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Abstract. *The use of computers in the development of Electronic Chart Display and Information System (ECDIS) teaching materials can be used to assist lecturers in learning activities on vocational campuses as well as other materials in the Computer Base Training (CBT) laboratory at the Indonesian Maritime Polytechnic. The CBT laboratory provides learning materials on ship machinery systems and multiple choice questions for learning evaluation. The purpose of this study was to determine the level of effectiveness of the use of ECDIS material learning media software when used computer-based. The method used in this study is a qualitative method by looking at the final grades of students. This software consists of 42 slides of ECDIS material theory, 1 slide of ECDIS material video tutorial, 1 slide of ECDIS material practice, 20 slides of multiple choice evaluation questions, and 1 slide of final grades made using Visual Basic software. The results of the test showed that all cadets who attended the lecture were successful in using the software until the final grade was obtained.*
Keywords: *simulation, ECDIS, online learning, teaching media, visual basic.*

INTRODUCTION

Computer-based learning or often called computer base training (CBT) is learning where cadets obtain more material from the computer by listening to material on the computer that is created with software. Learning media using computer base training has been widely applied in previous research, one of which was applied to occupational safety courses using Adobe Animate software.[1] With the development of technology and information, learning media plays an important role to assist the teaching and learning process, as a teacher, we can take the benefit of the teaching media to be used as the teaching aid for transferring knowledge to make the teaching and learning process easier to do. Learning media are very diverse so an educator must be good at choosing appropriate learning media to be applied in schools or class so that a learning goal can be achieved as expected.[2] One of the existing digital application is computer-based training (CBT) based learning. Students can learn by using computer programmed with visual basic software through some material slides completed with lecturer's voice. By using the helpful teaching media, then students are not easily getting bored in following the teaching and learning process, they will be easier to understand the materials, so the teaching and learning process is getting more effective and efficient, the learning objectives can be attained as expected. Computer-based learning media is expected to increase the independence of students and make the learning process more effective and efficient.[3]

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Learning with Computer Based Training was also developed for learning electricity and electronics at the shipping campus as an innovation from lecturers to educate lecturers to learn independently in addition to learning using face-to-face and practicum so that students can study independently in their free time. [4] Computer-based learning can be combined with paper-based learning in mid-semester exams. Computer-based learning can save paper usage and teachers can summarize student exam results and reduce errors in assessment because it is done computerized. The creation of this computer-based midterm exam system uses PHP software which is programming for building websites. The flow used in taking exams using this website starts with distributing question codes to students, continues with working on questions and finally logging out. [5] Creating test applications using PHP programming and MySQL databases is also applied to creating computer-based psychological test questions. As technology develops, psychological test exams can be carried out using a website which includes information about psychological test exams, psychological test categories and questions, scores, test duration settings, participant data and exam data. By using a computer-based test, this test can save time and make it easier to carry out the test. [6]

As a lecturer one of the main responsibilities is to do "*Tri Dharma*", it includes to carry out teaching activities. To support it, teaching media plays important roles since it can simplify the activity, therefore we are interested to design and develop the teaching media for ECDISS subject. ECDIS stand for Electronic Chart Display and Information System. This tool can be used to assist the deck officer in navigating the ship's position. [7] Besides being able to provide clues to the existence of a ship, froth and ship's position, this tool can plot the navigation routes to ease the navigating on board. The invention of ECDIS is considered able to help to improve the safety navigation. ECDIS is possible to the navigator to conduct effective, precise, and accurate supervision. [8]

The lecture activity consists both theoretical and practical subjects, after carried out the theory, then proceed with practical activities which aim to give students the opportunity to test and apply the theory. After getting the ECDIS material, the students are able to use Electronic Chart Display (ECDIS) and information system, start from turning on, operate and turning off the tool according to the existing procedures, and through some sequence of process in computer-based navigation information systems appropriate with International Maritime Organization (IMO). It is expected the students able to operate the tool in the work field.[9] Through theoretical and practical activities, students will get theoretical material, such as when

lecturers teach with automatic slides added by lecturer's voice. At the end of the slide, there are 20 questions in form of multiple choice and final score.

The evaluation process is undertaken after the teaching process as the parameter and knowing the level of success in understanding theoretical and practical material that has been delivered through the software.[10] It is necessary to conduct the evaluation in order to increase the teaching and learning quality. The evaluation can be a pre-test and post-test that the lecturers then able to know the students' understanding of ECDIS. The evaluation results can be displayed in the form of scores that can provide information to the lecturers regarding the level of understanding of each student. Evaluation in the form of software provides several benefits, it paperless because students work using the electronic software instead of paper. It also provides the lecturers with some benefits as it is easier to carry out the evaluation since it doesn't require correction process, the final score is automatically appeared after the students do the evaluation.[11]

METHODOLOGY

To determine the level of success of learning using computer-based training media on ECDIS material, this research uses a quantitative descriptive method. The research objects used are cadets and lecturers who take part in lecture activities using this software using Google Forms via questionnaires. This software includes power point slides from the lecturers, voice recorder, video tutorial of how to operate ECDIS which can be downloaded from YouTube. and some multiple-choice questions that will be used in the evaluation process for the students. Then wemaking the software by designing it based on the input and needs from lecturers. The obtained data from the lecturer then converted into software by using visual basic software. The finished software will be formatted and saved in the form of exe file, so it can be accessed directly without installing the visual basic software. The next step is testing the software which is carried out by the lecturer when they deliver the ECDIS material. Below is the flow of the research stage. After the software has been created, it is then tested on cadets when learning ECDIS material to be evaluated using a Google form with a questionnaire model.

FINDING AND DISCUSSION

The teaching media of ECDIS is created by using visual basic software. It consists of some related material of ECDIS added with some quizzes in 20 questions in form of multiple-choice related to ECDIS. These quizzes aim to sharpen students' understanding of the concepts of the material.

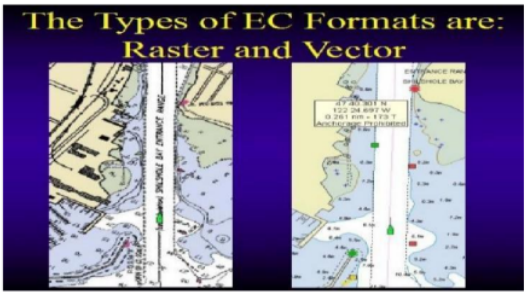

Figure 3. Theory Slide

The use of this media is very effective since the lecturers able to know how far the learning process has been achieved by students, then it can be ranked and the lecturers can take further action. The process of forming new knowledge occurs when answering questions according to the initial knowledge of the students. There is also personal evaluation for the students about their understanding related to the concepts learnt, because there is a discussion with the lecturers. The benefits of using the software-based teaching media is this learning is independent, able to increase the memory and able to give opportunity to the students to participate actively in teaching and learning process in line with student-centered learning method. It is shown in the following figure that showing ECDIS material consist of 42 slides, each slide is set for 30 seconds.

Figure 4. Multiple Choice Slide

To see the extent of the absorption of the material that has been gained by the students by means of software then a test is conducted by doing 20 items of questions of ECDIS in multiple-choice form. The purpose of this test is to evaluate the students to find out the value that describes their ability.

Figure 5. Final Score Slide

The results of the test on cadets who took the course showed that all cadets had succeeded in getting their final grades using the software.

CONCLUSION

From the results of the previous discussion, it can be concluded that the evaluation of ECDIS learning materials helps lecturers in providing an overview of students' abilities by using computer software. After the students taken the test or evaluation, then they work on 20 multiple-choice questions with score of 5 for each question and a maximum score of 100. The creation of learning materials for ECDIS material based on computer base training is made using Visual Basic software, making cadets very interested in learning to use this software.

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PAGE 2

PAGE 3

PAGE 4

PAGE 5

PAGE 6