respectively). The technical problems mostly faced by the students were related to the low speed of Internet connection (to UT website), connection stability (sometimes of sometimes on), and system reliability (high frequency of 'error' when opening and navigating within the website and complexity of the application used). It seems that all the problems are basically related to the national communication infrastructure, UT services, and students' basic skill in dealing with web-based applications.

The problems related to the speed of internet connection complained by the students are beyond UT's and students' control. As data show, most students access the Internet from either their work places (256 students) or the Warnet (179 students). Although there is no empirical data on the average speed of offices' Internet connection, most Warnet would have the average real internet connection at no more than 5 Kbps. Across the country, this number could be smaller due to differences in hardware and software sophistication of the computer they used.

As shown by Table 8, the other sources of student' dissatisfaction are rooted in UT's internal system and services such as lack of tutor responsiveness, poor

appearance of the website, lack of information on how to navigate the applications, lack of standardization in the format of materials presented in the online tutorials, and the limited number of courses being supplemented by the online services. Among these, tutor responsiveness seems the most serious aspect noticed by students (mentioned by 42 students or 6%). This dissatisfaction is also expressed by students' responses to the closed questions that asked students to choose their perception about tutors' responsiveness among three possible responses: fast, moderate, and slow. Fifty five (7%) and 67 (9%) students who participated in online tutorials and online courses chose 'slow'. Even though those percentages are small compared to the students who chose "moderate" (13% of students participating in online courses and 21% in online tutorials), the problem itself is significant because tutors' responsiveness is the key to the promptness and effectiveness of the UT-Online in facilitating student independent learning process. This is also disappointing for UT because all tutors have gone through a training on e-tutoring (technical and communication skill or online or web-based tutoring), and have been provided with a technical as well as academic guidelines for e-tutoring. This shows that tutors were not yet fully aware of the importance of being prompt and responsive in e-tutoring.

Being an e-tutor is not an easy job since the tutor has to have "online competencies". In this case, Salmon (2000) provides a matrix as perspectives for e-moderators or whoever who deals with online learning and acts as online tutors. This matrix consists of a combination of quality and characteristics aspect of e-tutor online competencies. She breaks downs the quality aspects into six components such as confident, constructive, developmental, facilitating, knowledge base, and creative. On characteristic aspects, she mentions about five components such as understanding online process, adequate technical skill, online communication skills, content expertise, and personal characters. Therefore, there are 30 elements of competencies that e-tutors should have in dealing with the students. The low tutors' responsiveness found in this study, from Salmon's matrix perspective, falls into a category that reflects the combination of facilitating (quality) and understanding of online process (characteristic). In this category, the tutors are supposed to have online competencies such as: know when to control groups or students, when to let go, how to bring non participants, and know how to pace discussion and use time online.

In conclusion, it seems that although some students had some difficult experiences with UT-Online due to either external and internal factors (personal limitation such as mentioned by 64 students (see Table 11), 65 students specifically wrote and hoped that UT would increase the number of courses (to all courses if possible) to be supplemented with online tutorials/courses. As mentioned, the online tutorials offered in this project were only for 160 courses (7 of which were offered as online courses) out of the 1336 courses offered by UT.

4. Implications for Institutional Policy Changes

4.1. Academic System and Policy

The findings of this pilot project have indicated that online academic services do have significant impact on students' learning success, i.e. course completion rates and perceived satisfaction. These findings have proved that the university needs to further explore the potentiality of ICT for learning supports for students.

More specifically, the tried-out system of online courses and online tutorials has definitely provided students with a fast and reliable communication channel to both the institution and specially the tutors. The other provided online academic services (i.e. online supplementary learning materials, online counseling, online examination results announcements, etc.) have also perceived beneficial as indicated by the number of e-mails received by the university. The positive responses of students to the provided online services have convinced the top executives of UT to continue providing the online services.

In accordance with the afore discussed findings, UT has decided to accommodate the provision of the online services as an integral parts of its learning support system, comprehensively and integrated with the existing learning supports such as face-to-face tutorials, radio tutorials, correspondence, and televised tutorials. To be systematically able to do so, UT has set up specific academic policies such as follows:

a. UT will continue producing Computer-Assisted Instruction (CAI) programs as well as web-based supplementary materials in addition to the audio/video programs as The Center for Multimedia Production's routine programs.
b. UT will disseminate/up-load all non-printed learning materials produced by the Center for Multimedia Production through/into UT's website as parts of the online academic tutorial programs.
c. UT will continue providing online counseling for all Study Programs, and have the Head and the Secretary of the Study Program to be persons in charge of responding to students' queries.
d. UT will make online tutorials as one of the official tutorial model in addition to the other existing tutorial system (i.e. face-to-face, radio, televised, correspondence), and will make the provision of online tutorials as obligatory for all study programs.
e. UT will use online tutorials as obligatory mode of learning in the higher level courses such as in the Advanced Courses Programs (ACP). In ACP, the instructional system is designed to be a mix of independent study, face-to-face tutorials, and online tutorials, which together will determine students' passing rates for the courses.

4.2. Capacity Building

The project has contributed to UT overall capacity building, which includes human resource development, communication infrastructure and facilities, as well as networking and partnerships. With regard to human resource development, the

project has trained approximately 9 web-based course developers, 212 academic staff for tutoring online, 88 staff for counseling online, three web-based academic service administrators, and about 600 students for basic computer skills. The project has also increased UT's bandwidth for Internet connection from 64 Kbps to 128 Kbps for international link and 6 Mbps for domestic link. In addition, the project also procured two servers and 2 PCs for supporting the project implementation.

Networking and partnerships are very important for UT, especially in its effort to increase student access to the Internet. The project has been able to facilitate the signing of MOUs between UT and three biggest Internet access providers in Indonesia. With these partnerships, UT students in several areas have better access to the Internet at lower cost, as well as privileges to get free training from the WARNETs. This collaboration has significantly increased UT's capacity to provide a better two-way communication channel to its students without having to build its own external infrastructure.

Most importantly than others, the project has:

a. raised students' awareness of the value of Internet for education;
b. increased computer literary among UT students;
c. raised staff awareness of the emerging phenomenon of e-learning practice and opportunities stimulated by it;
d. increased UT's top executives' commitment on the use of ICT for improving UT's learning support system; and
e. improved image of UT from being conventional distance learning institution to being more sophisticated provider of distance learning.

CONCLUSION

The findings show that students' participation in the online courses and tutorials significantly increases their course completion rates (p<.00). Students also expressed their appreciation and satisfaction of the online services, which was considered as an innovation, appropriate for the characteristics of working students, and useful. However, students also complained about the technical problems that are frequently occurred during their accessing the online services (low speed, error, etc.). Furthermore, students suggested that the online services need to be improved especially in the tutors' responsiveness

Based on the above findings, it is recommended that UT continuously improve and provide online services to its students. Such an improvement should be emphasized in the further development of the human resources' (i.e. tutors') capacity in conducting the online tutorials. Improvement should also be focused on strengthening the existing collaboration with the Internet Access Providers so that students will have higher opportunity to take advantage of the provided online services. Last but not least, UT should also keep developing an online system which would be more users friendlier, yet has an attractive appearance. Finally, even though the pilot project conducted in this study

seems to be successful, it is important for UT in the future to involve its staff in the Regional Centers in the provision of the online services. For this, it is deemed necessary for UT to also develop an internal online network that would electronically connect UT's Head Office in Jakarta with its 35 Regional Centers throughout the country. With such an internal wide area network, UT will be able to utilize all the staff and tutors all over Indonesia to serve their students through the online services.

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