Effectiveness of Using Hypercontent Based E-Module to Improve College Students' Critical Thinking Skills

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Abstract: - This study aims to determine the effectiveness of using hypercontent based e-module to improve college students' critical thinking skills on curriculum and learning subjects. The method used in this study is a quasi-experimental design with a pretest-posttest control design. The findings of this study show that: 1) E-module can be stated as good quality, but it needs to be developed more, 2) having learnt by using hypercontent based E-Module, college students' critical thinking skill is effective, 3) the responses of college students toward hypercontent based E-Module development can be accepted well and positively by them. The conclusion of hyperconternt based E-Module effectively improves college students' critical thinking skills.

1. Introduction

The rapid development of science and technology currently has an impact on education. Learning motivation is required to create college students who can compete. One of the ways is by having critical thinking skills in college students. The development of instructional media designs students involved in the learning process, namely building and discovering the concepts of the material taught to have thoughts, problem-solving and communication skills. Currently, curriculum and learning subject does not use innovative learning media, either textbooks or modules. Interactive E-Module is a learning material that consists of material, methods, limits, and ways of evaluating designed systematically and attractively to achieve the subject's competencies that have been set by the rate of complexity [1]. This can be conducted by improving critical thinking skills by applying the E-Module with the Hypercontent approach. Critical thinking, such as the concept of education, has been defined by writers and researchers [2, 3]. Further study is developing E-Modules oriented on problem-solving to improve college students' critical thinking skills. The E-Module can help college students learn independently to find concepts from the material [4].

The module can be used as a medium in learning designed to help college students ease the material understanding process to master learning objectives. An electronic module called an E-Module, is a form of printed module innovation that utilizes technology that

college students can use to learn independently. E-Module is one of the teaching materials entirely and systematically. It contains a set of planned learning experiences and is designed to help college students master the learning objectives specifically [5, 6]. In addition, an electronic module or e-module is information collected in the form of a book structure that is presented electronically by using a hard disk, diskette, CD, or Flash disk and can be read by using a computer or other electric book systems [7].

In line with this, the e-module is designed in the form of electronic learning media [8]. Learning media is everything that can be used Learning media can be used to deliver messages (teaching materials) to stimulate interest, thought, and college students' sense of learning activity to achieve learning objectives. This is why e-module becomes an alternative to learning. Module and e-module contain the same learning material that has been designed for the need of college students' competencies. Explained by the interactive e-module, it is a teaching material that consists of material, method, limits, and ways of evaluating designed systematically and attractively to achieve the subject's competencies that have been set by the rate of complexity [1]. According to the previous explanation, it can be seen that an e-module in its use requires computer components. E-Module is a form of a module that is more practical, interactive and innovative.

Hypercontent approach or commonly called as Hypercontent design instruction is a concept connected to material to other materials in a certain technology system. Hypercontent design This type of concepts comprises upon text and multimedia elements like audio, video, pictures and graphics [9]. According to this idea can be seen that Hypercontent combines multimedia concept such as audio, video, picture and graphic.

Module with Hypercontent approach contains of various contents that related one another and users can start freely which content will be open the first. Hypercontent-designed instruction also has units, modules, and topics. First, modules are identified and organized into units of similar content. Next, topics related to the module are identified and learning experiences are designed and produced. These topics are presented using

text, audio, graphics, pictures, and video. Finally, a module assessment activity is developed. This assessment is designed to determine if a student has successfully completed and understands the module satisfactorily. If so, the student moves to the next module in the sequence of modules [10]. In line with above notion, topics of hypercontent designs can be studied randomly and in a non-sequential way. They state additionally that students within their framework and had a control over the studied topics and they can do this without the direct control of instructor. This type of concepts comprises upon text and multimedia elements like audio, video, pictures and graphics [11].

The contents that presented with Hypercontent approach including several things: The hyper content will be inserted in SLM in two formats; short link (short URL) and QR Code. Therefore, during this third session, instructor also taught about how to create a short link (short URL) and QR Code using free QR Code generator. Hypercontent can be presented by using website link (short URL) and using QR Code [12].

In facing competition in this era college students must have critical thinking skill. This definition leads to the conclusion that critical thinking is the practice of processing this information in the most skillful, accurate, and rigorous manner possible, in a way that it will lead to the most reliable, logical, and trustworthy conclusions, by which one can make responsible decisions about one's life, behavior and actions with full knowledge of assumptions and consequences of those decision [13]. It is accordance with an argument that says critical thinking and creative thinking have important roles in education and is a main objective of learning in which consists of four important components to improve the skill namely (a) explain and clarify; (b) ask with the right questions to clarify or challenges; (c) consider the credibility of sources; (d) problem solving and take conclusion [14].

Critical thinking can help students improve intellectual, leadership, competitive soul, creative, discipline, independent and many more as stated that understanding comes when students develop critical thinking skills which go beyond intellectual brilliance and capacity as they also embrace leadership, companianship, courage, creativity,

perseverance, discipline, freedom, honesty, maturity, integrity, autonomy, transformation, discernment, and empathy [15].

Critical thinking skill with subject matter is not executive or special rather than complementary [15]. It is commended by critical thinking idea, is an important component of professional competencies [16, 17]. In accordance with both ideas, problems that faced in human reality has different perspective in order to have critical thinking is one of the ways to solve effectively [18]. Therefore, we can see that critical thinking skill is a matter that needs to be improved in learning, there are six critical thinking rate as follows [19], a) unreflective thinking, b) challenged thinking, c) beginning thinking, d) practicing thinking, e) advanced thinking, f) accomplished thinking.

Critical thinking includes the skill of recognizing matter deeper, finding way to solve it, collecting relevant information, recognizing assumption and values attached in belief, knowledge, or conclusion. It is also delivered that critical thinking skills involve identification and analysis of informational sources for credibility, indicating previous knowledge and making connections and deducing to conclusions [20].

E-Module innovation uses a Hypercontent approach by creating electronic module that contains various contents that can be accessed users to see or obtain information complexly and completely related to subject matter in order to improve college students' critical thinking skill. The use of tools facility and information source that used properly in accordance with the context and its content. Those tools used to the following activities: first, using website such as www, http, https, and the other to display a term or scientist theories and journal as well as the lattest article in accordance with the subject matter. And then, using Hypertext with blue link and if it is clicked can access directly to the page. Next, using QR Code or barcode that can be scanned by users so that access directly to certain information provided. In addition, Hypercontent can use video channel, youtube channel to show learning video, subject matter and lattest information showed by its video.

E-Module with Hypercontent approach can improve critical thinking skill refers to the notion that says college students who want to improve critical thinking skills can use

keywords in obtaining material that connected to every subject [21, 22]. It is the same as the concept of Hypercontent that shows learning material through various contents that can be accessed by users to obtain information related to learning material.

According to above analysis, the aim of this study is to recognize the effectiveness of using Hypercontent based E-Module to improve college students' critical skill on curriculum and learning subject in economic education study program (PSPE), social science department, teacher education faculty, University of Lampung.

2. Method

The method used in this study is a quasi-experimental design with a pretest-posttest control design. To see the effectiveness of using the learning module to use the t-test, before it is tested, the prerequisite test analysis must be conducted by using the following test:

2.1. Normality Test

This test is used to determine whether the data is normally distributed or not. In this study the normality test uses SPSS 26. The testing steps are as follows.

a. Determine the hypothesis of Ho: H1 normally distributed data: data not normally distributed.

b. Significance rate (α 5% 3) Ho is rejected if sig (p) ≤ 0,05 4) concludes (a) if sig (p) > 0,05 then Ho is accepted and H1 is rejected (b) if sig (p) ≤ 0,05 so Ho is rejected and H1 is accepted.

2.2. Homogeneity Test

This test is used to determine whether the study sample has the same variance or not. If the groups have the same variance, then the group is called as homogeneous. The testing steps are as follows.

a. Determine the Ho hypothesis: the variance between groups is the same as H1: there is at least one different variant

b. Significance rate (α) 5%

c. Ho is rejected if sig (p) ≤ 0.05

d. Take conclusions a) If sig (p)> 0.05 then Ho is accepted and H1 is rejected b) If sig (p) ≤ 0.05 then Ho is rejected and H1 is accepted

2.3. Hypothesis test

If the requirement is fulfilled that the sample comes from a normal and homogeneous population then the effectiveness test will be carried out with the right-side t-test. The steps are as follows.

a. Determine the hypothesis of Ho = there is no significant difference in the average learning achievement between the control class and the experimental class of H1 = The average learning achievement of the experimental class is higher than the control class
b. Significance rate (α) 5%
c. Take conclusion a) If t arithmetic> t table, then Ho is rejected and H1 is accepted b) If t arithmetic $\leq$ t table, then Ho is accepted and H1 is rejected

3. Results and Discussion

Based on the results of the analysis of study data, the effectiveness of hypercontent-based e-module test results to improve critical thinking skills are as follows:

3.1. Media Effectiveness Test

To test the effectiveness of the e curriculum and learning module media with the hypercontent approach that has been developed is by conducting an achievement test. To do this competency test involves two classes, namely class A that uses the e-module of curriculum and learning media with a hypercontent approach that was developed (experimental class), while in class B uses power point media (control class). The questions for achievement test as many as 20 items. Data on the results of the achievement test on students can be seen that the average test score of the experimental class achievement test (the group subjected to learning media that developed) is 65.63 in the pre-test and post-test 85.71. While if seen from the control class (the group that was subjected to power point media) showed the pre-test score for the achievement test was 65.56 and the post-test score was 78.75.

Meanwhile, to prove the effectiveness of the use of curriculum and learning e-module product with a hypercontent approach that was developed to improve students' critical thinking skill, t test was conducted.

3.2. Perquisite Test

a. Normality Test

The normality test that is used is the t-test normality. This test is carried out on a variable with two or more group data. This study uses data normality test and variance uses One Sample Kolmogorov-Smirnov with significance rate 0,05. The result of normality test that carried out by using SPSS 26 program. Based on Kolmogorov-Smirnov normality test, the learning outcome shows significance rate more than α (p>0,05), so that the data has normal distribution or has normal data distribution.

3.3. Homogeneity Test

Homogeneity test is used to determine whether the population variances the same or not. This test is also the requirement of the use of t test, if population variances are not the same, so t test cannot be used as analysis tool. The result of homogeneity test that carried out by using SPSS 26 program. Homogeneity test is used to determine whether sample data derives from population that has the same variance. According to above analysis can be seen that sample has significance rate more than 0,05 (0,667 > 0,05). It can be concluded that learning outcome sample from population has the same variance (homogenous).

3.4. Hypothesis Test

The experimental design used in this study is the Matching Only pra test-posttest control group design. The use of this design is to see the results of the two groups that are compared statistically in the final condition after the treatment is given. To find out the final condition after the treatment is given (between experiment and control), the post test is given to both subject groups that are given different treatment namely learning media. Hypothesis test in this study used t test. The result of hypothesis test is analyzed by using SPSS 26 program. Based on this analysis can be seen that 0,000 < 0,05 means there is significant difference between experiment class and control class after given treatment. Because the average achievement test score of experimental class (a group given learning media that is developed) + 87,71 > the average of critical thinking skill test score of control class (a group given power point) =76,74 so can be concluded that the media developed is effective to improve college students' critical

thinking skill. The comparison of group average score that uses learning media e-module of curriculum and learning with hypercontent approach that is developed and a group that uses power point media can be seen on the following picture:
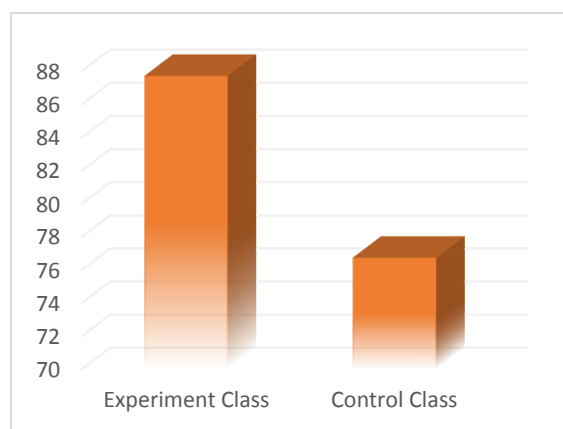

figure 1. The Comparison of Post Test Average Score Between Experimental Class and Control Class

3.5. Critical thinking skill and college students' responses

Based on the results of the questionnaire distributed to students of economic education study programs with a total number of respondents, as many as 206 with critical indicators, as many as ten indicators obtained data as follows:

Table 1. Recapitulation of Students' Critical Thinking Ability

No	Indicators	Answers number Respondent				Total Score
		STS	TS	S	SS	
1	Basic Clarification	-	12	158	36	642
2	Giving reason to a certain decision	1	13	156	36	759
3	Assessment	-	19	121	66	665
4	Interpretation	-	40	145	21	599
5	Analysis	-	12	166	28	634
6	Evaluation	-	19	119	68	667
7	Inference	-	2	71	133	749
8	Explanation	-	31	147	28	615
9	Reflecting	-	11	142	53	660
10	Criticism	-	18	149	39	639
	Study total score					6629

Source: Primary Data Processing

Based on above table 1, it can be seen that most of the respondents have critical thinking indicators. With the data, we can determine

that the critical thinking skills of PSPE students have an improvement rate (6629: 8240) x 100% = 80,449%. It means that respondents or PSPE students have critical thinking proved by achieving the indicator with an improvement rate of 80,449%.

This result is supported by an opinion that says the excellence of E-Module compared to the printed modules is interactive, easy to navigate, possible to create a video, audio, animation, and direct test can get feedback effectively [23, 24], meanwhile printed module only contains information and knowledge in the form of writing and picture merely. In addition, the developed E-Module is oriented to the problem-solving model. With the problems that must be solved independently, the output will be obtained in the form of students' critical thinking skills [23, 25, 26]. Critical thinking includes the types of thinking involved in problem-solving, formulating conclusions, calculating possibilities and making decisions that refer to the use of cognitive skills or strategies desirable [27-29].

4. Conclusion

According to the above study and its analysis, the conclusion is that the use of hypercontent based e-module can effectively improve college students' critical thinking skills. The media development is carried out through a development procedure that starts from the analysis step, design, development, implementation to learning media evaluation in the form of curriculum and learning e-module with the Hypercontent approach. This explanation proves that economic media learning by using a developed curriculum and learning e-module with Hypercontent approach shows that: 1) E-Module can be stated as good quality, but it needs to be developed more, 2) having learnt by using hypercontent based e-module media, college students' critical thinking skill is effective with score 87,71 3) the responses of college students toward the development of hypercontent based e-module can be accepted well and positively by them that proved with the achievement of the indicator with improvement rate by 80,49%.

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