Developing courseware usability of human body part for secondary level

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ABSTRACT – Courseware is an easy application that can be used by the user without the Internet. This led us to develop courseware for Form 1 to Form 3 students focusing on science subjects; the external human body topic. This topic is complicated. In other words, the teaching method nowadays is not interactive. Thus, the objective is to design and develop an instructional interface design model courseware for Science subject. ADDIE and 9 Gagne's model is used in this project because it represents a dynamic and flexible guideline. Then, the result shows this courseware has met the usability standard.

1. INTRODUCTION

Nowadays, students find it boring to have a lecture session by using the same method such as listening and jotting down notes. The teaching can no longer solely on traditional methods of learning today [1]. They tend to forget what has been taught in class easily. Furthermore, nowadays teaching and learning session without using technology is irrelevant. Courseware is educational material intended as kits for teachers or trainers [2]. The courseware development since the early 2000s has been growing rapidly in Malaysia. Many educators develop the innovation of teaching and learning in their institution. The previous study by Hassan and Ali [3] findings the development of the courseware is seen as being very effective and has managed to attract the student's interest to further explore teaching contents. Moreover, Azran and Mahfuzah [4] state courseware is user-friendly and capable of enhancing the learning of the subject.

The ADDIE model is the most framework used by the instructional designer. It has a flexible guideline that helps the instructional designers in building effective support tools in five phases called Analysis, Design and Development, Implementation and Evaluation [5]. In order to achieve the objective, this courseware was designed and developed based on the ADDIE model. In addition, many institute offer courses use 9 Gagne events of instruction for course design and it has proven to be effective [6].

In this study, the 9Gagne principle is implemented in the component that promotes usability courseware [7]. The scope of the courseware focuses on the topic External Human Body in Science subjects for Form 1 to Form 3 secondary school level.

2. PROJECT METHODOLOGY

The main objective of this study is to evaluate the usability of implement instructional design principle for interactive courseware. The ADDIE model has been adopted as the guidelines for the whole courseware development. Each phase of development starting Analysis, Design, Development, and Evaluation has its own contribution to the main objective of the research:

Analysis Phase: This phase involves the preliminary activity to find user requirements, analysis user, context and system specifications. Thus, previous research data were collected through literature review and investigated related teaching method.

Design Phase: The courseware interface designing process uses a tool Balsamiq Mockup 3 that starts with a storyboard. One of the most significant courseware from the previous study is the combination of elements such as texts, graphics, animations, and videos [3]

Development Phase: From this storyboard, the developer refers to each process to develop courseware. Adobe Captivate 2017 used in this project as a tool authoring for creating e-learning content. The main page of this courseware in Figure 1.

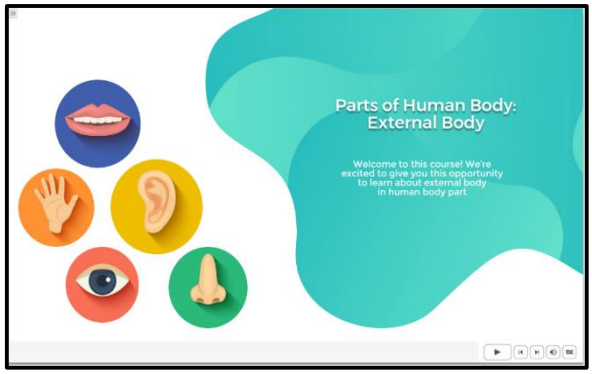

Figure 1 Main page of courseware.

Implementation Phase: The principles of 9 Gagne as our references and guidance to complete the implementation phase:

Gain attention
1. Inform learners of objectives
2. Stimulate recall of prior learning
3. Present the content
4. Provide "learning guidance"
5. Elicit performance (practice)

6. Provide feedback
7. Assess performance
8. Enhance retention and transfer to the job

Evaluation Phase: The evaluation of the courseware was carried out through a questionnaire based on usability evaluation. In order to evaluate the usability, the evaluation was conducted once the design and development process was fully completed.

3. RESULTS AND DISCUSSION

The usability testing is conducted among 10 students based on courseware usability evaluation. Most of the students agreed that the navigation and buttons provided are user-friendly as they can easily use it without requiring specific training or tutorials. The result as shown in Figure 2

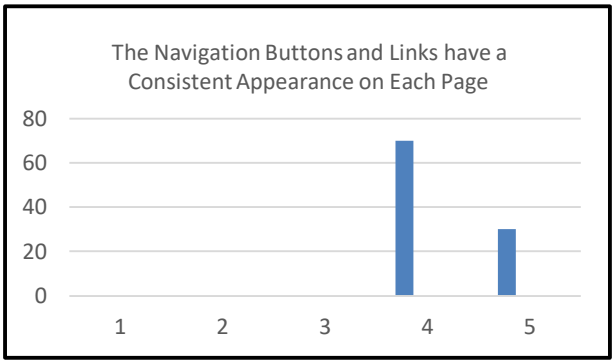

Figure 2 Usability Evaluation result

Majority of the students strongly agreed that the usage of multimedia elements in this courseware is suitable and appropriate to be used. They also claim that all of these elements had helped them to understand more about the topics as it is created in an interesting and attractive way as shown in Figure 3.

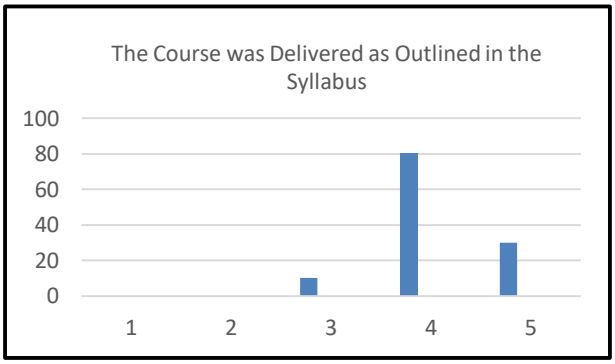

Figure 3 Usability Evaluation result

4. CONCLUSION

To gain insight into the usability requirement, at least beyond the level where the user has become fluent in gaining access to the learning support system [8]. By applying the ADDIE model to complete this project, this model very useful because having stages clearly defined facilitates the implementation of effective training tools. ADDIE model helps to construct the usability courseware step by step inappropriate and accurate ways.

In conclusion, the development of courseware especially for science subject is important to help to improve the teaching and learning process for secondary school education. By providing this kind of application, will contribute to increasing the quality and effectiveness of learning for this country. Therefore, the cooperation and commitment from all community such as the education ministry, teachers and students are important to build and develop this courseware together.

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