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Design and Implementation of Economics Teaching Module Based on Discovery Learning, Its Effect on Students' Critical Thinking Ability

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Abstract

In 2021, the Ministry of Education, Culture, Research, and Technology of the Republic of Indonesia will begin to promote an independent curriculum. This curriculum was developed to support the recovery of learning due to the COVID-19 pandemic. On the other hand, students in the 21st century also need to be empowered with critical thinking skills. So that relevant learning tools are needed to improve students' critical thinking skills. This study aims to produce an economics learning module based on discovery learning in an independent curriculum to improve students' critical thinking skills. The method used in this research is Research and Development (R&D) using the Borg & Gall model. The instruments used in this study were expert validation sheets and critical thinking skills tests given to students in class X6 and X7 at the State Senior High School 5 Taruna Brawijaya, Kediri City. Based on the results of the validation of module experts and material experts on the products developed, the average value of 91.5% indicates that the discovery learning-based economics teaching module is very feasible to be used in the learning process. Meanwhile, based on the results of the independent sample t-test in the Equal variances section, it is assumed that the sig value is known. (2-tailed) of 0.000<0.05. So it can be said that there is a significant difference between the average student learning outcomes in the post-test experimental class and post-test control class. Based on the output descriptive statistics table, it is also known that the average score for the experimental class post-test is 89.50, while the control class post-test is 85.30. So it can be said that this product is effectively used in learning based on the results of the post-test in the experimental class which shows a higher score than the control class. Therefore, it is recommended that the class X economics teacher use this teaching module as an alternative support in the learning process.

Keywords: ***Teaching modules, Economics, Discovery Learning, Critical Thinking.***

INTRODUCTION

Education is a learning process to gain in-depth knowledge and understanding of various things, to be implemented in everyday life (Molnar, 2021). Education also means a way to build civilization (Soraya, 2020). In general, education can be pursued through various channels, namely formal, informal, and non-formal education (Bafadhol, 2017). Formal education is a structured and tiered educational path starting from basic education to higher education. In this formal education system, it contains an important component, namely a curriculum that will provide guidance and direction in carrying out the learning process (Fahmi & Bitasari, 2021).

As for what is contained in the curriculum including the objectives, content, learning materials and methods used in learning activities (Purwadhi, 2019). Therefore, the curriculum designed must be ready to anticipate the needs of students, both the needs while still learning and future needs (Julaeha, 2019). On the other hand, the curriculum implemented in the learning process must always be monitored and evaluated periodically to keep up with the times (Julaeha, 2019). As is the case with the learning curriculum which has been socialized by the Ministry of Education, Culture, Research and Technology (Kemendikbudristek) since 2021, namely the independent curriculum or formerly called the prototype curriculum. The independent curriculum is a flexible system and gives teachers the freedom to carry out

learning according to the abilities of students, as well as adapt the local context and content (Kemdikbudristek, 2022). Therefore, the learning tools used also have many changes compared to the previous curriculum. If the 2013 curriculum uses the term lesson plans as the only teaching tool, then in the 2022 curriculum, education units, especially teachers, can use teaching modules.

The teaching module in question is a number of tools or facilities, media, methods, instructions and guidelines that are designed systematically and attractively which is one type of teaching tool (KemendikbudRistek, 2021). The teaching module is an implementation of the Learning Objectives Flow which was developed from Learning Outcomes with the Pancasila Student Profile as the target (KemendikbudRistek, 2021). So the purpose of developing this teaching module is to develop teaching tools that can be used to guide educators in carrying out learning. This teaching module is very important to develop, because the success of the learning process is determined by the teaching tools used (Magdalena dkk., 2020).

Currently, the independent curriculum has begun to be applied to approximately 2,500 educational units that are members of the Mobilization School and Center for Excellence Vocational School program in 2021. The activator school is a school that focuses on developing student learning outcomes holistically, by realizing the Pancasila student profile, which includes competence and character that begins with superior human resources from school principals and teachers (Sudarmanto, 2021). This activator school can be a role model, inspiration and even a training place that can move other schools in implementing independent learning.

What is meant by independent learning is the process of guiding children, where children need to be given freedom to learn and think, but are still guided by educators so that children do not lose their way and endanger themselves (Mustaghfiroh, 2020). This spirit of freedom to learn and think, based on human decency, is what ultimately becomes the big theme of Indonesia's current education policy, namely the independent learning program. The spirit of independent learning is also strengthened by the goals of national education as stated in the Law of the Republic of Indonesia Number 20 of 2003 article 3 concerning the national education system. Wherein it states that education is held so that every individual can become a human being who believes and fears God Almighty, has noble character, is healthy, knowledgeable, capable, creative, independent, and becomes a democratic and responsible citizen. These two passions then gave rise to a consistent guideline in education in Indonesia called the Pancasila Student Profile.

Pancasila Student Profile means the embodiment of Indonesian students as students who have global competence and behave in accordance with Pancasila values (Rusnaini dkk., 2021). The elements forming the profile of Pancasila students include faith, fear of God Almighty, and noble character, global diversity, mutual cooperation, independence, critical reasoning, and creativity (Rusnaini dkk., 2021). In the learning process, critical reasoning ability or critical thinking is closely related to the activities of reasoning, problem solving, and decision making (Radulović & Stančić, 2017). The purpose of critical thinking skills, namely so that students have fluency in giving simple explanations, developing basic skills, drawing conclusions. On the other hand, critical thinking is needed to seek new ideas and discoveries to overcome complex life problems in the 21st century (Prayogi & Estetika, 2019).

The cultivation of critical thinking skills aims to produce students who are competent and skilled in solving problems in everyday life (Wahyuni & Sari, 2020), one of them is related to problem solving in the economic field which is implemented in economics subjects at school. Economics subjects are subjects that originate from economic behavior in the social life

of the community, which are selected using economic concepts used for learning purposes (Rahmatullah, 2018).

This research was conducted at the Public High School 5 Taruna Brawijaya, which is one of the leading boarding schools managed by the East Java provincial government and in collaboration with the Indonesian Army. Public High School 5 Taruna Brawijaya is an institutional capacity development of the Regular Public High School, namely Public High School 5 Kediri City. In the 2021/2022 academic year, Public High School 5 Taruna Brawijaya, East Java, were also selected as the activator school so that the curriculum used in the learning process refers to the independent curriculum.

Based on the results of interviews and initial observations at Public High School 5 Taruna Brawijaya, information was obtained that in the economics learning process, teachers only use books provided by the government. However, the book is only general in nature and the material presented is still quite shallow. So it is necessary to develop teaching modules that are in accordance with the independent curriculum and use more in-depth material, which can be used as guidelines for teachers in the learning process. In addition, based on the results of observations, information was also obtained that the problem of critical thinking skills was also experienced by students of class X Public High School 5 Taruna Brawijaya, this can be seen in the answers that were filled in by students, where students only answered by mentioning without giving reasons underlying the answer. In addition, students also only accept the concept of the lesson from what they can, without proceeding with the reasoning process, developing arguments or criticizing the concepts obtained. So it takes teaching tools that can be used by teachers as a guide to improve students' critical thinking skills.

Problems regarding critical thinking skills can be overcome if students are trained continuously to improve analytical power, develop observation skills, increase curiosity, ask questions, reflect, and read critically (Marlina, 2020). As for overcoming these problems, special guidelines are needed such as teaching modules that can direct students' critical thinking competencies. In developing this module, the researcher refers to the components of the module development in the independent curriculum. This is because the module development component in the independent curriculum is designed to support critical reasoning students, which is one of the elements of the Pancasila student profile.

In addition, increasing critical thinking skills can also be done through the application of the discovery learning model, which is a learning model that trains students to find concepts independently (Fahmi dkk., 2019). Discovery learning is a learning process by involving students to organize, develop knowledge and skills for problem solving (Ana, 2018). The reason the researcher uses this model is because the discovery learning model invites students to be more creative in exploring material with guidance and direction from the teacher so that it will train students' critical thinking patterns to understand the material being taught (Fahmi dkk., 2019).

Based on the above background, it causes researchers to feel the need to develop of Economics Teaching Module Based on Discovery Learning on the Independent Curriculum to Improve Students' Critical Thinking Skills.

RESEARCH METHODS

The method used in this research is research and development (R&D) method. The R&D method in education is the process used to develop and validate educational products. The steps of this process are usually referred to as the R&D cycle which consists of several steps, namely, (1) studying the findings of previous research related to the product to be

developed, (2) developing a product based on these findings, (3) testing the product. where the product will be used later, and (4) revise it to correct deficiencies found in the testing phase (Aricò & Lancaster, 2018). In developing this economics teaching module, the researcher used the Borg & Gall model. This model was chosen because it is considered by researchers as an appropriate development model and is easy to follow. Researchers can modify research steps according to the needs of researchers. What determines the stage in this development is the process of collecting data as study material from the economics teaching module. Data collection is the most important stage because to get accurate data from several individuals and schools concerned. The stages of developing the economics teaching module are as follows:

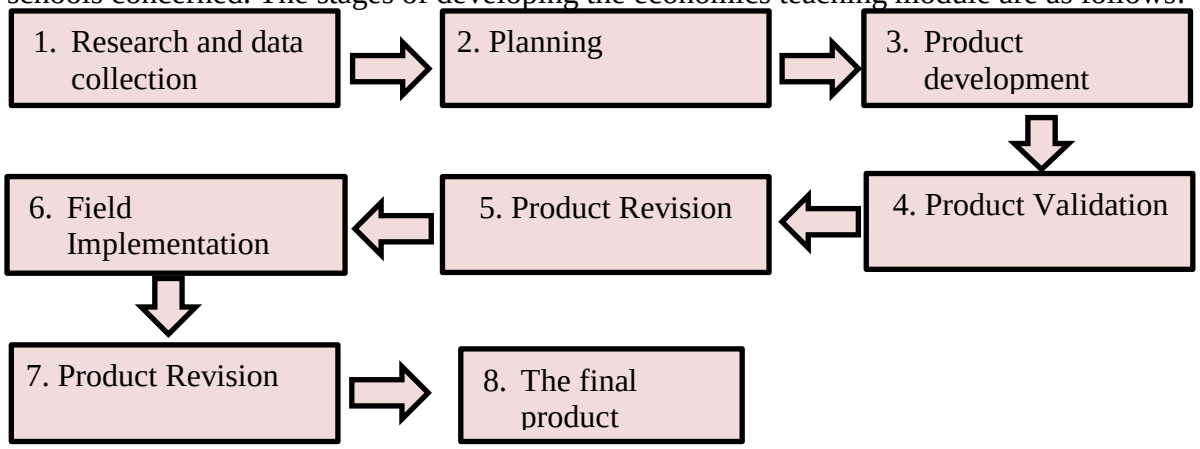

Figure 1. Stages of research and development

The product in this study was validated by module experts and material experts. The field implementation test was carried out at Public High School 5 Taruna Brawijaya, Kediri City in class X6 as the experimental class and X7 as the control class. The field test is intended to determine the difference in critical thinking skills between the experimental class and the control class. The types of data in this study are quantitative and qualitative data. Quantitative data was obtained from questionnaires by expert validators, while qualitative data was obtained from validators' criticisms and suggestions for the developed module. Data collection techniques in research and development are carried out through interviews, questionnaires, documentation and tests. While the data analysis technique was carried out through product feasibility tests and analysis of improving critical thinking skills through normality tests, homogeneity tests, and independent sample t-tests.

RESULTS AND DISCUSSION

The result of this research and development is a economics teaching module based on discovery learning on the independent curriculum. This research is related to learning outcomes about institutions, which contains material on concepts of the bank and non-bank financial industry, as well as various products produced. This teaching module contains three components in its preparation, namely, 1) general information containing module identities, initial competencies, profiles of Pancasila students, infrastructure, student targets and the learning model used; 2) the core components that contain learning objectives, meaningful understanding, questions lighters, preparation for learning, learning activities, assessment, enrichment and remedial, reflection of students and teachers; and 3) includes all student worksheets, teacher and student reading materials, glossary, bibliography.

Products that have been developed must be validated by experts before field testing. Validation is carried out to provide an assessment of whether the modules that have been

developed meet the valid criteria in terms of appearance and effectiveness. Criticisms and suggestions of module expert validators and material experts are used to improve the module before it is implemented in research in the field. The module expert validator consists of 2 validators, the first validator is Dra. Tutik Ismawati, M.Pd. and the second validator is Eva Nurdia Nusi Ferawati, S.Si. The validator is a teacher of Public High School 5 Taruna Brawijaya, the teacher was chosen because he understands the components of the preparation of teaching modules. This is supported by his various experiences in filling out workshops to other schools that will organize a independent curriculum or an independent curriculum so that they are considered capable of providing an assessment or validation of the developed teaching modules.

Material expert validation aims to test the feasibility of the material presented in the developed module. Aspects assessed include material coverage, suitability of learning outcomes, presentation components and language feasibility. The material expert validation was carried out by the Economics subject teacher of class X Public High School 5 Taruna Brawijaya, namely Mrs. Hari Reswati, S.Pd and Mrs. Cahya Wulan Prabasari, S.E., S.Pd., M.M. The results of data validation by module experts and material experts are presented in table 1 as follows:

Table 1. Overall Validation Result Data

No	Validation	Percentage	Eligibility Criteria
1.	Module Expert	90,5%	Eligible
2.	Maerial Expert	92,6%	Eligible
	Average	**91,5%**	**Eligible**

Source: Data processed by 2022 researchers

The results of the feasibility test for the economics teaching module based on discovery learning indicate that the teaching module developed by the researcher is appropriate to be used as a teacher guide in the learning process. Validity refers to aspects of the accuracy and precision of the measurement results. The measurement itself is carried out to find out how many aspects are stated by the score on the measuring instrument in question (Hendryadi, 2017). The purpose of validation is to obtain input regarding the shortcomings of the teaching modules developed, then analyzed and used to revise, so as to improve the quality of the teaching modules that will be used in research (Nardjosoeripto dkk., 2017).

Based on suggestions at the expert validation stage, improvements were made to the Economics Teaching Module. The criticisms and suggestions given by expert validators include adding agency logos on the cover, adding steps to the model section, changing the color of website links, adding teaching module components to general instructions and providing examples that are suitable for everyday life. learners. Here are some final product views of the products that have been developed.

Figure 2. Cover of Teaching Module

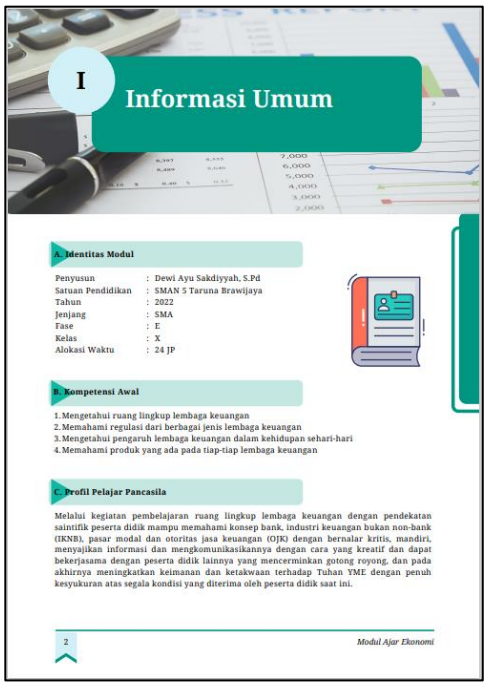

Figure 3. General Information

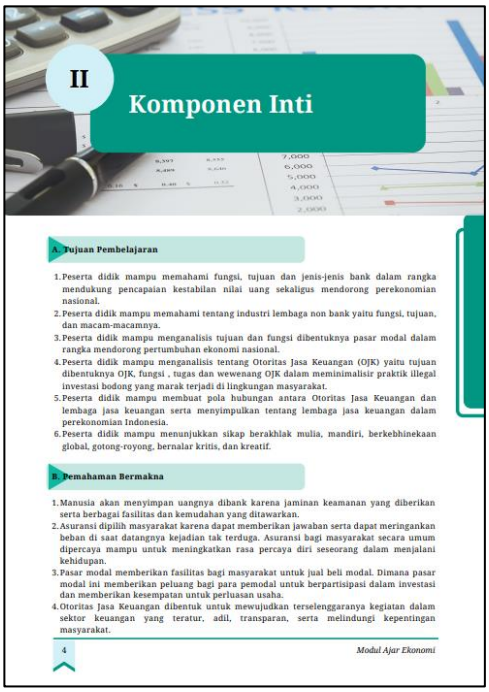

Figure 4. Core Components

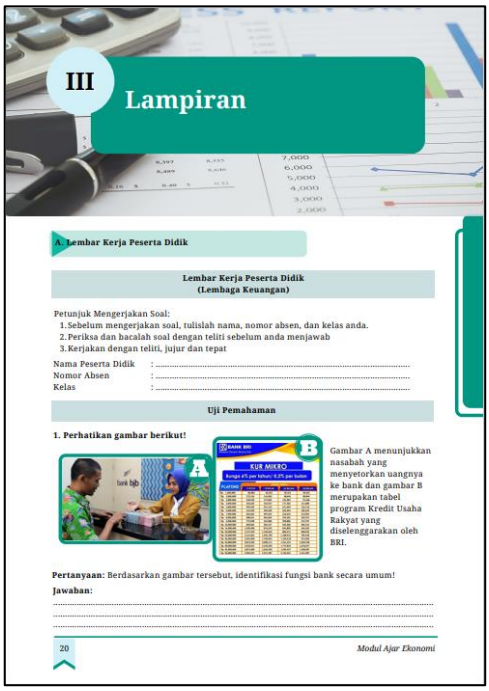

Figure 5. Attachment

The product of this research and development can be used as a guide for teachers in the learning process. This discovery learning-based economics teaching module can be accessed via the link https://bit.ly/Modul_Ajar_Ekonomi. The development of economics teaching module based on discovery learning is one of the efforts to improve students' critical thinking skills, which is one of the profile characters of Pancasila students. Critical thinking skills can be trained through the provision of literature, both in the form of books and modules containing exercises to encourage students to seek facts and knowledge, as well as support students to gain understanding, ideas, and new perspectives so as to improve critical thinking skills and student

learning outcomes (Haseli & Rezaii, 2013; Khatib & Alizadeh, 2012; Zou'bi, 2021). The development of a planned module that contains aspects of critical thinking, will encourage students to improve various abilities including: (1) analytical skills; (2) the ability to interpret; (3) the ability to conclude; (4) the ability to evaluate; (5) ability to explain; (6) self-regulation ability (Andriani & Suparman, 2019; Nugroho & Prayitno, 2017).

In supporting the improvement of students' critical thinking skills, it must also be supported by a learning model that directs students' critical thinking processes, one of which is using the discovery learning model. The discovery learning model was developed with a syntax or learning step that stimulates students to find their own material being studied (Nurlaili dkk., 2021). The application of discovery learning can make students more active and independent in learning, in contrast to conventional learning where students tend to be passive and bored when learning (Nurfadilah dkk., 2020). Discovery learning also involves students actively (student-centered learning) to investigate the problems presented (Martaida dkk., 2017). On the other hand, discovery-based learning also triggers the curiosity of students, builds social and group skills, improves debating and public speaking skills, and increases the ability to find information to get the right concept (Shofiyati dkk., 2020).

In measuring students' critical thinking skills, the researcher gave a test in the form of essay questions in the experimental class and the control class. This study used 2 classes to compare the learning outcomes of students who were treated using economics teaching module based on discovery learning and students who were not treated using economics teaching module based on discovery learning. The class that was treated was using the economics teaching module based on discovery learning, namely class X6 as an experimental class consisting of 30 students, and the class that was not treated using an economics teaching module based on discovery learning, namely class X7 as a control class consisting of 30 students.

a) Normality Test

Normality test in this study was carried out using the Kolmogrov-Smirnov test with the help of SPSS version 16. The normality test data was carried out on students' critical thinking skills from the pretest-posttest scores of the experimental class and the pretest-posttest scores of the control class carried out by the students. The results of the pretest-posttest normality test can be seen in table 2 below.

Table 2. Normality Test Results

Tests of Normality				
Class		Kolmogorov-Smirnov[a]		
		Statistic	df	Sig.
Critical Thinking Ability	Pre-Test Experiment	.134	30	.178
	Post-Test Experiment	.146	30	.100
	Pre-Test Control	.112	30	.200*
	Post-Test Control	.129	30	.200*

Source: SPSS Data Normality Test Results for Critical Thinking Skills, 2022

The results of the Kolmogorov-Smirnov normality test show that the results of the experimental class pretest-posttest and the value of the control class pretest-posttest have a significance value of each, namely the experimental class pretest of 0.178, the experimental class's post-test value of 0.100, the control class's pretest value of 0.200, the control class post-test score was 0.200, which the result was > 0.05. From these values, it can be concluded that the results of the pretest and post-test scores are normally distributed.

b) Homogeneity Test

The homogeneity test in this study was carried out using the SPSS version 16 test. The normality test data was carried out on the students' critical thinking skills from the post-test scores of the experimental class and the post-test scores of the control class carried out by the students. The results of the homogeneity test can be seen in table 3 below.

Table 3. Homogeneity Test Results

Test of Homogeneity of Variance					
		Levene Statistic	df1	df2	Sig.
Students' Critical Thinking Ability	Based on Mean	.005	1	58	.944
	Based on Median	.012	1	58	.911
	Based on Median and with adjusted df	.012	1	56.579	.911
	Based on trimmed mean	.010	1	58	.920

Source: SPSS Data Homogeneity Test Results of Critical Thinking Skills, 2022

Based on the results of the homogeneity test, it is known that the significance value (Sig.) Based on Mean is 0.944. which result is > 0.05. So it can be concluded that the variance of the post-test data of the experimental class and the post-test data of the control class is the same or homogeneous. Thus, one of the requirements (not absolute) of the independent sample t-test has been fulfilled.

c) Independent Sample t Test

The independent sample t test in this study was conducted to test the differences in the results of the post-test scores of the experimental class (treated using the teaching module) with the results of the post-test scores of the control class (not treated using the teaching module). This can be seen in table 4 which shows the results of the independent sample t test of the post-test experimental class and post-test control class.

Table 4. Test Results of Independent Sample t Test

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Students' Critical Thinking Ability	Equal variances assumed	.005	.944	4.041	58	.000	4.200	1.039	2.120	6.280
	Equal variances not assumed			4.041	57.891	.000	4.200	1.039	2.119	6.281

The interpretation of the independent sample t-test output table above is guided by the values contained in the equal variances assumed table, because the data variance between the experimental class and the control class is homogeneous or the same as in table 3. Furthermore, based on the independent sample t test output table in section Equal variances assumed known

value of sig. (2-tailed) of 0.000 <0.05, so as the basis for decision making in the independent Sample t test, it can be concluded that H0 is rejected and Ha is accepted. Thus, it can be concluded that there is a significant (significant) difference between the average student learning outcomes in the post-t-test of the experimental class and the post-test of the control class. Meanwhile, to show the difference in the results of the average value between the experimental class and the control class, it can be seen in Table 5 which shows descriptive statistical data for the experimental class and the control class.

Table 5. Descriptive Statistical Results

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Pre-Test Experiment	30	76	88	81.47	2.813
Post-Test Experiment	30	82	97	89.50	3.937
Pre-Test Control	30	75	88	81.33	3.565
Post-Test Control	30	78	95	85.30	4.112
Valid N (listwise)	30				

Source: SPSS Data Descriptive Statistical Results (2022)

Based on the output descriptive statistics table above, it is known that the average value or mean for the post-test experimental class is 89.50, while for the post-test control class it is 85.30, with an average difference of 4.2. So that statistically descriptive it can be concluded that there is a difference in the average critical thinking ability between the experimental class and the control class.

Based on the critical thinking ability test, class X6 as the experimental class got a higher score when compared to class X7 as the control class. The results obtained based on the Independent Sample t Test showed that there was a significant difference between the experimental class which was treated using the discovery learning-based economics teaching module and the control class that was not treated using the discovery learning-based economics teaching module. The difference in test scores is because students who are accustomed to being given training in critical thinking and the learning process that emphasizes the activeness of students will know better how to think in a planned, logical and directed manner in accordance with the facts, so that it will have an impact on obtaining maximum test results (Haseli & Rezaii, 2013; Nugroho & Prayitno, 2017). Based on this comparison, it can be concluded that the use of discovery learning-based economics teaching modules can improve students' critical thinking skills in learning outcomes about financial institutions that contain the concepts of banks and the non-bank financial industry, as well as the various products produced.

CONCLUSION

This research and development resulted in economics teaching module based on discovery learning that can be used as teacher guidelines in the learning process, especially in schools that implement a prototype curriculum. This research was conducted at Public High School 5 Taruna Brawijaya, Kediri City, in class X6 as the experimental class and class X7 as the control class. This teaching module can be accessed at the link https://bit.ly/Modul_Ajar_Ekonomi. The discovery learning-based economics teaching module developed by the researcher has passed the validation process by module experts and material experts. Based on the results of the module expert's assessment of the developed economics teaching module, which includes an assessment of the physical aspects/appearance, introduction, content, utilization, task/evaluation, and attachments, the results show 90.5%.

While the results of the assessment of material experts which include assessments on aspects of material coverage, suitability of learning outcomes, presentation components, and language feasibility are 92.6%. Based on this assessment, it was obtained an average assessment of 91.5% so that it was stated that the discovery learning-based economics teaching module was suitable for use in learning activities, especially for class X students of SMAN 5 Taruna Brawijaya, Kediri City. While the results of the independent sample t test using SPSS 16 obtained a significance value of 0.000 <0.05 which can be concluded that H0 is rejected and Ha is accepted, which means that there is a significant difference between the critical thinking abilities of students who are treated using teaching modules and students. who were not treated using the teaching module. It can be concluded that the discovery learning-based economics teaching module is quite effective in improving students' critical thinking skills.

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