Development of Scaffolding-Based Discovery Learning Model to Improve Students' Economic Learning Outcomes at SMA Negeri 1 Salak, Pakpak Bharat Regency in Academic Year 2021/2022

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Abstract : The goal of this study is to improve the scaffolding-based discovery learning model's syntax in Pakpak Bharat Regency's class X IIS SMAN 1 Salak so that it may better promote learning and help teachers present material to students. A 4D development model is employed in this development investigation. The SMAN 1 Salak Pakpak Bharat facility served as the study site. This study used class X IIS1 as its sample. The study's findings led to the development of a scaffolding-based discovery learning model, which is valid and qualifies for use as a teaching aid in class X IIS1 economics. 85% of student replies were used to produce products based on the evaluation of material features, learning design specialists' work, and student responses.

Keywords: Discovery Learning Model , Scaffolding, Learning Outcomes

1 Introduction

Because science and technology (IPTEK) are advancing so quickly and are now an essential part of daily life, people must acquire the skills necessary to compete in the global marketplace. Developing excellent human resources or human resources through education is one strategy being used to address this significant challenge. Therefore, it is necessary to constantly implement education reform that aims to raise the standard of education in the country. The dignity of the Indonesian people is anticipated to rise as a result of efforts to raise education quality.

The world of education is essential to keep up with technological advancements and use more complex information and communication technology facilities to speed up the learning process. By comprehending how technology can aid in the learning process, they can create learning procedures that are efficient. (2002) Rose, Meyer, and Strangman.

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In addition, it is hoped that with the use of information and communication technology, the learning mindset can shift from teacher-centered to student-centered. Technology advancements make it easier to conduct and create novel learning procedures that will result in high-quality outputs. Students will also develop as people with the capacity for thought and learning.

The effectiveness of enhancing education requires efforts from many angles, including paying attention to all factors that are crucial, such as raising the caliber of teachers, curriculum, facilities and infrastructure, school administration, and community involvement. Teachers are also expected to be able to act as mentors and facilitators in the classroom, as well as deliver material creatively, utilize learning media, and carry out appropriate evaluations to ensure learning results.

The current educational system includes learning outcomes as one of its elements. Student learning outcomes are the degree of success or mastery in learning that has occurred during the teaching and learning process and is developed in the form of values across a variety of subjects. Additionally, one of the elements that can promote learning outcomes is motivation.

However, to achieve success in learning several factors must be considered, such as students' understanding of the concept of learning the lessons presented, the teacher can also use learning models or even use learning methods, as well as learning media in conveying learning. It is without realized greatly affect the learning process carried out in schools. However, learning models are rarely or even not applied in the learning process, more often using conventional methods will result in students being bored and bored and ultimately lacking enthusiasm in the learning process. Factors such as the lack of application of learning models in the teaching and learning process are caused by teachers who do not want to apply them so it has an impact on student learning outcomes who always feel bored during the learning process and learning outcomes decrease. This requires a teacher to think more about how to achieve maximum learning objectives by using learning models or even learning media.

According to the findings of observations made by researchers at SMA Negeri 1 Salak in class X IIS 1, researchers discovered a number of issues that made the learning process less effective, including the teachers' propensity to use traditional teaching methods like lectures, questions and answers, and assignments, as well as their sole focus on books, during the teaching and learning process. when explaining the lesson such that the pupils have trouble grasping the information the teacher is presenting. When the teacher attempts to ask brief questions, the students only modestly respond in accordance with the textbook, and the majority of students remain silent. Then, the students appear passive and only function. In addition, teachers also rarely use interesting learning models, therefore student learning outcomes are still on average below the minimum completeness criteria (KKM), which is 75.

Of course, students' economic learning outcomes are still relatively low and have not achieved success in learning by what is set. This shows that students' learning outcomes in economics must be improved. Seeing the conditions that occur, it is necessary to make changes in the learning process. One way to overcome these problems is to improve learning outcomes by using learning models that can improve student learning outcomes.Based on things that have occurred in schools, the researchers feel the need to develop learning models in the teaching and learning process, so that students are active and enthusiastic in learning and the learning process can run effectively and according to the objectives of the existing curriculum and

student learning outcomes can also increase. In addition to developing a learning model, it is also necessary to relate it to the method.

The learning model that the researcher uses is the Discovery Learning Model, where the teacher does not tell the facts, but the students find the information they need for themselves. According to the results of the study (Saputra, 2016) stated that, by finding it yourself and investigating it yourself, the results obtained will last a long time in memory, and are not easily forgotten by children. The Discovery Learning learning model can train students' knowledge acquisition skills and cognitive abilities. So that later it will affect the learning outcomes obtained by students.Meanwhile, according to (Ali & Setiani, 2018), the Discovery Learning Model can improve the skills of the direct observation process or the discovery process regarding problems in the surrounding environment, so that students better understand the concepts given by the teacher and are very effectively used to improve student learning outcomes. In addition, according to the research results of Muhammad Yusuf and Ana Ratna Wulan (2015), the application of the discovery learning model shows that there is no significant difference between the use of the discovery learning model.

Based on the results of previous research according to Agus Santoso (2016), Discovery learning is student-centered learning. In other words, discovery learning is discovery learning where students experience directly the subject matter presented by the teacher. Furthermore, according to research results (Tsamaniarity and Yuli, 2019) stated that the results of developing the Discovery Learning learning model on student personality development increased the effectiveness of learning using a larger learning model, and increased high attractiveness so that it had a positive impact.In applying the learning model, the teacher needs to link the learning methods that will be used during the learning process in the classroom. One of the methods applied to accompany the learning model is the Scaffolding method. The scaffolding method is one method that can be used by teachers, by providing assistance, guidance, encouragement (motivation), attention to students to achieve learning objectives. The assistance provided can be in the form of instructions, warnings, or encouragement (Mamin, 2008). Scaffolding is given by the teacher to students by providing a large amount of assistance in the early stages and gradually reducing the assistance until they are finally released and able to complete on their own.

Based on existing research, the results of research conducted by Santosa et al (2013) show that learning by using the Scaffolding method can increase students' learning independence and problem-solving abilities in the learning process. Another study conducted by Wang (2014) showed that the knowledge of students who were taught by the Scaffolding method showed a significant increase in the understanding of students who were taught.Based on several facts found in the field, it is necessary to develop a learning model so that the learning process continues effectively and achieves the desired learning objectives. As well as the need to use methods in linking learning models in delivering material to students, so that students are enthusiastic and eager to follow the learning process. Research on the development of the Discovery Learning learning model based on the Scaffolding method, are some of the things that can be done to improve student learning outcomes at SMAN 1 Salak, Pakpak Bharat Regency in economic subjects. Therefore, researchers are interested in conducting development research entitled "Development of a Scaffolding-Based Discovery Learning ModelTo Improve Student Learning Outcomes at SMAN 1 Salak, Pakpak Bharat Regency in Academic Year 2021/2022".

2 Research Methods

Development of Scaffolding-based Discovery Learning Modules on economic subjects using research and development (Research and Development). The development model used is the 4D model developed by Thiagarajan & Semsel to design a learning system, The acronym 4D stands for define, design, develop, and disseminate. A quantitative techni will be used in further experimental investigation on the end-product of this development. The purpose of this study was to determine how to use the developed model to help studen become better problem solvers. The research method used is to use the test is in the form of a post-test for the experimental class using the developed model and the control class without using the developed module.T subjects in this study were all students of class X IIS which consisted of 3 (three) classes, the samples in this study were class X IIS1 as the experimental class and class X IIS2 as the control class.The variables in th tudy consisted of independent variables, namely the Scaffolding-based Discovery Learning learning model (X), the dependent variable was student learning outcomes (Y).

Technical analysis of data in the feasibility test of the product developed is using feasibility analysis, namely validation analysis obtained from material experts, design experts, economic learning practitioners and feasibility trials based on questionnaire sheets analyzed using descriptive analysis techniques. Data analysis techniques used for product effectiveness testing To increase student learning outcomes, the t-test was used with (sig) 95% and the level of significance (α) 5%.

3Results and Discussion

The device developed was a scaffolding-based discovery learning model to increase student learning outcomes utilizing the 4-D development model, it was discovered based on the description of the research results that have been pr ided in the research results section. The four stages of the 4-D development paradigm are define, design, develop, and disseminate. This research was conducted up till th velopment stage due to research limitations. The validity and efficacy of the outcomes of the development of learning tools will be evaluated.

e development stage of the learning model device starts from the define stage. The define stage consists of initial and final analysis, student analysis, task analysis, concept analysis, and specification of learning objectives. The purpose of the final preliminary an lysis is to find out the general problems faced in economic learning activities, while the student analysis is carried out to determine the characteristics of students. then the purpose of the analysis aims to formulate Basic Competencies (KD) that will be applied.

The specification of learning objectives aims to formulate learning objectives that must be achieved by students during the learning process by the fundamental skills to be used, particularly by using the device. Concept analysis is an analysis of the key concepts contained in the material patterns of producer and consumer behavior in economic activities and employment. acquired learning.

The next stage is the design stage. The design phase aims to design learning tools developed in the form of scaffolding-based discovery learning models and instruments used in research. The last stage in this development research is development. The research instrument was

validated before being used to measure the validity of the model. The developed model was validated by expert validators before being used in individual, small group, and field trials.

The results of the assessments submitted by several experts and student trials can be seen in Table 1 below:

1. The Feasibility of Using the Improvement of the Scaffolding-Based Discovery Learning Model Student Learning Outcomes

Table 1. Assessment Results of the Scaffolding-Based Discovery Learning Model

No	Category	Average Score (%)	Criteria
1	Material Validation	96%	Very Deserving
2	Validation of Design	89%	Very Deserving
3	Individual Trial	85%	Very Deserving
5	Trial in a Small Group	86%	Very Deserving
6	Field Test	88%	Very Deserving
Average		88.8%	Very Deserving

Based on the table of results of the feasibility assessment of the scaffolding-based discovery learning model that was developed with the average percentage value of the overall score of 88.8%, it is included in the "Very Eligible" category, the scaffolding-based discovery learning model that was developed proved feasible to use in the process learn how to teach.In line with the results of the study (Komang Syuryani, 2020) revealed that the validity score of the Environmental-based Discovery Learning learning tool is known that each indicator gets an average validation score in the range of 4.01 <X<5.01 with very good qualifications.Furthermore, the results of the study (Septina Dwi Prasetyana, 2015) stated that the results of the feasibility of the device expert validator obtained a score of 3.44 in the good category, the material expert validator received a score of 3.52 in the very good category, and the practitioner validator received an assessment of 3.65 in the very good category. From the discussion above, it can be concluded that the model development is feasible to be used as a learning tool. This scaffolding-based discovery learning model can be used as an economic lesson plan in class X IIS.

2. The Effectiveness of the Scaffolding-Based Discovery Learning Model to Improve Student Learning Outcomes

By examining the data, it is possible to examine and interpret how the problem in this study was formulated on student learning outcomes taught using the model developed in the experimental class and without using the module in the control class. learning outcomes obtained the highest score (Xmax), the lowest score (Xmin), and the average score ($\bar{X}$) for the experimental class and control class which can be described as follows:

Table 2. Student learning outcomes data

Class	The value of economic class student learning outcomes		
	Xmin	Xmax	$\bar{x}$
Experiment	87	95	92
Control	75	80	77

From Table 2 2 It is well known that there are discrepancies between the lowest and maximum scores. The minimum and maximum scores were higher in the experimental class than in the control class.The average economic problem-solving ability of students is also different, the experimental class is higher, namely 92, while the control class has an average value of 77. The interpretation of the difference in the average problem-solving ability of students can be seen in Figure 4.1 below:

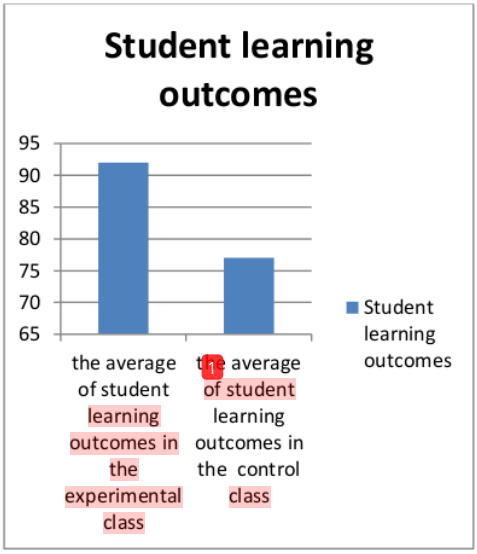

Fig 1. The interpretation of the difference in the average problem-solving ability of students

Based on Figure 1, it can be seen that the experimental class using the scaffolding-based discovery learning model that was developed was higher than the problem-solving ability of students in the control class without using the developed learning module. The results show that the implementation of the scaffolding-based discovery learning model in the learning process has an average of 92 higher than the problem-solving ability of students in the control class with an average of 77.To see how big the difference in student learning outcomes in

post-test scores using a scaffolding-based discovery learning model with post-test scores without using a scaffolding-based discovery learning model, can be seen in the descriptive statistics in the following independent sample test.

Table 3. Group Statistics

Group Statistics

	Class	N	Mean	Std. Deviation	Std. Error Mean
Student learning outcomes	Post Test Experiment	34	92.00	2,000	.343
	Post Test Control	34	77.41	1.438	.247

Based on the results of the descriptive statistical calculations above, it was found that the student learning outcomes in the class using the scaffolding-based discovery learning model obtained an average value (92) which was greater than the class that did not use the scaffolding-based discovery learning model by obtaining an average score (77.4).According to the results of previous researchers (Midaiyana Nella Santi, 2019) the results of his research state that the Discovery Learning learning model can be used by teachers as an alternative to introducing geometric shapes. The assessment of the feasibility of the material resulted in a score of 110 and 105 which were in the "adequate" category. In the results of the initial field trial, the results of the teacher's response to the discovery learning model were a score of 105.25 which was in the feasible category, while the field trial scored 116.5 which was in the very feasible category. The development of the discovery learning model was declared effective by increasing the ability to recognize the geometry of children aged 4-5 years getting the results of the t-test obtained by the value of sig (p) <0.05, which means there was a significant change between the children's abilities before and after being given treatment.Then according to the results of the study (Ajeng Raja Azura, 2019), the results of the ANOVA test were obtained that were significant in trial 1 of 0.839 > 0.6319 (r-table) and significant in trial 2 of 0.946 > 0.3338 (r-table). This means that trial 1 obtained 0.839, which is greater than the requirement of 0.6319. In trial 2, it was obtained that 0.946 was greater than the requirement of 0.3338. So there is the influence of the Discovery learning model on student learning outcomes in the material of changing the shape of objects.Furthermore, the results of the study (Muhammad Yusuf, 2015) The results showed that there was no significant difference between the use of the shared integration type discovery learning model and the webbed integration type to improve students' science process skills based on the value of t-count = -1.537 which was in the acceptance area t-table = ±2.014 with a significance value of 0.131. The average N-Gain of science process skills of students in the shared integration class is 0.55 with moderate criteria and the webbed integration class is 0.47 with moderate criteria.It can be concluded that the increase in learning outcomes proves that the scaffolding-based discovery learning model is effectively used as a good learning tool for teachers in the field of economics studies or students so in other words a learning device is said to be effective if the goal is achieved in the form of learning outcomes, effective and efficient in its use.

4 Conclusions and Suggestions

Based on the findings and discussion of the development research conducted, it can be concluded as follows:

The discovery learning model based on scaffolding was developed The discovery learning model based on scaffolding model in economics subjects of consumer and producer behavior patterns in economic activities. The product developed, based on the assessment of material aspects and learning design aspects, carried out by experts and also student responses, obtained an average percentage of 88% feasibility level so that the conclusion is classified as "very feasible". category. The discovery learning model based on scaffolding was developed meets the requirements for effectiveness to be used as a learni model in economics subjects. The product developed based on the statistica t of data on student learning outcomes using the developed model was higher an the student learning outcomes taught without the developed model. This can be seen based on the results of the test using the t-test with the results showing T-statistics 12.004 > t-table 1.671 with 0.05 and dk = 62 and based on the average e of student learning outcomes from the experimental class 92 > 77 the average value in the control class. So it can be concluded that the product developed is effective in improving student learning outcomes.

From the conclusions that have been stated, the following are suggested:
The Scaffolding-based Discovery Learning Model has been tested for feasibility and effectiveness, so it is recommended for teachers to use this learning model as a choice in the learning process, especially on different materials.The Scaffolding-based Discovery Learning Model on the material of consumer and producer behavior patterns in economic activities can be suggested to teachers or further researchers that the Scaffolding-based Discovery Learning Model can also develop in all other aspects such as aspects of religious values, and moral, physical motoric, social-emotional, cognitive, language, and artistic integrity.

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