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E-Learning Implementation in Medical Education: Why Does The Program Fail in Our Department?

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The medical education department conducts final tests at the end of the batch. The tests measure the increasing of knowledge in the basics of medical science. Within five years, the number of students who passed the post-test 69%. There are some ways to increase the number of students who pass the test, one of which is e-learning. The board believes by using the e-learning will give the student a more chance to learn and increased the possibility pass the test. The board decided to develop a web based LMS for facilitating the students to access the course material and discussions outside the classroom like other Indonesian universities do. The learning material in video tutorials, portable document files, and presentation files which are easily accessed by students. After three years of implementation of e-learning, the number of students who passed the post-test decreased to 55%. The board found that the using of e-learning is failing to increase the students' knowledge. Why does this happen?

Keywords: progress test, low score, e-learning implementation, program fail

1. INTRODUCTION

The Universitas Muhammadiyah Yogyakarta is a private university in Yogyakarta, Indonesia. The medical education department of the university has implemented an e-learning since 2010. E-learning is for supporting the activities in the classroom and outside the classroom. The implementation of e-learning in the classroom is providing projector and improved lecturers skill to use power point as teaching aids. Meanwhile, outside the classroom used web-based LMS for facilitating the student to gain as well as to improve the medical basic-knowledge.

The main objective of e-learning is to improve student achievement, especially in the subjects with the percentage of students who pass the test is low; this was due to the limitation in tutoring time. The results of the annual academic evaluation show the amount of students who pass the test the basics of medical science 69%.

The number of graduates can be improved by increasing the duration of the tutorial, but this is hard to do, because the lecturers have high teaching hours. The board decided to improve the number of students who passed using e-learning. The board strongly believes that students can learn independently outside of the classroom using an e-learning environment to increase their knowledge. After three years of implementation of e-learning, the board found that the percentage of students who pass the basics medical science test even decrease to 55%. From the evaluation, it was concluded that the use of e-learning is not yet able to improve the number of students who passed the test. It is interesting to find what causes it? In fact, e-learning has been shown to have a positive effect on learning outcomes, the e-learning effect size is 0.42 or moderate impact on teaching and learning¹. There are strong indications that the failure is due to the e-learning requires a change of culture and attitude of student learning. Students are not used to learning by using e-learning; students take a long time to adapt.

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In Indonesia, e-learning is a trend and is being developed. In general, they developed a web-based LMS; there are 980 educational institutions that developed Moodle LMS; the method of e-learning development is almost the same throughout Indonesia, even the use of e-learning tools such as CAL or ITS is unpopular. The conclusions of this study describe the main causes of e-learning are not able to increase the students' understanding of basic knowledge. Thus, the results of this study are crucial for the majority of educational institutions in Indonesia, particularly in the medical education department which is developing e-learning..

2. RESEARCH METHOD

This study intended to find the main practical problems in the implementation of e-learning that fail to enhance the student learning performance. Research steps (Fig.1) include: identifying the problems, collecting the data through FGD and survey, analyzing the data using qualitative and quantitative analysis, and drawing the conclusion.

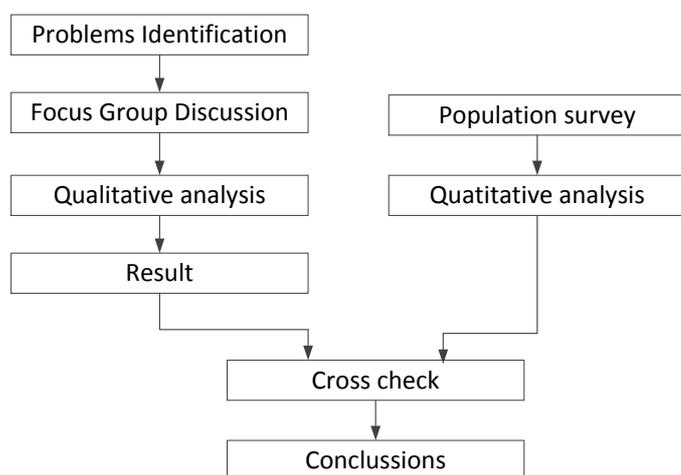


Figure 1. Research flow chart

The study conducts a Focus Group Discussion (FGD) to explore and identify the main problem of failed in e-learning application from the student perspective. The FGD's participants are final year students as a research population because they are already familiar and have enough experience of using the e-learning facility. The sample was selected randomly to provide all students the opportunity to join the FGD. The sampling technique has a purpose that discussion group members are students who represent the population, can provide the necessary information, and willing to give objective statements. Due to the nature of the interview takes a long time, then to know in depth the problem in the implementation of e-learning discussions the number of members limited up to 15 people.

An important element of the FGD is to ensure the participation, careful questions, maintaining a neutral attitude, and summarizing the meeting to reflect the opinions. Any observations during the session noted and included in the detail report. Some of the questions

prepared so that the FGD took place in accordance with the purpose. The earlier study found that the students already familiar with email, social media, or other internet application, but students did not interest using e-learning. This is interesting information as the key to find the root cause problems. Thus, the FGD conduct to answer the question why students did not interest using e-learning; it causes by the student, teacher, technology, or education system? If the main cause of failure of the implementation of e-learning is found, then it needs to be checked back through the questionnaire to a wider population with a greater number of samples. The results are used to draw conclusions more thoroughly and carefully.

3. RESULT

There were 12 students who joined in the FGDs. Results of FGD among others considered less attractive appearance because only a document file content as a replacement for a book. Video tutorials are too few and unattractive. They believe that e-learning does not help clarify understanding, students prefer to read textbooks or other articles that could be dropped because streak and given any distinct color to mark the text that are considered important. Other causes of e-learning are often difficult to access. Students feel when studying the e-learning materials also do not understand the connection with the case or the purpose of studying the course material. E-learning content has nothing to do with the settlement of the problem of clinical cases. Thus, look less attractive and appropriate content is the main cause reluctant learners using e-learning.

Students still prefer face-to-face models in the classroom and outside the classroom reading books. They prefer to attend college in the room because the lecturer is delivering the teaching material using power point and an LCD projector. Students find it easier to understand and remember the material for viewing in the form of short texts and pictures with explanations of the teacher. In addition, learners can also ask direct and immediate answers.

During this time, sometimes, a lot of face to face lectures postponed, so that the teaching material conduct close to examination schedule. It is very burdensome learners in learning the material because the material had to learn a set in a short time; therefore, it is not optimal. In this situation, the using of e-learning is appropriate way, but the one of the success keys of e-learning that push the students willing to learn.

E-learning is effective if interest to the student, the e-learning content should match the student needs, and the learning material easy to access anytime. The powerful e-learning cause student interested using e-learning if they do not understand of a particular concept. E-learning content should give to a student like the teaching in the classroom. So e-learning should provide a teaching material like face to face lectures, as with hearing the explanation easier to understand the material presented in comparison just look softcopy and should strive to understand themselves. The use of the learning management system is not yet able to meet the needs of students.

E-learning is considered useful tools of education if it interesting, helpful content, and easy to access. If those three things occur; it is likely that the students are interested in using e-learning if you do not understand the material. E-learning should display the teaching material so that the lecturer can replace the presence of e-learning. The e-learning setting should similar to the face to face learning in the classroom. So e-learning should be given no explanation like face to face lectures, as with hearing the statement easier to understand the material presented in comparison just look softcopy and should strive to understand themselves. The use of Learning Management System is not yet able to answer the requirements of students.

From the discussion, the look and content of the learning expected of students are as follows:

1. Display of e-learning is expected to be appealing so as to make the students happy to open e-learning such as video tutorials, as long as this if the students do not understand the learning materials they are looking for an on YouTube that explains the material. Learners feel YouTube so help them in finding a video tutorial that meets their needs.
2. Learners really enjoy tutorials in the classroom using PowerPoint PowerPoint, but expect a more attractive appearance and a better lecturer explanation.
3. Each learning content describes the goal of teaching as well as examples of real cases the benefits of studying the material.
4. The material is important given the emphasis for example text with different colors, fonts thicker, or underlined below.
5. Learning materials should have animations or images that further clarify and easy to understand.
6. E-learning or home page is ensured and easily accessible at all times.
7. Course material has questions to measure the achievement of learning so that students can gauge their level of understanding..
8. Students can get an immediate response after answering a question and obtain an explanation of the correct answer.
9. The material displayed in a particular sequence so that the learners are easier to learn.

From the FGD is known that the e-learning main problems are, it is not interesting and does not help students to understand the course material. From the survey of the LMS comfort found that 68% of respondents stated the appearance (color, text, and images) is quite convenient, and the menu is easy to use. 84% respondents state the grouping of information is good, but the content on teaching material conveyed too much and confusing. It shows that the LMS environment is convenient, but the content that created by the teacher need revised.

4. DISCUSSION

Opinions expressed learners who are less attractive appearance analyzed through the study of literature on the

theory that underlies the development of computer-assisted learning. Based on the research studies, there are several approaches that must consider in the delivery of learning materials using multimedia in e-learning. The first approach is the presence of the cognitive theory of multimedia learning which says that there are three important cognitive processes that occur when studying multimedia material through the selecting, organizing and integrating. The second approach based on three theories on multimedia development, those are dual coding theory, cognitive load theory, and constructivism learning theory. The third approach using the theory of working memory which it consists of visual and auditory which work separately². Each working memory has a very limited capacity^{3,4}. Humans have two separate systems in verbal and visual information presented.

According to the opinion of⁵ on dual coding theory that the learning process will be useful if learners select relevant information to be stored, then organize the information stored into something coherent and able to connect between the information into meaningful⁶. Cognitive load theory explains that: working memory as a function of duty to organize information, to give meaning and shape information for the knowledge stored in long-term memory, it's called working memory. Incapacity, this memory can only store (hold) information in a short time, it's called short-term memory.

Cognitive load theory mentions that the cognitive load on working memory influenced by three sources, namely: intrinsic cognitive load (intrinsic cognitive load), the cognitive load extrinsic (external cognitive load) and constructive cognitive load (German cognitive load)^{7,8}.

The intrinsic cognitive load is determined by the level of complexity of the information or material being studied, whereas external cognitive load is determined by the technique of presenting such material³. The intrinsic cognitive load cannot be manipulated because it is the character of the interactivity of the elements in the material. Thus, this intrinsic cognitive load is fixed. However, the extrinsic cognitive load can be manipulated. Engineering presentation of the material is good, that which does not complicate the understanding, will reduce external cognitive load. The material has intrinsically had a heavy load if given correctly, then the workers' cognitive processes in the memory will run smoothly. In contrast, although the intrinsic cognitive load is a lighter material, if presented with no good, as too much or random, then the cognitive processes in working memory will run slow or stop.

If memory filled by workers intrinsic and extrinsic cognitive load, then there is no charge remaining for constructive cognitive load. Constructive cognitive load is the cognitive load caused by cognitive processes that are relevant to the understanding of the theme being considered and the process of construction (acquisition scheme) knowledge. If there is no constructive cognitive load, memory means workers cannot organize, construct, encode, elaborate or integrate the material being studied as well the knowledge stored in long-term memory. In other words, the information presented is not well studied. Such information, may successfully store in long term memory, but it may be difficult to call back or not connected with

the relevant knowledge. It causes the future process of learning in a relevant matter is slow.

The constructions of cognitive processes that occur automatically if in the working memory has a minimum of intrinsic and extrinsic cognitive load. However, it can be influenced by motivation and attitudes of learners towards the material being studied. Without motivation and a good attitude towards the learning process, although the material is managed well, might not be the maximum learning outcomes.

The key success of e-learning depends on the technology, content, management, and support learning. Elements of the technology include reliability, standardization, and ease of use; content includes the convenience of the interface, the ability to attract attention, and ability to guide on understanding; elements of management include planning, financing, curriculum, and benefits for the institution; learning support includes the ability to attract the interest of learning, according to the learning objectives, the benefits of the achievement of learning objectives, and benefits for faculty^{9,10}. According to the above key success that the e-learning fails to satisfy in terms of guiding to the understanding and content doesn't meet the student requirements.

5. CONCLUSION

Based on the results of the FGD, the implementation of e-learning as a complement of the face-to-face method is less efficient since the lack of the e-learning environment using. The e-learning environment is less attractive, not motivated, and does not facilitate the understanding. In addition, students often had problems in opening the e-learning site; this situation further reduces the interest of students using e-learning facility.

The implications of working memory function, that when the faculty design the e-learning content should follow the steps:

1. Require to understand the level of complexity of the learning material.
2. Need to know the level of prior knowledge students will learn the material presented
3. Minimize the number of intrinsic and extrinsic cognitive load
4. Facilitate a process that increases the cognitive load constructive knowledge acquisition and construction schemes.

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