Developing an e-module of making Edmodo-based Hosanna Moda system bustier to improve learning independence and learning achievement

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ARTICLE INFO

ABSTRACT

This study aims to: 1.) Develop an Edmodo-based e-module for making Hosanna Moda system bustier to increase independence and achievement in learning custom made clothing; 2.) Describe the feasibility of the developed e-module; and 3.) Reveal the effectiveness of the developed e-module in increasing student learning independence and learning achievement. This research is development research, which was carried out on grade XII students of Fashion, State Vocational High School 3 Magelang. The product trial consisted of a validity test by three experts, a small-scale trial involving 12 students, a large-scale trial involving 24 students, and an effectiveness test involving one control and one experimental groups each consisting of 36 students. The data were collected using questionnaires and tests as well as through interviews. The data analysis used is quantitative description and the effectiveness testing used the t-test. The results of the study are as follows: 1.) The developed e-module contains learning materials about making Hosanna Moda system bustier illustrated with relevant pictures to make it easier for students to understand it when studying independently; 2.) The product has been declared feasible by a material expert, media expert, and linguist. In the operational trial, teacher responses are with an average score of 5.00 (very good category and suitable for use), and student responses are with an average score of 4.59 (very good category and suitable for use); and 3.) The results of the effectiveness testing on student learning independence is at the significance level of 0.000 (<0.050) indicating that the learning independence of experimental group students was higher than that of the control group, while the results of the effectiveness test on student learning achievement is at the significance level of 0.001 (<0.050) indicating an average value. The posttest average score of the experimental group was much higher than that of the control group. Thus, it can be concluded that the developed e-module is effective in increasing student learning independence and learning achievement.

INTRODUCTION

Based on Instructions of the President of the Republic of Indonesia No. 9 of 2016 the revitalization of Vocational High Schools (VHS) is carried out in order to improve the quality and competitiveness of Indonesian human resources for the revival of vocational schools. In order to facilitate the achievement of the objectives of implementing education in VHS, the media component must be able to become an intermediary in delivering messages from teachers to students. Learning media refers to the tools used to assist teachers in delivering and displaying learning materials (Yaumi, 2018). The use of media needs to pay attention to the needs of students and the environment

so that the learning process runs according to its objectives. Teachers and students can utilize the wifi provided by the school as a means of supporting digital technology-based learning media with online learning through the Internet.

The application of the use of the Internet will provide learning media innovations to implement an electronic learning called e-learning. E-learning can make students more active in the teaching-learning process (Wani, 2013). Teaching is no longer centered on the teacher, but students are also actively involved in finding materials and studying them independently. Students can choose their own study time which makes it easy and comfortable for them to understand the materials. There are many types of e-learning that can be used by students, including: Edmodo, Rumah Belajar, Moodle, Fedena, Schooltool, Dokeos, and OpenEMIS. Edmodo is a social learning platform that can be used by teachers, lecturers, students, and parents (Ekayati, 2017). Edmodo is also a type of information technology in the form of a website and it can be used by students, educators, and guardians of students (Nasrullah et al., 2017).

State Vocational High School (SMKN) 3 Magelang is a tourism vocational school that has implemented online learning using Edmodo. However, it is still limited to simulation and digital communication subjects. The use of Edmodo media in teaching is still strange to teachers, especially the teachers of the Department of Clothing. Whereas teacher training related to the management of Edmodo has been carried out since 2015. Online media is only used by teachers to give students browsing tasks. The use of media in custom made clothing is also still minimal. Making custom made clothing is one of the productive subjects of years XI and XI students of Fashion Design, SMKN 3 Magelang. One of the basic competencies in Custom Made Clothing course is implementing bustier making. The Hosanna Moda system bustier is still applied today for several advantages, including: 1.) Pattern making is faster than other patterns; 2.) Product results can be enlarged and reduced by the wide back seam; 3.) The chest shape fits the body curve shape; and 4.) Fitting the zipper is not limited to using bustier zipper, but can use jacket zipper to make it stronger. The goal of this subject is that students are skilled in making custom made clothing products. At the end of teaching-learning process, students are expected to be able to make bustier.

Each learning competency has many indicators that must be achieved, but there are several problems in learning to make bustier. Based on the data on student daily test scores in 2018, out of 36 students, 56% had not mastered the knowledge and 14% had not mastered the skill. The specified minimum mastery criterion (MMC = KKM) was 80. The low MMC score of the students was due to the fact that they did not understand the process of making bustier correctly, so the results obtained were not maximal. The lack of student understanding was caused by the absence of appropriate and clear learning media in conveying the correct bustier making process, so that the main source of student learning was only the teacher. However, the large number of bustier-making learning materials that had to be delivered, made the teacher rush in delivering the material using the lecture method, thus making it difficult for students to understand it.

Teachers not only organize learning activities with the lecture method, but also use learning media to help them deliver the materials, namely the PowerPoint. However, in practice, the use of PowerPoint media has not been able to stimulate students to participate in learning activities better. In addition, to support the delivery of learning materials through PowerPoint media, the teacher also prints the materials into handouts and distributes them to students. However, the materials given to the students are not accompanied with a clear jobsheet guide because the content was the same as the PowerPoint presentation. This causes the knowledge conveyed cannot be perfectly absorbed by students, and also shows that students' learning independence has not been seen. Independence refers to the ability to be responsible for the learning process for oneself (Wicaksono & Roza, 2016). Independence needs to be instilled in children from an early age so that they are accustomed to learning independently. Independence can make students do everything they are facing according to their abilities (Fitriana et al., 2015). Therefore, the delivery of learning materials using the PowerPoint is less effective, so students need the right media in order that learning runs smoothly.

The module is one of the printed media and is designed systematically with the aim of helping learning processes (Tang et al., 2018). The module is self-instructional, so it can be used as a learning resource without face-to-face teacher assistance or guidance. This is because the module contains the material on the steps to make bustier equipped with clear images, so that it can make it

easier for students to understand the learning materials. However, modules in physical form are certainly less efficient for teachers, considering the number of class XII students of SMKN 3 Magelang, which reaches 108 students. Therefore, to be more efficient for teachers and effective for students in learning the process of making bustier, the development carried out is in the form of electronic modules (e-modules). The e-module in question is a module in the form of a soft file which is uploaded into an application, which can then be accessed and downloaded by students. This type of e-module includes cloud form media, namely modules in softfile format that are stored on a website or share point, and in order to access them the Internet connection is required (Yusuf et al., 2020). This form of e-module is considered more flexible because it is stored on the website so that students can access and download it easily, anywhere, and anytime. The application that is considered appropriate as the media for uploading the e-module is Edmodo.

Edmodo is a free-of-charge social learning application for online practice that can be used via mobile devices or computers that can be used by teachers, students, and guardians of students (Ekici, 2017). Teachers can upload learning materials in the form of e-modules, practice questions, and assignments in the Edmodo application, and students can download them anytime and anywhere. Edmodo is also considered easy to use because it looks like a social media Facebook. In addition, student guardians can also monitor student learning achievement through Edmodo, because in addition to accessible learning materials and practice questions, student learning achievement will also be listed in the application, and they can also be accessed by student guardians. Fauzi (2017) and Khodary (2017) in their research report show that Edmodo is effective in learning and it improves students' skills and maximizes the use of ICT.

Based on the condition of SMKN 3 Magelang, which is well equipped with the supporting wifi facilities, the development of this Edmodo-based e-module can be carried out. All of the students are able to operate mobile phones and 94% have Android phones. Therefore, they can download the Edmodo application and e-module materials within the school environment, and can study them at school or at home. Learning using the Edmodo-based e-module, besides being able to save learning time at school, can also develop students' abilities to study independently at home. Therefore, the development of this e-module is considered not only able to improve student competence to make bustier in the subject of custom made clothing, but also able to increase their learning independence.

RESEARCH METHOD

Developmental Model

This research is research and development. According to Gall et al. (2003) research and development is a form of development based on research results that are used to design new products and procedures, which are then tested, evaluated, and systematically refined to obtain specific criteria that are effective and of the same quality or standard. This study aims to: develop an Edmodo-based e-modul for making Hosanna Moda system bustier, describe the feasibility of the developed e-module, and reveal the effectiveness of the developed e-module in increasing student learning independence and learning achievement. The data were gathered by using questionnaires containing instruments about learning media and e-module materials to experts and year XII students of the Fashion Design Department, State Vocational High School 3 Magelang, who are the subjects of this research.

Research and Development Procedure

This study refers to Borg and Gall (1983) in Putra (2012) whose procedure is decreased into six stages, namely: 1.) Gathering data and information; 2.) Planning; 3.) Product development; 4.) Feasibility testing; 5.) Effectiveness testing; and 6.) Final product. In brief, the description of the six steps of e-module development is presented in Figure 1.
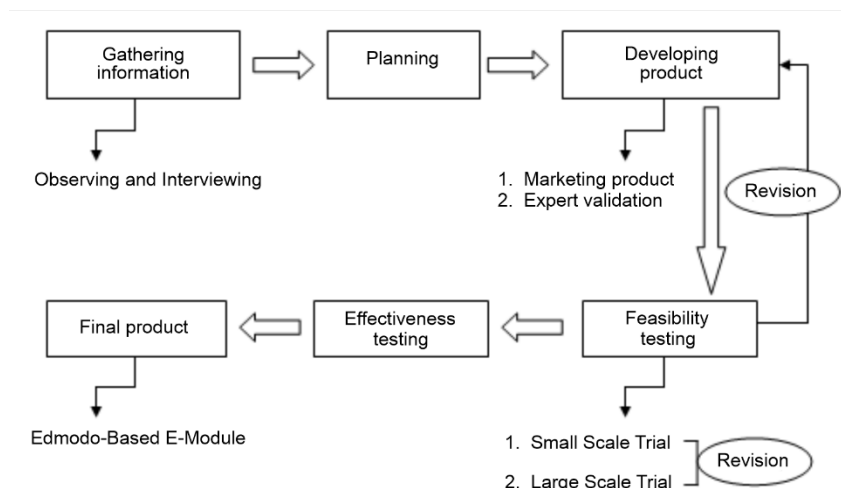
Figure 1. The Steps of Developing Edmondo-Based E-Module

Product Trial Design

The product trials in this study were carried out in three stages, namely: validity testing by experts, small and large scale trials, and effectiveness testing. The effectiveness testing was carried out using the experimental model of pretest-and-posttest-control-group design (Sekaran & Bougie, 2016). The model uses one experimental group and one control group, which is given a pretest and posttest.

Table 1. Pretest-Posttest-Control-Group Model

Group	Pretest	Treatment	Posttest
Experimental	O1	X	O2
Control	O3		O4

Notes:
X   : Instruction applying the e-module
O1 : Experimental Group Pretest
O2 : Experimental Group Posttest
O3 : Control Group Pretest
O4 : Control Group Posttest

Research Subjects

The subjects in this study are grade XII students of the Fashion Design expertise program, SMK Negeri 3 Magelang. The test subjects in this study were divided into three groups, namely 12 students (four high achievers, four moderate achievers, and four low achievers) for small-scale trials, 24 students (eight high achievers, eight moderate achievers, and eight low achievers) for a large-scale trial, and 72 students (36 students in the experimental group, and 36 students in the control group) for the effectiveness testing.

Data Collection Techniques and Instruments

The data collection in this study used questionnaires, tests, and interviews. The questionnaires were used to collect data related to learning independence and student and teacher responses to the developed e-module. The learning achievement test was used to collect data about student learning achievement. Interviews were held to determine the state of the learning process and the needs for developing a learning e-module.

Technique of Data Analysis

Research Instrument Testing

The research instrument testing was conducted on 12 students (a small-scale trial). The instrument testing included the validity and reliability tests. The instruments tested are a questionnaire for independent learning, and a test for learning achievement. The validity test for the questionnaire is the product moment test (Pearson Correlation) with five score variations (Arikunto, 2001). Based on the results of the validity testing, it is known that 23 items of learning independence have a calculated r-value greater than r-table, at the significance level of lower than 0.05. These results indicate that all items in the learning independence variable instrument are valid. While the reliability test used for the learning independence questionnaire is the Cronbach's Alpha test. Based on the results of the analysis, the alpha coefficient value is 0.941. This value is greater than 0.700 (Hair et al., 2014). This indicates that the learning independence questionnaire is reliable, so it can be used for data collection in the research.

The validation of the test was carried out using biserial correlation (Arikunto, 2001) because there were two variations in the scores used in the instrument, namely the score of one (1) for the students who answered correctly, and the score of zero (0) for the students who answered incorrectly. The value of r-table for 12 data with an error rate of 5% is 0.575 and it is greater than r-table. This shows that all items in the learning achievement test are valid. While the instrument reliability testing of the instrument used for the test is the KR-20 test (Arikunto, 2001). Based on the calculation results, it is known that the coefficient value of KR-20 is 0.971. This value is high and greater than 0.700. This indicates that the instrument for assessing learning achievement is reliable and can be used for collecting the research data.

Quantitative Descriptive Analysis

The description analysis was conducted to describe the data obtained using the questionnaires and tests. The feasibility of the developed e-module can be categorized as can be seen in Table 2 (Widoyoko, 2012).

Table 2. Category of E-Module Media Validation

Score Range	Category
3.01 – 5.00	Feasible
1.00 – 3.00	Not feasible

The learning independence data obtained were calculated for the average score, and grouped into five categories as can be seen in Table 3 (Widoyoko, 2012).

Table 3. Categories of Learning Independence Average Score

Score Range	Category
1.00 – 1.80	Very Poor
1.81 – 2.60	Poor
2.61 – 3.40	Sufficient
3.41 – 4.20	Good
4.21 – 5.00	Excellent

The test in this study was used to collect the data about student learning achievement. The scores obtained were calculated using the Formula 1 (Arikunto, 2001).

$$V = \frac{\text{Score obtained}}{\text{Maximum Score}} \times 100 \tag{1}$$

Based on the scores obtained, students are said to achieve the mastery if the scores obtained are able to reach or exceed the minimum mastery criterion (MMC). Furthermore, based on the values obtained, the students' mastery scores can be calculated classically.

$$P = \frac{\Sigma ni}{\Sigma n} \ x \ 100\%$$

Notes:

P : Classical learning mastery
Σni : Total number of students achieving individual mastery (score $\geq$ 80)
Σn : Total number of students

The assessment of the quality of learning achievement was done by conforming to the percentage of classical mastery. Students are declared to have achieved classical mastery if a minimum of 85% of the students get a score of 80 or are able to achieve the MMC score (Abdullah, 2017).

Effectiveness Testing

The t-test was used to test the effectiveness of the developed media in increasing student learning independence and learning achievement. If the results of the normality test showed that the data were normally distributed, and the results of the homogeneity test showed that the data were homogeneous, then the tests used were paired t-test and independent t-test. However, if the results of the normality test used showed that the data were not normally distributed and the results of the homogeneity test showed that the data were not homogeneous, then the tests used were the Wilcoxon test and Mann Whitney (Sekaran & Bougie, 2016).

RESULT AND DISCUSSION

The product developed in this research is an Internet-based learning media. The product development was carried out through several stages of product development such as: 1.) Collecting the data and information related to product development; 2.) Product trial; and 3.) Effectiveness test.

Collecting the Data and Information Related to Product Development

Prior to product development, several analyses were carried out to find out the problems faced and the purpose of developing learning products. The analyses carried out included field studies, needs analysis, objective analysis, and capability analysis.

Planning

The planning stage of the e-module development was carried out by determining the preparation and content of the materials to be used in the e-module, starting from determining the indicators of achievement of basic competencies, formulating the objectives of the preparation of the e-module, and arranging the sequence of learning activities carried out using the e-module. In addition, it was also necessary to collect various sources related to the materials for making bustier to determine the distribution of learning activities. Then the researcher determined several experts who knew about the development of learning resources and experts who understood the materials of custom made clothing, especially in the manufacture of bustier. The researcher also determined the size of the sample used in the e-module small scale and large scale trials as well as operational testing or effectiveness testing. The testing was carried out to determine the parts that needed improvement.

Edmodo-Based Product Development

At the first stage, the researcher compiled the e-module according to the plan. The e-module contained the materials for custom made clothing, especially the Hosanna Moda system bustier. However, preceding the learning materials, the initial pages of the e-module contain the introduction cover page, preface, map of the position of the e-module, table of contents, and glossary. The introduction aims to provide the identity of the e-module, to mention the usefulness of the e-module, and to make it easier for students to understand the contents of the e-module.

The main part of the e-module contains four chapters and a bibliography, which is briefly described as follows.

Chapter I: contains basic competencies and indicators of competency achievement, a brief description of the learning materials, learning time, requirements for participating in learning, and instructions for using the e-module.

Chapter II: contains the objectives of learning activities, material descriptions, material summaries, assignments, skill worksheets, exercises, and self-assessments.

Chapter III: contains evaluation activities after learning is carried out, in the form of knowledge competency tests, skill competency tests, attitude assessments, products/workpieces, and scoring guidelines.

Chapter IV: contains conclusions from all the contents of the e-module

Bibliography: contains the sources used by researchers in compiling the e-module.

After the e-module was compiled, the second stage was to develop the e-module into the Edmodo application. The e-module was uploaded via Edmodo in Pdf format. Assignments, skill worksheets, and exercises were tailored to the learning activities that would be carried out through Edmodo. Meanwhile, polls were also included at the end of each learning activity.

Product Validity Testing

The validation in this study was carried out by experts whose fields are in line with the module. They are a material expert, linguist, and media expert. The material expert is a lecturer of clothing engineering education, Faculty of Engineering, UNY, who is an expert in the field of custom made clothing. The media expert is a lecturer who is an expert in the module field. And the linguist is a lecturer who is very good at grammar. The validation by these experts was carried out in order to get a valid and quality product so that the e-module is suitable for use in learning activities. The result of the validation in this study is presented in Table 4.

Table 4. Result of Validation by Material Expert

No.	Indicator	Average	Category
1.	Content and Objectives	5.00	Feasible
2.	Instruction	4.88	Feasible
	Average	4.93	Feasible

The result of the linguist validation test is presented in Table 5. The result of the validation by the media expert is presented in Table 6.

Table 5. Result of Validation by Linguist

No.	Indicator	Average
1.	The language rules used are good	4
2.	The terms used are in accordance with the concept of material	5
3.	The terms used are consistent	5
4.	The language used is easy to understand	4
5.	The language used is communicative	4
6.	The choice of words is appropriate in analysing the materials	5
7.	The sentences constructed represents the materials to be presented	5
8.	The spelling used is appropriate	5
9.	The symbols used are consistent	5
	Average	4.67
	Category	Feasible

Based on the results of the validation of the three validators, it is known that the developed e-module is attractive and easy to use by students in learning. In addition, the e-module has also been declared feasible, so it can be tried out in the field.

Table 6. Result of Validation by Linguist

No.	Indikator	Average	Kategori
1.	Content and objectives	5.00	Feasible
2.	Instruction	4.43	Feasible
3.	Technique	4.29	Feasible
	Average	4.44	Feasible

Product Trial

Small-Scale Trial

The result of small-scale trials based on the assessment by 12 students shows that the average score obtained is 4.20, which is in the good category. The majority of the students considered that the material presented was in accordance with the topic they were studying. In addition, the material had also been arranged systematically, the type of font used was also easy to read, and the images used were also very clear so that students could easily understand it, and it was considered to have a positive impact on students' learning. The material presented was also considered adequate and presented in an attractive manner, and used large enough letters with good color choices, so that it could motivate students to learn. The grammar used was also good so it was easy for students to understand.

The result of small-scale trials based on the assessment by three teachers shows that the average score obtained is 4.92, which is in the very good category. The teacher judged that the material presented was adequate. It was arranged according to competency standards and basic competencies in bustier making, presented in an interesting and systematic way, so that it was easy for students to understand and it could motivate students to learn better. The e-module was also considered to have very good interaction quality and it contained very good test and assessment tools, so that the e-module could have a positive impact on students. In addition, the e-module also made it easy for teachers to deliver learning materials because the images presented were very good and had very good program management quality and were easy to use. When viewed from the technical point of view, the e-module was presented with the right typeface, right font size, very good grammar, and choice of colors, so it was considered to be able to assist teachers in delivering the learning materials better.

Large Scale Try out

Based on the results of large-scale trials from the 24 students' responses, it is known that the average score obtained is 4.48, which is in the very good category. The majority of the students considered that the learning material was in accordance with the theme of their learning material. The material was also presented in a concise, interesting, and systematic manner so that it was easy to understand and could have a positive impact such as increasing student learning motivation. The presentation of the material was also carried out using easy-to-read letters with fairly large font size, using easy-to-understand grammar and excellent color choices. The material was also illustrated with clear and appropriate pictures showing the process of making bustier so that students could learn it more easily.

Based on the results of the assessment by three teachers, it is known that the average score obtained is 4.98, which is in a very good category. This shows that the e-module has been prepared very well and can be used to assist teachers in delivering learning materials, in terms of the material presented, grammar, use of letters and colors, and the selection of appropriate and clear images. In addition, the management of the e-module program is also very good.

Based on this assessment, suggestions were also obtained. The first teacher gave suggestions to further complement the other bustier examples, so that students could get a view of the various bustier shapes and colors that they could make by learning through the e-module. Meanwhile, the second and third teachers gave their judgement that the e-module was good, had been improved according to the suggestions given, and could be used as learning media. Based on the suggestions given, the researcher then made improvements to the e-module. After repairs were made, an operational test was administered to determine the e-module effectiveness in learning.

Operational Try out

The result of the assessment by 36 students shows that the average score obtained is 4.59, which is in a very good category. The e-module is equipped not only with subject matter that is presented in an attractive manner, but also with images that match the material. This shows that all students considered that the developed e-module was very good because it was easy to read, easy to understand, and interesting and it could increase their learning motivation. The results of the assessment by three teachers show that the average score obtained is 5.00, which is in a very good category. The score obtained shows that the e-module has been prepared very well, in terms of the materials, the way of writing, the language used, and the use of pictures to help students understand the process of making bustier referred to in the e-module. In addition, the e-module is also equipped with test and evaluation tools which are considered to be able to measure and assess students' knowledge and skills after participating in learning using the e-module. Thus, it can be concluded that the developed e-module is good.

Effectiveness Test

The effectiveness testing in this study began with the statistical descriptive analysis to describe the data on learning achievement and learning independence. The result of the pretest of student knowledge shows that the number of students who score 80 or above 80 in the control group is six students (16.67%), while 30 students (83.33%) have not yet achieved minimal mastery criterion. In the experimental group, the students who have achieved mastery level are nine students (25.00%), while the 27 students (75.00%) have not achieved mastery level. The score in the knowledge competence in the pretest is shown in the graph as shown in Figure 2.
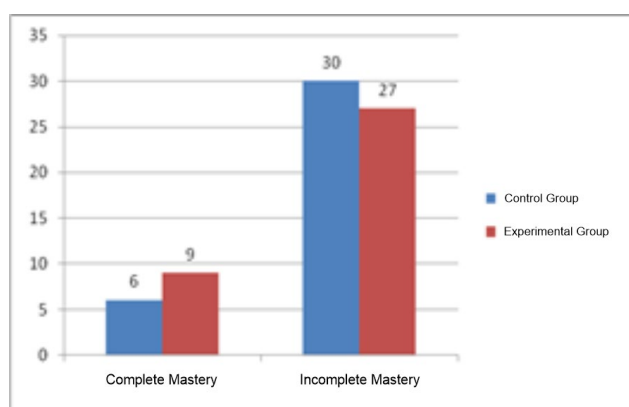

Figure 2. Mastery of Knowledge Competence in Pretest of the Control and Experimental Groups

The posttest result shows that 28 students in the control group (77.78%) have achieved the mastery level, while eight students (22.22%) have not. In the experimental group, 32 students (88.89%) have achieved the mastery level, while four students (11.11%) have not. The students' posttest scores in the knowledge competence are depicted in Figure 3.

Based on the mean score obtained, it is known that in the pretest, the mean score of the control group is 68.889 and that of the experimental group is 69.861, which shows that they are not very different. However, in the posttest, the average score obtained by the experimental group is 87.847, which is much higher than the control group average score, which is 82.222. The average scores are presented in the form of a bar graph in Figure 4.
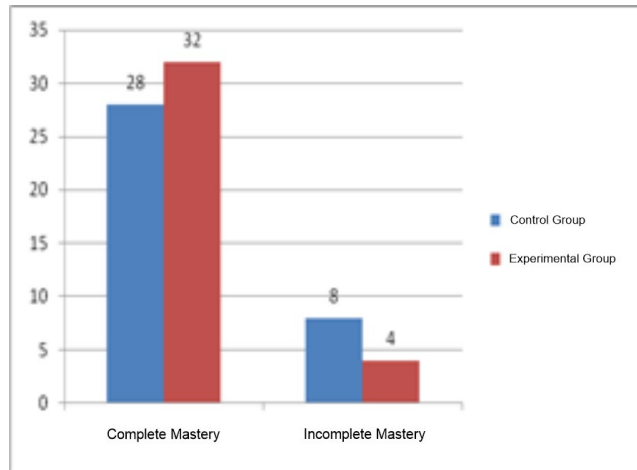
Figure 3. Mastery of Knowledge Competence in Posttest of the Control and Experimental Groups
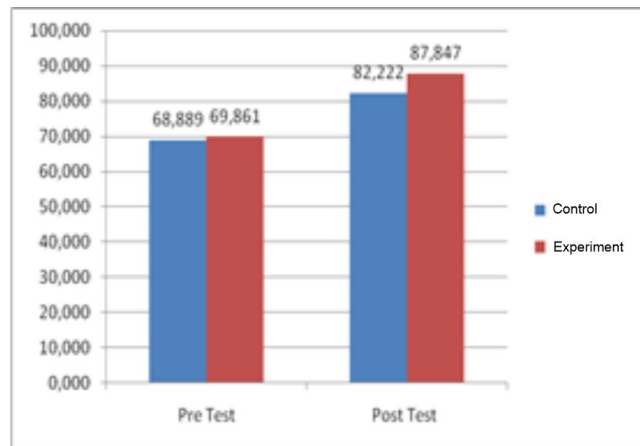

Figure 4. Average Score in the Pretest and Posttest of Knowledge Competence of the Control and Experimental Groups

Based on the mastery of the skills obtained, it is known that only 10 students (27.78%) in the control group have achieved the mastery level, while 26 students (72.22%) have not. On the other hand, in the experimental group, the majority of students or as many as 34 students (94.44%) have achieved the mastery level, while two students (5.56%) have not. The statistic of the mastery level of the students in the control and experimental groups is presented in Figure 5.
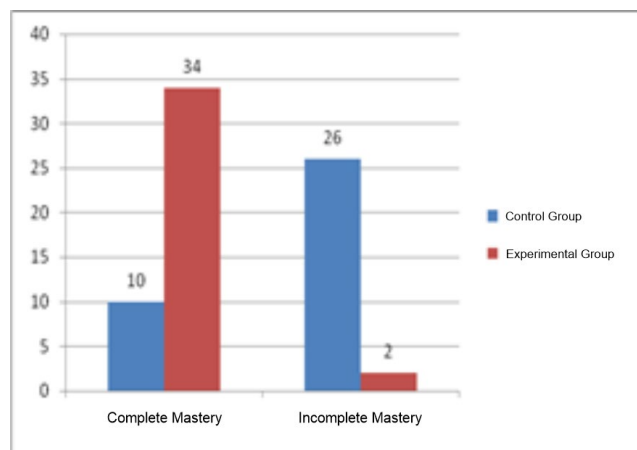

Figure 5. Practicum Mastery Score of the Control and Experimental Groups

Apart from the number of students who have achieved the mastery level, the differences in the ability to make bustier of the students in the control and experimental groups can be seen from the average score obtained. Based on the results of the practice of making bustier, it is known that the classical average score in the control group is 75.382, which is lower than the experimental group average score of 89.630. This shows that classically the students' average score of the ability to make bustier after they learned activities is much higher when they used the e-module. The average score is presented in the form of a bar graph in Figure 6.
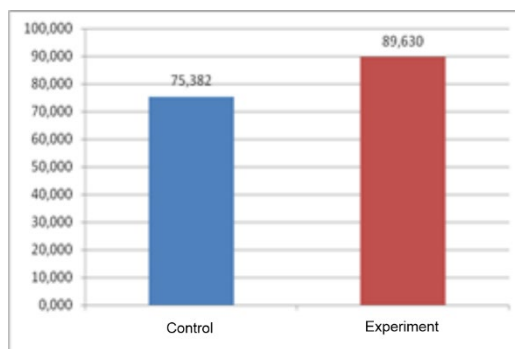

Figure 6. Practicum Average Score of the Control and Experimental Groups

The result of the attitude competency test in the control group, after learning activities, shows that 21 students (58.33%) have achieved the mastery level, while 15 students (41.67%) have not. In the experimental group, which used the e-module in learning, more students have achieved the mastery level, namely 28 students (77.78%), while eight students or 22.22% have not achieved the mastery level. These results are shown in the form of a bar graph in Figure 7.
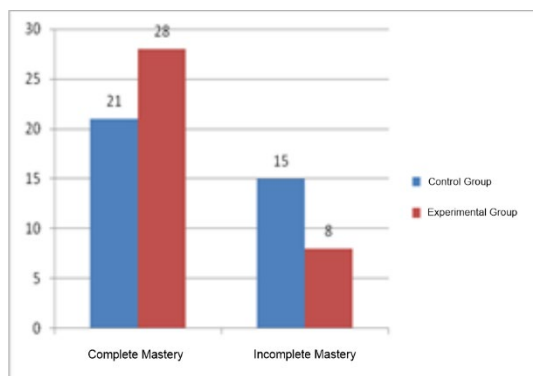

Figure 7. Mastery of Attitude Competence of the Control and Experimental Groups

In addition, the comparison of the control group and the experimental group in terms of attitude competence can also be seen from the average scores obtained classically. The average score obtained by students in the control group is 78.889. This score is lower than that obtained by the students in the experimental group, which is 84.653. This shows that the average score in the attitude competence of the students in the experimental group is higher than the average score of the students in the control group. The comparison of the average score in the attitude competence of students in the control and experimental groups can be seen in Figure 8.

The result of the pretest of student learning independence show that in the control group the majority of the students (31 students or 86.11%) have learning independence in the good category. Furthermore, four students (11.11%) have excellent learning independence and one student (2.78%) is with fairly good learning independence. In the experimental group, the majority of students (27 students or 75.00%) also have initial learning independence in the good category. Furthermore, seven students (19.44%) have very good learning independence and two students (5.56%) have fairly good

learning independence. The result of the student learning independence pretest is presented in the form of a bar graph in Figure 9.
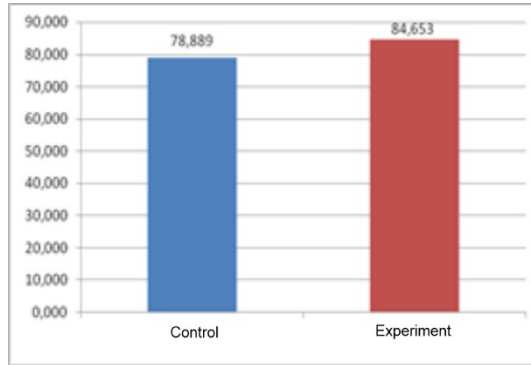

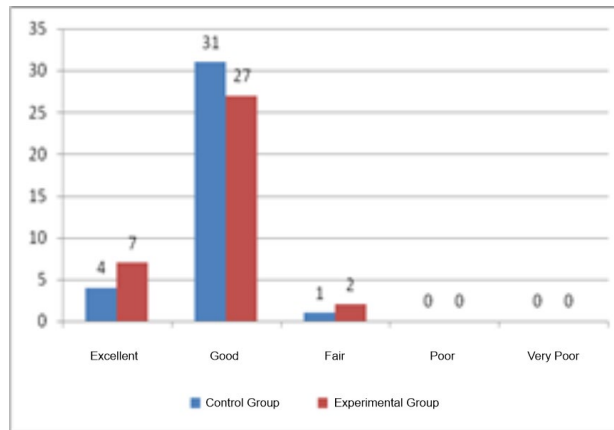Figure 8. Average Score in Attitude Competence of the Control and Experimental Groups

Figure 9. Pretest of Learning Independence of the Control and Experimental Groups

The posttest scores that have been obtained show that the students in the control group experienced an increase in learning independence. The number of the students who have learning independence in the good category decreases to 24 students (66.67%), while the number of those with very good learning independence increases to 12 students (33.33%). In the experimental group, there is an increase in the number of the students with excellent learning independence to 35 students (97.22%), while one student has learning independence in the good category. The result of the posttest of learning independence of the students in the control and experimental groups is presented in Figure 10.
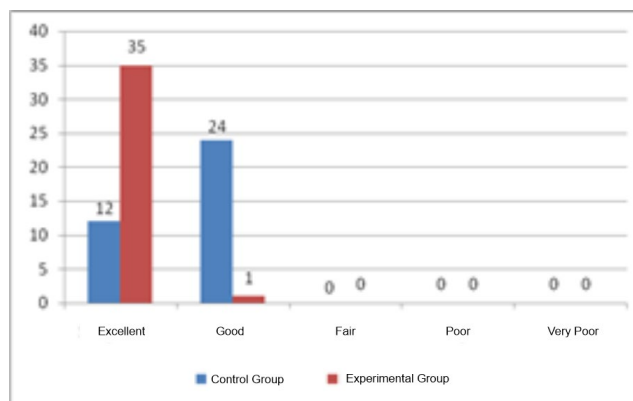

Figure 10. Posttest of Learning Independence of the Control and Experimental Groups

Based on the average score obtained, it is known that the average score of the control group in the pretest is 3.850 and that of the experimental group is 3.891. The two scores are not much different. The average score of the experimental group is 4.684. It is much higher than the average score of the control group, which is 4.107. The average scores can be seen in Figure 11.
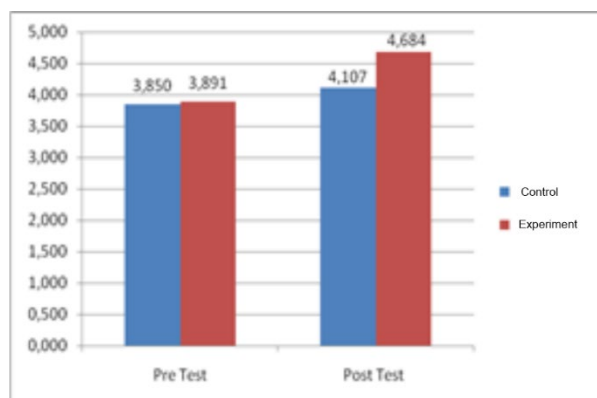

Figure 11. Average Score of Learning Independence Pretest and Posttest of the Control and Experimental Groups

The e-module effectiveness testing was carried out with a non-parametric test, thus using the Wilcoxon test. The results of the Wilcoxon test for the learning achievement of the control and experimental groups are presented in Table 7 and Table 8.

Table 7. Result of Wilcoxon Test of Learning Achievement of Control Group

	Average	Z-Score	Significance
Pretest	68.889	-5.243	0.000
Posttest	82.222		

Table 8. Result of Wilcoxon Test on Learning Achievement of the Experimental Group

	Average	Z-score	Significance
Pretest	69.861	-5.240	0.000
Posttest	87.847		

Based on the result of the t-test that has been carried out in the control group, it is known that the significance level is 0.000 (< 0.05), meaning that the average scores in the pretest and posttest of learning to make bustier in this study are significantly different. This shows that the learning activities carried out by the teacher by conveying the material directly to the students in the control group can improve students' knowledge related to making bustier. Based on the result of the t-test that has been carried out in the experimental group, it is known that the significance level is 0.000 (<0.05), meaning that the average pretest and posttest scores in bustier-making learning achievement in this study are significantly different. This shows that the learning activities carried out using the e-module in the experimental group can improve students' knowledge regarding bustier making.

In addition, the posttest of learning achievement was also tested to determine whether the use of the e-module in teaching the experimental group was more effective than ordinary teaching in the control group. This testing was carried out using the Mann-Whitney test. The teaching was said to be effective if the significance value obtained is < 0.05. The test result are briefly presented in Table 9.

Table 9. Result of Mann-Whitney Posttest of Student Learning Achievement

	Average	Mann-Whitney U	Sig
Control group	82.222	342.000	0.001
Experimental group	87.847		

The effectiveness test for independent learning in this study was carried out using a parametric test, thus using a paired t-test. The result of the paired t-test analysis for learning independence is presented in Table 10 and Table 11.

Table 10. Result of Paired t-test on Learning Independence of the Control Group

	Average	t-count	Sig
Pretest	3.851	7,727	0.000
Posttest	4.107		

Table 11. Result of Paired t-test of Learning Independence of the Experimental Group

	Average	t-count	Sig
Pretest	3.892	14.439	0.000
Posttest	4.684		

Based on the result of the analysis that has been carried out in the control group, it is known that the significance value obtained is 0.000 (<0.05), which means that the difference in the average scores in the pretest and posttest of student learning independence is significant. This shows that learning activities carried out by delivering materials directly to the control group can increase student learning independence.

Based on the result of the analysis that has been carried out in the experimental group, it is known that the significance value obtained is 0.000 (<0.05), meaning that the difference in the average pretest and posttest scores of learning independence is significant. This shows that the learning activities carried out using the e-module in the experimental group can improve students' knowledge regarding bustier making.

In addition, testing was also conducted on the posttest of learning independence in the control and experimental groups to reveal whether or not teaching by using the e-module was more effective than ordinary teaching. Based on the normality test, it is known that the posttest scores obtained are normally distributed and homogeneous, so the test is carried out using the independent t-test. The test result is presented in Table 12.

Table 12. Result of Independent T-Test Posttest on Learning Independence of the Control and Experimental Groups

	Average	t-count	Sig
Control group	4.107	11.026	0.000
Experimental group	4.684		

Based on the result of the analysis, it is known that the significance value obtained is 0.000 (<0.05), meaning that the average score of learning independence of the control group is significantly different from that of the experimental group. This shows that the e-module used in the teaching of the experimental group is effective in increasing students' learning independence compared to ordinary learning activities carried out in the control group.

Final Product Review

The e-module for making the Hosanna Moda system bustier was developed based on the needs of students and teachers, and it was declared feasible by experts and thus it was declared feasible in small and large scale trials, and then the effectiveness testing was carried out. The effectiveness testing was conducted to obtain empirical evidence that the developed Edmodo-based e-module was suitable for use in learning and it also showed its effectiveness in increasing student learning independence and learning achievement in the Hosanna Moda system bustier making materials.

The Effectiveness of Edmodo-Based E-Module for Making Hosanna Moda System Bustier in an Effort to Improve Student Learning Independence

Learning independence refers to students who try to carry out learning activities on their own consciousness. They will try to understand the material being studied based on their abilities, and they can also ask other students or the teacher for the explanation of the things that they do not understand in independent study. The independence of students in learning can take place well if it is supported by the right sources and learning media. This study develops an Edmodo-based e-module for the construction of the Hosanna Moda system bustier.

Edmodo is one type of information technology in the form of a website and it can be used by students, teachers, and guardians of students (Nasrullah et al., 2017). Edmodo can be accessed anytime and anywhere as long as there is a device that is connected to the Internet. Teachers can upload learning materials, practice questions, and assignments through the application. The students can download it and work it out according to instructions, even their learning results can also be known through Edmodo, and student guardians can monitor the student learning process and learning achievement directly through the application.

In addition, the developed e-module contains not only learning materials, but also instructions for using it, such as an explanation of the steps for using the e-module and equipment that needs to be provided and prepared in order to be able to take part in learning activities. Students can ask the teacher through the message feature provided in Edmodo or face to face regarding the material that is not yet clear. They can do the assignments and exercises provided in each learning activity. They are also asked to prepare the tools and materials that are used to practice making bustier.

The instructions for using the e-module are important to be included and explained in the e-module, which are intended to train students' independent learning, so that they can also study on their own at home properly according to the specified flow of learning activities. Although the developed e-module is intended to train students' independence in learning, the students can still ask the teacher online or directly when learning is in the classroom if there are things that are not understood.

The Edmodo-based e-module that was developed was then tested for its effectiveness in improving student learning independence. The testing was conducted by comparing the students who studied by using the Edmodo-based e-module with those who studied without the help of the e-module. The results of the analysis show that the learning independence of the students who studied by using the Edmodo-based e-module is higher than that of those who studied without using the e-module. The differences shown are statistically significant. This means that the effectiveness of the developed Edmodo-based e-module is proven to be able to make students' learning independence better.

The high students' learning independence is shown by their not depending on others, which means that the e-module is able to help students understand the material more easily without the need for detailed explanations from the teacher. Students can also make patterns to sew bustier to completion without asking the teacher much and they can work together with their friends. It also shows that students have high confidence in their own work, either following the bustier example given, or creating their own bustier model in accordance with the teacher's instruction.

Students' increasing learning independence proves that the developed e-module can provide functions and benefits as expected. The material is described in detail, starting from the definition of bustier, the steps for making patterns, and sewing bustier until it is ready to use, and it is illustrated with relevant pictures to help students learn independently each stage that must be passed in order to produce bustiers. Students can also ask Edmodo or the teacher directly during learning activities in the classroom the material that has not been understood.

The results of this study are in line with the research conducted by Sujadi et al. (2017) and Purnawarman et al. (2016). Both studies also used Edmodo media in learning activities. The results of both studies also stated that Edmodo was able to facilitate students to learn better. This is in line with the results of this study that the Edmodo-based e-module can be used by students well. Students can study independently at home with the help of Edmodo, which can be accessed anytime and

anywhere, so that student learning activities for bustier making materials take longer and students also have a longer time to understand the process of making bustiers and to practice making bustiers with better results

The Effectiveness of the Edmodo-Based E-Module for Making Hosana Moda System Bustier to Improve Learning Achievement

The students who have participated in learning activities will have knowledge, understanding, and skills that tend to be better than before. This can be shown by their learning achievement. Learning achievement is the ability obtained by students after participating in learning activities, which can provide changes in behavior, both knowledge, understanding, attitudes and skills of students, so that they will be better than before. Learning achievement can be obtained by students by taking the tests or questions from the teacher, that measure their abilities, from cognitive, affective, and psychomotor aspects.

The teaching-learning activities in this study applied the use of Edmodo-based e-module on the topic of Hosanna Moda system bustier making materials. Students were asked to download the e-module materials for making the Hosanna Moda system bustier through their respective Edmodo accounts, which then they studied independently at home. In this way, the student learning time is longer when compared to having to study in the classroom, where time for learning activities is limited. This is expected to give additional learning time to students I order to understand the material for making bustier better. Therefore, the development of Edmodo-based e-module in this study is also aimed at improving student learning achievement.

The Edmodo-based e-module was then tested for its effectiveness on student learning achievement. The result of the effectiveness testing shows that the developed e-module is proven to be able to improve student learning achievement in the material for making bustier. This is indicated by an increase in the number of students who achieved mastery criterion after they learned by using the e-module. Although there are still four students who have not achieved the mastery criterion, this number is still lower than that of the students learning not by using the e-module, which is as many as eight students.

The result of this study also shows that the average score of learning achievement of the students who used the e-module is higher than that of those who did not use the e-module. This proves that the developed e-module is able to assist students in strengthening their understanding of bustier making with various materials that are presented in a complete and easy to understand manner.

The students' understanding also has an impact on the form of bustier that is produced according to their expectations. This shows that the students' psychomotor competence or skills in making bustier with the Hosanna Moda system also increased after they studied the materials through the developed Edmodo-based e-module. The students also show that they have better affective competence, meaning that they can learn independently by utilizing the e-module, not making noise during learning activities in class, actively participating in group activities, doing every task given by the teacher, and showing confidence during class activities, such as not copying a friend's work, daring to ask questions, and expressing their opinions in front of the class.

The result also shows that there are still some students who have not achieved mastery criterion in cognitive, affective, and psychomotor aspects. This is because they did not fully understand the material for making the Hosanna Moda system bustier through independent learning with the e-module. This then became a point to consider for the remedial action on the incompletely mastered material. In addition, it is also necessary to question whether or not the Internet network access is a constraint for students in achieving the mastery criterion.

The students who do not have a good understanding means that there are still learning materials that have not been understood, and they do not ask the teacher about them to get the needed explanation. This shows that there are still students who need direct guidance and explanation regarding the materials for making bustier, which means that they have not been able to do independent learning optimally. The students have not been able to produce bustier patterns or designs according to the examples, and cannot help their classmates who are also having difficulties. The difficulties experienced by students in making patterns and in sewing bustier made it take longer

for them so that it had an impact on late submission of assignments. Based on these shortcomings, the teacher explained again in the classroom learning activities about things that had not been understood by the students so that they could have a better understanding.

Nevertheless, the result of this study indicates that the Edmodo-based e-module shows its effectiveness in improving student learning achievement, and this in line with the finding of the research conducted by Suyoso and Nurohman (2014) which showed that the developed e-module was able to improve student achievement. E-module is considered capable of helping students to better understand the learning materials, because students not only learn at school, but also repeat the lessons at their respective homes.

In addition, the result of this study is also in line with the finding of the research conducted by Al-Said (2015) and Magreñán et al. (2015) both of whom used Edmodo as a medium to upload their developed e-module. The study found that Edmodo was effective in improving communication in teaching-learning activities, which in this study was also used so that students could freely ask the teacher if there was something that was not understood. The two studies also state that students' academic results can be improved by using Edmodo in the learning process, which means that the use of appropriate teaching media can improve students' academic achievement.

CONCLUSION

The conclusions of this study are as follows: 1.) The e-module that has been successfully developed contains learning materials on the making of Hosanna Moda system bustier, starting from design analysis, pattern making procedures, and detailed steps for sewing the Hosanna Moda system bustier illustrated by relevant pictures to make it easier for students to understand it when they study independently. Teachers also need an e-module that is cost efficient but still effective, which every student can have so that they can study independently wherever and whenever; 2.) The developed e-module has been declared feasible by three validators, namely material expert, media expert, and linguist, after three feasibility tests were carried out. In the follow-up test, the result of the operational test analysis, for teacher responses, shows that the average score obtained is 5.00 (very good category) which means it is feasible to use, while the student responses show that the average score obtained is 4.59 (very good category) so that the e-module is in the appropriate category and can be used in teaching-learning activities; and 3.) The e-module effectiveness testing conducted on students' learning independence shows that the average score of learning independence of the experimental group was higher than that of the control group, at the significance level of 0.000 (< 0.050). While the e-module effectiveness testing conducted on student learning achievement shows that the posttest average score of the experimental group is much higher than that of the control group, at the significance level of 0.001 (< 0.050). This shows that the Edmodo-based e-module for making the Hosanna Moda system bustier is effective in increasing student learning independence and learning achievement..

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