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ORIGINAL RESEARCH

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THE DEVELOPMENT OF E-PARTOGRAPH MODULE AS A LEARNING PLATFORM FOR MIDWIFERY STUDENTS: THE ADDIE MODEL

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ABSTRACT

To enhance the competencies of midwifery students, one must design a learning instruction in such a manner that it will optimize the learning. The learning materials designed based on technology will facilitate the learners to achieve the desired outcome. In this study, e-partograph was developed using ADDIE (Analysis, Design, Development, Implementation, and Evaluation) instruction model. The module of e-partograph was followed the structural guideline of Department of National Education of Indonesia consisted of: *self-instruction, self-contained, stand alone, adaptive, and user friendly*. The evaluation showed that e-partograph was feasible (99.3) in the material subject, very feasible (195) in terms of media, feasible (101.6) in the try-out, and feasible for the students (users) (104.18). It is suggested that e-partograph could be applied in the teaching learning system, and it is expected to contribute positively to the increase in skill and competence of midwifery students who will be able to carry out its role both academic and practice.

Keywords: partograph, e-module, ADDIE

INTRODUCTION

Education is one of the basic needs for human development and the key to the success of a country.¹ Today, there have been many efforts to improve the educational system adapted to the changing times. Thus, the educational system also must be able to adapt to the

today's development of science and technology to compete in the globalization era, especially in the quality of teaching learning and its media.²

The position of learning media remains crucial in assisting the learning process of students to facilitate information, overcome the limitations of

space, time and sensory; and make learning more fun and interesting.³ Therefore, it is important for educators to develop learning media to optimize the competencies of midwifery students⁴ and create a professional midwife after graduation, as the one who has the responsibility of providing health care of individuals, families and community.

Midwives are authorized to provide services in prenatal, during, and postnatal until the period between the two pregnancies.⁵ In this regard, midwives have an important and strategic position particularly in decreasing maternal and infant mortality rate.⁶ Based on the Indonesian Health Minister's Decision No. 369 / Menkes / SK/ III/2007 indicated that the qualifications of midwives with Diploma level III, as a midwife practitioner, has the competence to implement midwifery practices both in the institution and individual practice.⁶ Of the many duties of midwives, one of the competencies that must be mastered is helping labor, and clinical quickly and accurately, especially in using partograph.

Partograph is "Important Warning System" to help making decisions earlier when mother should be referred, precipitated or terminated. With partograph, there will be an increase of the quality and regularity of maternal and fetal monitoring during labor. Using partograph is also to prevent prolonged labor, lower the risk of postpartum hemorrhage, sepsis, membrane rupture, fetal distress, and reduce Maternal Mortality Rate (MMR) in Indonesia, which was in 2014 reached 356/100,000 live births;⁷ while in the Central Java in 2012 was 116,34 / 100,000 live births, which 17.33% of mortality occurred during childbirth.⁸ Thus, partograph is one of the solutions to deal with maternal mortality.

However, although there are many benefits of the use of partograph, its

implementation is still low. Studies revealed that only 53.6% of midwives performed or used partograph due to lack of knowledge and the influence of media.⁹ The preliminary study conducted by the researchers revealed that most of teaching learning system used in Indonesia were lecture and module methods, which might not be interesting and made the students felt bored in the class. The use of technology is limited although it has been proven to be effective in teaching learning system, particularly to increase the skills and knowledge of students as well as their creativities, as previous studies revealed that there was an increase of the student's independence and learning outcomes after given a teaching learning using electronic module.^{10,11} Besides, almost all of the students have their own notebooks or laptops. Thus, to facilitate the student's learning, one must therefore design the learning instruction in such a manner that it will optimize learning.⁴ As Rogers said in his work, you can never really teach anybody anything, you can only facilitate learning.¹² This study aimed to develop and examine the e-partograph module as a learning platform in midwifery students using or Instructional systems design (ISD).

INSTRUCTIONAL SYSTEMS DEVELOPMENT (ISD)

The instructional systems design is a systematic method of development of education and trainings programs for improved student performance.⁴ The ISD process involves five steps: analysis, development, design, implementation, and evaluation (ADDIE). The concept of ISD is the process of designing learning through instruction where the focus is on learning rather than on teaching.¹³ This concept has been widely used and accepted within the education profession as a distinct specialty.^{14,15} The concept of ISD has been around since the early

1950s, ADDIE first appeared in 1975. It was created by the Center for Educational Technology at Florida State University for the U.S. Army and then quickly adapted by all the U.S. Armed Forces.^{13,16,17} The military, having a large number of instructional designers, greatly influenced much of the corporate and educational world to adapting the ISD or ADDIE model.

DEVELOPING E-PARTOGRAPH USING ADDIE MODEL

This was a Research and Development (R&D) study following the instructional system design with analysis-design-development-implementation-evaluation (ADDIE) model to develop e-partograph as a learning media for midwifery students.

Analysis

This step is to analyze learning activities and characteristics, the needs and limitations of teaching materials, and formulate student competency that needs to be achieved.¹⁸ In this study, the analysis was done in the subject of partograph in midwifery care by in-depth interview with the midwifery educators and the midwifery students in third semester in the Health Polytechnic of Semarang. The interview findings indicated that most of teaching learning in this subject used lecture and module methods. Some of the students felt bored and could not catch all information from the class. Almost all of the students have their own notebooks or laptops, and all the students agreed if they could learn online or having electronic module. It would help them in understanding the subject.

Design

Where an outline and description of the module and storyboard are created.

Module, software program, instrument to assess the quality of modules are designed and determined.¹⁸ In this study, the development of e-partograph (Indonesian version) was the result of the analysis step, which aimed to help and facilitate the midwifery students as their learning media in the partograph subject. The module was developed using Adobe Flash CS6 which this product could be operated directly on the computer although the computer does not have the Adobe program.

On the other hand, the first draft of the instruments was adapted from Department of National Education of Indonesia 2008, which consisted of three parts: 1) The questionnaire for the material experts to measure the quality of the module. There were 24 items of questions in terms of content feasibility aspect, language and graphic; 2) The questionnaire for the media experts comprising of 43 items of questions covering the aspects of content and objectives, instructional quality, development technique, language, utilization, and evaluation; 3) The questionnaire for user (student) feedbacks that consisted of two questions regarding benefit, language, presentation, and graphic. These three questionnaires used the 5-likert scale, namely strongly agree (5), agree (4), simply agree (3) disagree (2), and strongly disagree (1). All instruments were validated using experts' judgment validity. There were six experts for validating the instruments, namely three midwives from the Health Polytechnic of Magelang to validate the grammar and editorial, and the other three experts from the Faculty of Educational Technology of Universitas Negeri Semarang to validate the media and user feedback instruments.

The example of the instrument was shown in table 1 below.

Table 1 The Example of Instrument to Measure E-Partograph

Scoring Aspect	5	4	3	2	1
Material					
The content of e-module fits to the competency standard					
The content of e-module is in accordance with the development of students					
Language					
Clear information					
Using properly language in accordance with the standard					
E-module Presentation					
Clear objective					
The e-module is organized systematically					
Graphic					
The letter is readable					
Layout is correct					
Clear illustration					
Design is attractive					

Development

In the development phase, instructional designers and developers create and assemble content assets blueprinted in the design phase. In this phase, the designers create storyboards and graphics. In this study, the e-partograph has been developed for one month following all the design and based on the structural guideline of Department of National Education of Indonesia 2008 Module that consisted of: *self-instruction* which allows learners to learn independently; *self-*

contained that material was presented fully and systematically; *stand alone* and not relied on other media; *adaptive* which in accordance with the development of science and latest technology; and *user friendly* which is easy to use or apply, simple and understandable. This application was also equipped with self-exercise and discussion so the students would be pro-active and apply into practice.

The e-partograph design interface was described in the figures below:



Figure 1 Cover of the E-Partograph



Figure 2 About Interface

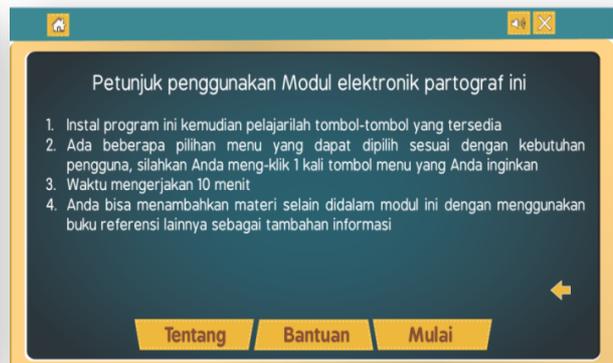


Figure 3 Guideline of Use Interface

Figure 2 is the screenshot of menu “about” to explain about the objective of this application to help the students and the educators in the process of teaching learning in the subject of partograph. Figure 3 explains about the “Help” menu to explain about the guideline of use of the application.

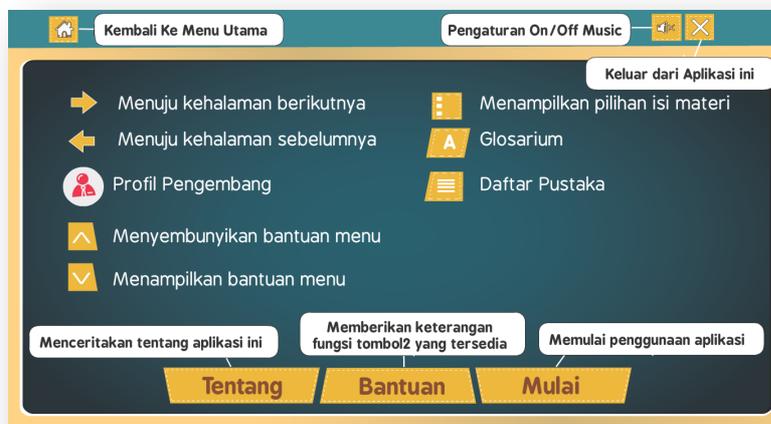


Figure 4 Main Menu Interface

Figure 4 shows the “Start” menu where there are many choices to view all the material subjects, glossaries, references, and the other features.

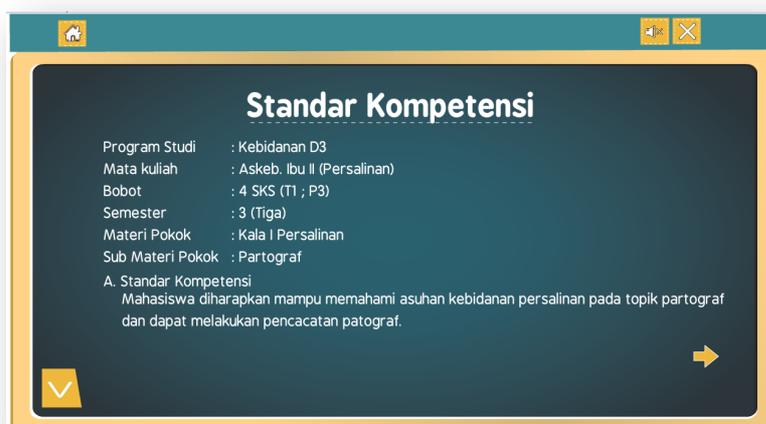


Figure 5 Screenshot of Competency Standard

Figure 5 views the first page of competency standard as the example of the material subjects, which explain about the ID of the subject, and the competency standard of midwife.

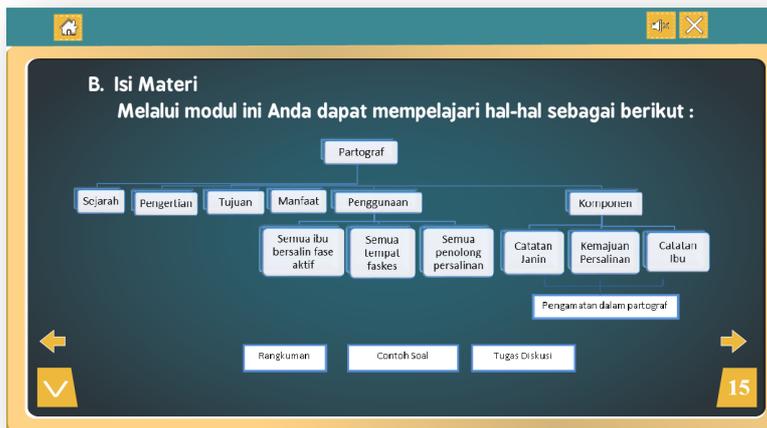


Figure 6 Material Content

Figure 6 shows the example of material content, such as the history partograph, definition, objectives, benefits, utilization, components, summary, assignment, and exercise.

Figure 7 Example of Exercise

Figure 7 shows the exercise consisting of three types, namely multiple choice, match, and case study. There is also key answer and feedback for students to learn.

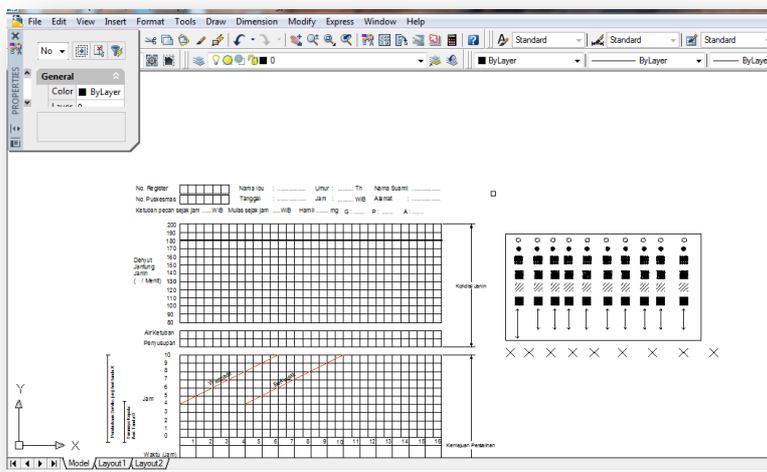


Figure 8 Partograph Digital

Implementation

The implementation phase includes the testing of prototypes which training for the instructor happens followed by learners participating in the instruction.¹⁸ In this study, the software had been tried out to 3 students before being implemented to the samples to reveal the students' responses in addition to the research subjects and to get input for the improvement. Further, the implementation of the application had been applied to the midwifery students in the third semester. There were 17 students selected using purposive sampling. This has been

implemented two times on 8 December 2016 and 14 December 2016.

Evaluation

The e-partograph was evaluated by the material experts, media experts, and students using the questioners that had developed in the development step. The score of the evaluation as shown in the table 2 indicated that e-partograph was feasible (99.3) in the material subject, very feasible (195) in terms of media, feasible (101.6) in the try –out, and feasible for the students (104.18).

Table 2 Evaluation of the E-Partograph

Evaluator	Score	Criteria
Material	99.3	Feasible
Media	195	Very Feasible
Try-out product	101.6	Feasible
Users	104.18	Feasible

Although there were revisions of the application based on the experts' evaluation, such as revising grammar, position of the features, material content, pictures, and instructions; these results however were proven that the use of technology in the educational system is very useful for both teachers and students. The features of the software in this study help the students in their learning, for instance, the e-partograph has a function to add vocabulary of the learners, attract the students' learning and increase student's motivation.

However, this e-module can be used as a self-learning without the presence of a teacher, or a temporary substitute for the function of educators. Additionally, this software can be used as an evaluation tool and as reference material. This was in line with previous studies revealed that e-book or e-module has many benefits such as increase motivation to learn, improve interactions and learning outcomes, as well

as improve results students' cognitive learning.

Limitation of the study

There were some limitations in this study: 1) the e-partograph could only be accessed with a computer/laptop, not via mobile phones, 2) for viewing the digital partograph, users must first install the AutoCAD software in the computer, and there was no yet system for assessment and feedback automatically, and 3) the material in this module was still limited to partograph only.

CONCLUSION

It can be concluded that the e-partograph was feasible to be applied in the teaching learning system. This innovation is expected to contribute positively to the increase in skill and competence of learners as a prospective midwife who will be able to carry out its role both academic and practice. This is certainly implicit in the effort to improve the quality of health

services to reduce the maternal and infant mortality rate. Further study is also needed to develop this innovation to cover the wide range of the midwifery subjects.

Declaration of Conflict of Interest

None declared.

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Authorship Contribution

The authors equally contributed in this study.

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