

# Preliminary Study on the Opportunity of e-Learning Deployment for Non ICT Subjects at High Schools in Jakarta-Indonesia

Heru Suhartanto and Kasiyah Junus

**Abstract**—As part of our community services in ICT, Esfindo (e-Learning for Indonesia) is an e-Learning portal developed by the Faculty of Computer Science, Universitas Indonesia (Fasilkom-UI) to support the quality of learning in the high schools. This paper reports the result of the training on the portal and the implementation using several non ICT subject modules as well as measuring the participants' readiness in implementing the e-Learning modules. The program consists of training the participants (students and teachers) on the portal and the subject modules, and collecting then analyzing the data obtained in the questionnaires. The results show that the participants are ready to implement the modules at their schools; however, in order to gain more effective learning process they need supports from stakeholders particularly in improving the school internet infrastructures and the school policies on teacher working loads.

**Index Terms**—E-Learning deployment, Esfindo.

## I. INTRODUCTION

One form of the use of ICT in education is e-Learning implementation. According to [1], some of the benefits of e-Learning are that e-Learning is very flexible in allowing learners to build their knowledge anywhere and anytime, facilitating learners to find information relevant to their hobby, encouraging students to build confidence and self-knowledge, helping learners to build knowledge through the internet, saving costs and time, and accommodating the types of students learning styles.

E-Learning is widely used in various educational institutions in the world, including Indonesia, especially in higher education, but not at the school level. According to the 2009 survey conducted by the Esfindo team, the total number of Indonesian schools that have a learning site was 187 schools spread across 20 provinces [2]. School learning site owners are mostly in Java. The top five provinces, in terms of the number of e-Learning sites, are Central Java, West Java, Yogyakarta, East Java, and Jakarta having 41, 33, 30, 27 and 16 sites, respectively [3].

The survey results also exhibited that the use of ICT is still very low compared to the number of schools, even in the capital city. In Jakarta there are only 16 schools that have e-Learning sites. It is very small compared to 2,546 the

number of non-elementary schools in the city. This contradicts the fact that the internet infrastructure is very adequate and supported in the city [3]; and a lot of students and teachers can afford laptops.

The potentials of schools to conduct ICT-based learning has some challenges such as [3], basic learning infrastructure in schools is still low especially when linked to the needs of the Internet. Some schools do not consider the benefits of using e-Learning to improve the learning process. In addition to that, the lack of standardized management of ICT at schools, the lack of minimum standards of implementation of e-Learning for schools set officially by the government, the lack of skills of teachers and students in the implementation of ICT-based learning, the unavailability of affordable Learning Management System (LMS) for the school, and inadequate of e-Learning modules which are ready for use. Schools have some other targets they considered to be more important than empowering e-Learning, for example: success in the student national final examination and preparing students to take universities entrance tests.

These constraints motivate us to continue our community service program by further testing the LMS and some e-Learning modules to schools. Since our previous program aimed the activities to ICT teachers who are mostly accustomed to ICT material and its usage, the current activities are given to non ICT teachers who are mostly not much exposed to ICT to enhance learning activities. We believe that empowering these teachers will speed up e-Learning implementation in schools.

## II. METHODS

Our activities comprised of three stages, namely, enriching the Esfindo e-Learning portal, e-Learning module development, and training teachers and students using the developed modules and portal.

### A. Esfindo Portal Development

Esfindo is an e-Learning portal developed in 2008 [4] dedicated for Indonesian schools. A prototype version for multi-schools was developed [5]. The portal was developed based on Moodle (Modular Object-Oriented Dynamic Learning Environment) Learning Management System. Moodle is a software package produced for the Internet-based learning activities and sites based on the principle of social constructivism [6]. Esfindo adopts student-centered learning paradigm. Student-centered learning is considered as a new paradigm in Indonesia. Students actively build their own knowledge, so that they

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acquire in-depth knowledge and at the end will ultimately improve their knowledge and skills. Learning is an active process and the learning is meaningful only when learners taken the knowledge as parts of their own [7]. Active learning encourages students to be able to direct themselves, to develop study skills, and to seek information from various sources.

We expect that students obtain a new learning experience and practice patterns of active and collaborative learning, so the role of the teachers will change from actors to facilitators, coaches, learning partners, and role models. Of course, this paradigm does not leave the role of teachers as learning resources (subject experts) in the classroom since interaction is still needed to direct discussion [3]. This environment is also facilitated in the Esfindo portal. In general, there are several key features that are provided in the portal, these are sharing materials, forums and chats, quizzes and surveys, collecting assignments, assessments, providing feedback, and recording document.

*B. Development of e-Learning Modules*

E-Learning Module is an electronic resource (learning materials) that can be used in teaching and learning. The learning content can be in the forms of e-books, journals, papers, and other multimedia learning content to support the learning process. Ideally, a learning content must meet several criteria, such as: easy to carry (portable), easy to reuse (reusable), accessible, durable (stable and can be reused even if there is a change in the operating system and package software used), and can be used on a variety of LMS [8], [9].

We develop the Esfindo learning content to have three levels, level 1 content is in power point format, level 2 has the same format as level 1 enriched with narration and multimedia contents such as text, audio, graphics, animation or video, and level 3 content includes links to documents and other content sites. The modules were developed using Articulate and Microsoft Power Point.

*C. Modules Testing*

Participants of the programs are teachers and pupils from four high schools in Jakarta that have adequate infrastructures (computer lab with internet connection). The teachers are subject experts on the topics covered in the modules, and they are interested in conducting online class in the future. However, none of them had an experience as online learners. Moreover, online teaching and developing an online curriculum are not part of the teacher preparation they attended. They have no experience in orchestrating the face-to-face and an online class.

Student participants are well-exposed with computers and internet connection to search for information. The teachers felt that their students more technological literate than the teachers.

We provide tutorial and training for teachers and students. The program used Esfindo portal and test the modules in staged activities. The participants consist of 32 teachers of Chemistry, English, and Mathematics. They are representatives from 11 schools in Jakarta, Depok and Bekasi. 41 Students from four schools participated in the workshop.

The tested e-Learning modules are year X English, year XI Mathematics, and year XI Chemistry. Having tested the e-Learning features and the modules on the portal Esfindo,

the participants were asked to complete a set of questionnaires consisting of three forms. They are Form 1 consisting of 22 questions used to record participants' ability to use the Esfindo, Form 2 consisting of 10 questions that are used to record the teachers' opinion about the tested module and the Form 3 recording the infrastructure and ICT skills as well as perceptions of e-Learning of the participants.

In the training, teachers will follow three main activities, started by reviewing of basic e-Learning skills. The teachers visit the Esfindo site and explore the school website, and then select the school site and log into their appropriate subjects. Furthermore, teachers can create a forum and initiate discussion or write some trigger questions in the forum. Finally, the teachers upload the prepared sample file that will be accessed by their students, provide subject materials in the page, organize their subjects, and assign a teaching assistant to have a teacher role.

In the second stage, the teachers post assignment and then students are required to submit their works on as files and upload them into an appropriate place provided in the site. Next, the teachers compose a multiple choice online quiz in which students get prompt feedback on the quiz.

In the final stage, the teachers interact with students (and students-to-students) asynchronously through an online discussion forum, and synchronously via chatting room.

Similar to the teachers' activities, students also engage in the three main activities, namely module testing, e-Learning fundamentals, and interaction with teachers. In the module testing, students are required to read at least one module, and then write comments and suggestions about the module. After completing the test, students respond to questionnaires given by Form 2.

Students start the activities by learning the basic e-Learning skills. In this task, students visited the Esfindo site, then go to the students forum to read some news in the forums and to comment on news. Next, students can download some learning materials available on the page subject.

The last activity is the interaction with the teacher and other students. Each student visits the prepared page to answer / respond to a teacher's question posted in the forum, then write a question or information in the forum, answering / responding to a question or information from other students. Next, again, students are asked to submit or upload answers of their assignment and then participate in the online quiz related to the current module. The students are required to repeat these activities for other lessons/ subjects.

TABLE I: PERSONAL FACILITIES  
TEACHER AND STUDENTS PERSONAL FACILITIES

	Teachers (%)	Students (%)
PC owning	88	65
Laptop owning	97	76
Internet connection	74	60
Office software skill	74	65
Email usage	65	75

III. RESULTS AND DISCUSSION

At the end of the workshop, the participants fill in three forms of questionnaires, Form 1, Form 2, and Form 3.

Form 3 records the participants' personal computing facilities; most of them own PC and laptops and also internet

connection. They are also able to use office software to support their activities, and are using email for communication. The detail is provided in Table I. Even though not all students have computers, their schools provide computer labs with internet connections.

TABLE II: E-LEARNING SKILLS PROGRESS

No	Activities	students		teachers	
		before	after	before	after
1	login logout	2.3	3.7	1.8	3.5
2	forum – reading	2.0	3.5	1.3	3.3
3	forum – responding	1.7	3.4	1.2	3.2
4	Participants monitor	1.6	3.2	1.1	3.3
5	Choose course	1.5	3.2	1.3	3.2
6	Course setting	1.4	3.2	0.9	3.0
7	Course report	1.3	3.2	1.0	3.1
8	Assigning roles	1.2	3.0	0.8	2.7
9	Uploading files	1.9	3.5	1.1	3.1
10	Renaming files	2.0	3.4	1.2	3.2
11	Creating folder	1.8	3.4	1.3	3.0
12	Downloading files	2.0	3.5	1.4	3.1
13	Deleting files	1.9	3.5	1.2	3.1
14	add resources – sites	1.3	3.2	0.9	2.9
15	add resources – files	1.2	3.1	0.9	2.9
16	add activity (assignment)	1.2	3.2	0.9	2.8
17	add activity (forum)	1.3	3.3	0.9	2.8
18	add activity (chat)	1.4	3.4	0.9	2.7
19	add activity (glossary)	1.2	3.1	0.8	2.6
20	add activity (quiz)	1.3	3.3	0.9	2.6
21	switch role to non editing teacher	1.3	3.2	0.9	3.0
22	switch role to students	1.4	3.2	0.9	3.1
	<b>Average</b>	<b>1.6</b>	<b>3.3</b>	<b>1.1</b>	<b>3.0</b>

In Form 1, each participant answers a question by filling out a number between 0 and 4. Number 0, 1, 2, 3, 4 denotes that the participant does not master the e-Learning feature, that the participant much less master the feature, that the participants less master the feature, that the participant quite master the feature, and that the student fully master the feature, respectively. The Form is filled before and after the training. The results are provided in Table II where we find that there is skill increase in using the portal. It is interesting to see that the average skill of students is higher than that of the teachers. In general, the training is capable of improving the students and teachers skill.

Then before completing Form 2, each participants test the e-Learning modules. The question on Form 2 includes measuring the modules completeness of the materials tested, the use of online quizzes, and preferences between the module and the module static dynamic. Any questions in Form 2 are answered by stating Strongly Agree (SA), Agree (AG), and Disagree (DA). The results are provided in Table 3.

It is obvious that 82% of teachers and 66% of students agree that the module is complete, 94% of teachers and 76% of students agree to use online quizzes, and 82% of teachers and 86% of students prefer using multimedia modules.

TABLE III: PREFERENCE ON TYPE OF MODULES

	Teachers (%)			Students (%)		
	SA	AG	DA	SA	AG	DA
The material is complete	8	74	18	6	60	34
Online quizzes	20	74	5	21	55	24
Preference on multimedia modules	20	62	17	34	52	14

Form 3 also records how many teachers and students provide their opinion on some of the obstacles encountered in the implementation of e-learning. The details of these results are given in Table IV.

TABLE IV: IMPLEMENTATION OBSTACLES

	Teachers (%)	Students (%)
Lack of e-learning operational capability and technical training	51	61
Lack of awareness of the e-learning benefits	20	40
Inadequate technology provided at schools	37	43
Lack of time preparing e- learning materials	34	37
Lack of support from school management	11	34

From Form 3 we also have good news that almost all teachers and students are interested in using e-Learning, 91% and 77% respectively.

#### IV. CONCLUSIONS

From teachers and students responds during the training/workshop, there few conclusions such as:

- most of the participants considered that e-Learning is needed in their schools, and should the school facilities and policies support the activities, teachers intend to implement the e-Learning to their subjects. This indicates that the participants agree that e-Learning can support the processes and the quality of learning activities. There is no objection to e-Learning implementation;
- Observing the participants activities during the training, it is interesting to see that students are more enthusiastic than their teachers. The students learn faster and acquire better technological skills their teachers.
- In terms of computer equipment, the participants are ready. These are shown by the fact that most teachers and students have computer that mostly connected to the internet. The preliminary survey showed that their schools also have computer labs the connected to internet. This will ease those who do not have the equipment;
- In terms of e-Learning skills, both the teachers and the students perform much better e-Learning operation after completion of the training. They also have sufficient ICT background skills that help them during the training practices. However, we do not investigate teacher readiness to play their roles as facilitators in online learning. This is a crucial issue because most teaching

and learning in schools are more spoon feeding. On the other hand, online learning requires students to be self-regulated.

- In terms of the learning modules, both teachers and students agree that the modules are complete and useful, easy to use and support the learning processes.

The results show that some high schools in Jakarta and its surroundings have potentials to implement e-Learning as part of their learning activities. However, the implementation quality and the success still depend on the solving some obstacles and support from schools and education offices in the city. There are at least two big obstacles. First, teacher day-to-day workload is heavy due to the regulation that teachers must fulfill certain hour per week. Unfortunately working online is not yet included in the working load. Second, high school teachers and students are forced to focus on national test and the university entrance with multiple choice questions. The universities are able to absorb less than 20% of high school graduates. Therefore the entrance is very competitive. Not much attention is paid on online learning since this kind of learning is not yet seen has direct impact on increasing competitiveness of the students. Online learning is student-centered learning; by nature, it is process oriented. Whereas, the national test and university test entrance are more result-oriented.

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