Students’ perceptions on the implementation of e-learning: Helpful or unhelpful?

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Abstract. E-learning is an essential part of today’s education. This article reports a design research conducted to develop an e-learning web-based module at the Primary Education Department of Syiah Kuala University in Indonesia. The study employed the Four-D Model of instructional development which consisted of Define, Design, Develop, and Disseminate. This article focuses on the Develop stage where the users’ perception was assessed regarding the implementation of the module. A number of 19 third semester students participated in the study. The data was collected using a questionnaire and interview. The questionnaire was constructed based on the Technology Acceptance Model (TAM) which suggested that two factors influencing someone’s acceptance of technology were perceived usefulness and perceived ease of use. The result showed that the students perceived the e-learning web-based module to be useful in improving their understanding, independence, self-discipline, motivation to learn, and interactions with each other and with the teacher. The students also agreed that the e-learning web-based module was easy to use. This study implies that the inclusion of technology in education at the university is beneficial.

1. Introduction

The implementation of information technology is proliferating in many aspects of our lives today, including education. Consequently, Syiah Kuala University as the leading university in Aceh Province of Indonesia has been promoting the implementation of ICT in the teaching and learning process in the form of blended learning. Blended learning is a combination of e-learning and face-to-face lectures. E-learning is “a system that uses internet technology to deliver information to students with interactions through computer interfaces” [1].

At the Primary Education Department of Syiah Kuala University, a limited number of courses have started implementing e-learning. This article reports an investigation on students' perception of the implementation of an e-learning web-based module at the Primary Education Department. The investigation was part of a design research conducted to develop the module for the ICT-Based Learning Course. We consider it is essential to assess students' perception because the way students view a teaching approach greatly affects their interestedness in learning and class participation [2]. Lorenzi and Riley [3] state that behavioral factors, such as perceptions, play more important role than technical factors in the success of an approach.

Many studies have been conducted to investigate students’ perceptions on the inclusion of ICT in their learning. Generally, students respond positively towards the implementation of e-learning [4-5], but there are also some students who prefer traditional on-campus learning because they consider e-learning can cause uncertainty [6]. These studies show varied students’ perceptions towards e-learning.

At the Primary Education Department of Syiah Kuala University, most of the students are active users of the internet, emails, and social media, but they are not yet familiar with e-learning. E-learning
is not yet widely implemented in universities in the Aceh Province. Therefore, there is a very limited number of studies on this topic that have been published. This article is intended to give insight into how students perceive the implementation of e-learning in Aceh.

Being an active user of ICT does not guarantee one’s acceptance of e-learning because learning using technology is very different from daily experience with ICT [7]. Popovici and Mironov [7] suggest that the main factors that influence someone’s acceptance of new technology are needs and demands. If a student perceives e-learning to be useful and helpful for their study, then they are likely willing to accept it. On the other hand, hindrance such as lack of ICT skills and lack of access can prompt negative perceptions towards e-learning [8].

For this study, we employed Davis’ [9] technology acceptance model (TAM) which posited that someone’s acceptance of technology was determined by two factors: 1) perceived usefulness, and 2) perceived ease of use. Perceived usefulness refers to the degree of user’s acceptance that the technology brings benefits for them in that it can enhance their performance, and perceived ease of use refers to the degree of user’s acceptance that the technology can be accessed effortlessly [10]. The research question addressed in this study is: What are the students’ perceptions on the implementation of the e-learning web-based module in the ICT-Based Learning Course at the Primary Education Department of Syiah Kuala University Indonesia?

2. Method
This study employed Research and Development (R&D). We used the Four-D Model of instructional development proposed by Thiagarajan, Semmel, and Semmel [11]. The Four-D Model consisted of Define, Design, Develop, and Disseminate. The Define stage is aimed at defining objectives and constraints; the Design stage is to design initial product; the Develop stage is where modification takes place in accordance with feedback from experts and users; and the Disseminate stage is to distribute the final product [11].

The product that we developed was an e-learning web-based module for the ICT-Based Learning Course at the Primary Education Department of Syiah Kuala University, Indonesia. The module contained course objective, course outline, lessons, links to reading materials and videos, discussion forum, and assessment. The module was available online for the students who were enrolled in the course at www.elearning.unsyiah.ac.id. Figure 1 is a screenshot of some of the module’s contents.

![Figure 1. Teacher’s instructions for a particular topic in the module.](image)

In this article, we focus on the Develop stage where we report the practicality of the e-learning web-based module. Van den Akker [12] explains that practicality refers to the degree that users perceive a product as "appealing and usable". Therefore, in this study, practicality refers to students' perceived usefulness and ease of use of the e-learning web-based module. The investigation of students' perceptions as the end-users of the module is an important part of the module development because as Thiagarajan, Semmel, and Semmel [11] state that during the Develop stage, users' responses and comments serve as a basis for revision of the instructional development.

A number of 19 third-semester (1 male and 18 female) students who were enrolled in the ICT-Based Learning Course participated in the study. Their average age was 20 years old. Regarding the
students’ awareness of technology, all of the students were familiar with the internet and word processor. A preliminary survey showed that over 84% of the students owned a personal computer; 94.74% owned a smartphone; 89.47% of the students used the internet and social media on a daily basis while 10.53% spent at least 10 hours per week on the internet. Therefore, it could be established that none of the participants were ICT-illiterate.

For data collection, a questionnaire and interview were utilized to assess the students’ perception on the implementation of the e-learning web-based module. The data collection was conducted at the end of the odd semester in 2017. The questionnaire was developed based on Davis’ Technology Acceptance Model (TAM) which suggested that two factors influencing someone’s acceptance of technology were: 1) perceived usefulness, and 2) perceived ease of use [9]. The questionnaire contained 20 questions using a 4-point Likert scale ranging from strongly disagree (SD) = 1, disagree (D) = 2, agree (A) = 3, and strongly agree (SA) = 4. The data obtained from the questionnaire were analyzed statistically by calculating the mean score for each question.

In order to gain in-depth insight into the students’ perception, we conducted a semi-structured interview with two students. One student earned A on their final mark for the ICT-Based Learning Course, and the other student earned B. No one in the class earned less than B. The interview was intended to clarify the students’ perception on whether the module was useful and easy to use. Each interview lasted for approximately 30 minutes. In the following section, the interviewees are referred to as Student A and Student B.

3. Results and discussion
This section is reported in two subsections: students’ perceived usefulness and students’ perceived ease of use.

3.1. Students’ perceived usefulness
Table 1 shows the students’ perceived usefulness of the e-learning web-based module.

| Items No                                      | Score | Mean     |
|----------------------------------------------|-------|----------|
| 1. The e-learning web-based module provides me with broad sources of learning materials. | SA 6 A 13 D 2 SD | 3.3158 |
| 2. E-learning gives me more time to explore learning sources. | SA 6 A 13 D 2 SD | 3.3158 |
| 3. The module helps my understanding of a topic. | SA 11 A 8 D 3 SD | 3.5789 |
| 4. E-learning improves my motivation to learn. | SA 10 A 9 D 3 SD | 3.5263 |
| 5. E-learning helps me to be more independent in my learning. | SA 13 A 6 D 3 SD | 3.6842 |
| 6. On-line tasks improve my self-discipline. | SA 9 A 10 D 3 SD | 3.4737 |
| 7. E-learning improves my self-confidence in expressing ideas and opinions. | SA 7 A 12 D 3 SD | 3.3684 |
| 8. The e-learning web-based module improves my ICT skills. | SA 11 A 8 D 3 SD | 3.5789 |
| 9. E-learning makes learning more enjoyable. | SA 9 A 10 D 3 SD | 3.4737 |
| 10. The e-learning web-based module improves my interactions with friends and the teacher. | SA 1 A 15 D 3 SD | 2.8947 |

Table 1 shows that the students’ perception on the usefulness of the module was positive. None of the students strongly disagreed with the statements in the questionnaire. All of the students agreed or strongly agreed with items 1 to 9, and 84% of students agreed or strongly agreed with item 10. The item that most of the students strongly agreed with was item no.5 (mean = 3.6842), and the least agreed with was item no.10 (mean = 2.8947).

As evidence in table 1, the students agreed that e-learning provided them with wide sources of learning materials. During the interview, the students explained that e-learning gave them more time to read the materials so that they could understand well about a particular topic prior to class meeting.
Student A: We have access to the sources before face-to-face meeting in the classroom. It is convenient because I can read the source materials at my own time. I usually read through the materials to have a good understanding of them so that I feel more confident to participate in the classroom when we do the face-to-face meeting.

Student B: The source materials are there, I don’t have to look anywhere else so I can save time. There are articles, powerpoint slides, and videos. That is very helpful.

The students also declared that e-learning improved their motivation to learn (item no.4, mean = 3.5263). The interviewees explained,

Student A: With blended learning like this, I think it improves my motivation to learn because there is a variety so I don’t feel bored. Usually, we only do face-to-face meetings in the classroom. Now we have online meetings as well. The teacher has provided various sources online, so I am motivated to read them because I want to be ready for the face-to-face meetings and online discussions.

Student B: The teacher always reminds us that we need to read through the materials in order to understand better. I am motivated to learn because I want to understand.

The students agreed that e-learning helped improve their independence (item no.5, mean = 3.6842) and self-discipline (item no.6, mean = 3.4737). With the availability of sources and clarity of what to expect at every stage throughout the course, the students were motivated to manage their time well.

Regarding students’ interactions, 15.79% of students disagreed that the e-learning web-based module helped improve their interactions. Student B explained that there was no difference between e-learning and traditional learning in terms of students’ interactions with each other or with the teacher. However, 5.26% of students strongly agreed and 78.95% agreed that e-learning improved their interactions. Student A described as follow.

Student A: I think e-learning improves my interactions. I mean, when I am having difficulties in understanding an article or in doing my task at home, I can use the forum to ask for help. It is different from traditional classroom in that I usually ask only when we are having a class meeting. With e-learning, there is more time to communicate with everyone.

All the data above showed that the students perceived the e-learning web-based module to be useful. First of all the availability of various sources online which the students could access at their convenience was perceived by the students to be helpful in their effort to understand a topic. This statement is in line with Al-Dosari’s [5] finding that online course users considered accessibility to be the greatest advantage of e-learning.

Second, the students claimed that e-learning improved their learning motivation. E-learning offered an alternative mode of learning, various forms of teaching materials, and more time to communicate especially with the teacher. All these contributed to the students’ preparedness for face-to-face lectures, which the students considered to be highly important. This finding is in line with a study conducted by Aristovnik, Kerzic, Tomazevic and Umek [13] that students’ perceived usefulness of e-learning was significantly influenced by the consistency of e-learning with traditional classroom meetings and teacher’s responsiveness.

Third, the students viewed that the availability of discussion forums improved their interactions because they could continue exchanging information outside the classroom through online communication. This result is in line with Al-Dosari’s [5] finding that the online courses improved students’ participation in discussions that even the shy ones tended to be more conversational in online communication. Improvement in students’ interactions is beneficial for students’ learning because as Vygotsky states that learning happens when students interact and communicate with each other [14].

Overall, the implementation of e-learning, as a supplement to traditional face-to-face lectures, enhanced students’ learning experience [1]. From the data above, it can be concluded that the students perceived the e-learning web-based module to be useful.

3.2. Students’ perceived ease of use
Table 2 displays the students’ perception on the ease of use of the e-learning web-based module.
Table 2. Students’ perceived ease of use.

| Items No | Score | Mean |
|----------|-------|------|
| 1. I have the technology to access the module. | 10 | 9 | 3.5263 |
| 2. I have time to access the online materials. | 7 | 12 | 3.3684 |
| 3. I know how to access the materials provided online by the teacher. | 13 | 6 | 3.6842 |
| 4. I know how to navigate through the e-learning web-based module. | 14 | 5 | 3.7368 |
| 5. The language of the module is easy to understand. | 7 | 12 | 3.3684 |
| 6. The teacher’s online instructions are easy to understand. | 9 | 10 | 3.4737 |
| 7. It is easy to do my tasks with the e-learning web-based module. | 11 | 8 | 3.5789 |
| 8. Internet connection is not a problem for me. | 9 | 10 | 3.4737 |
| 9. The online forums ease my interactions with classmates and the teacher. | 8 | 10 | 1 | 3.3684 |
| 10. I often encounter technical problems with the e-learning web-based module. | 3 | 15 | 1 | 2.1053 |

Table 2 shows that the students have a positive perception regarding the module ease of use. The most favorable item was item no.4 (mean = 3.7368), and the least favorable item was item no.10 (mean = 2.1053). This is not surprising given that the students were already familiar with ICT. First of all, the students had ready access to the module (item no.1, mean = 3.5263). They owned a personal computer or a smartphone.

Being familiar with the internet, the students claimed that they knew how to access the source materials online (item no.2, mean = 3.3684), and how to navigate the e-learning web-based module (item no.4, mean = 3.7368). The students considered the language used in the module was easy to understand (item no.5, mean = 3.3684). So were the teacher’s instructions (item no.6, mean = 3.4737).

This is as explained by the interviewees as follow.

Student A: I find it quite easy to work my way through the website and the forums. They are quite similar to other websites that I am used to accessing. As for the forums, they were new to me at first, but they were not difficult to understand.

Student B: The teacher’s instructions are quite clear and easy to understand, so it is not difficult to follow the steps to navigate the web and the forums.

The students also claimed that internet connection was not a difficulty for them (item no.8, mean = 3.4737). Student A stated that the students usually used Wi-Fi available at the campus and while outside campus they used a modem.

The students also agreed that it was easy to do tasks with e-learning (item no.7, mean = 3.5789). Student A elaborated,

Student A: For the task, it is basically the same as a traditional task, but easier. For example, one time we were asked to make a summary on a specific topic. I do it the way I always do. I type my summary on Word Processor and I go online to retrieve some articles that I need. With e-learning, it is easier because the sources are already available on the website, and I don’t have to print out my assignment, I submit it online.

The survey shows that more than 80% of the students did not often encounter technical problems. However, 15.79% of students agreed that they often encounter a technical problem. Student B was one of them. She explained that the problem was a slow connection. In regards to other aspects of e-learning ease of use, she agreed that the web-based module was easy to use.

Nawaz and Qureshi [15] stated that the most crucial factor that determined someone's comfort in accessing e-learning was their ICT literacy. This is as Popovici and Mironov [7] found that students’ expertise in technology affected their acceptance of e-learning. Basic ICT skills are required to be able to participate in e-learning without stress. As we mentioned earlier, the students who participated
in the study were ICT literate. Therefore it was comprehensible that they did not encounter serious technical problems with the e-learning web-based module, except for a few students who had difficulties with a slow internet connection. Overall, the students agreed that the module was easy to navigate, the sources were easy to access, and the teacher’s instructions were easy to understand. Therefore it can be concluded that the students agreed that the e-learning web-based module was easy to use.

4. Conclusion
The students who participated in the study perceived the e-learning web-based module to be useful and easy to use. They agreed that the module was helpful in improving their understanding of course materials, time discipline, interactions with each other and with the teacher, and that e-learning was enjoyable. The students also claimed that it was easy to access the module. Presumably, the students’ familiarity with ICT in their everyday life played an important role in their familiarizing with e-learning. This finding mentions that the development of e-learning should be continuously updated with the latest trends.

In this study, we addressed the issue of students’ perceived usefulness and ease of use of the e-learning web-based module used at the Primary Education Department of Syiah Kuala University. For future research, we suggest an investigation on students’ preferences of an e-learning system to gain information about what students, as the end users of e-learning, wish from e-learning.

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