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LEARNING EFFECTIVENESS OF DISCOVERY LEARNING MODEL BASED ON LOCAL WISDOM TO IMPROVE COMMUNICATION ABILITY AND SELF EFFICACY OF UPMI MEDAN STUDENTS IN ECONOMIC MATHEMATICS COURSE

Nova Riani[1], Winanda Marito[2], Rizka Fahruza Siregar[3], Rini Ramadhani[4], Hetty Elfina[5]
[1,2,3,3,4] Universitas Pembinaan Masyarakat Indonesia
Email : novarianiharahap@gmail.com[1], ndha62@gmail.com[2], rizkafahruza.siregar@gmail.com[3], riniramadhani0901@gmail.com[4], hetty.elfina90@gmail.com[5]

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ABSTRACT

The purpose of this study was to see the effectiveness of the Discovery Learning learning model based on local wisdom, the differences in communication skills and self-efficacy of students who were taught using the local wisdom-based Discovery Learning learning model with those taught using conventional learning. This study also aims to find out how to increase students' communication skills and self-efficacy when taught using the Discovery Learning method based on local and conventional wisdom. This research method is quasi-experimental with Posttest Only Control Group Design with descriptive analysis used to achieve this goal. This research was conducted at UPMI Medan. The population of this study were all students of UPMI, while the sample was students of the Department of Management. This study found that the Discovery Learning learning model based on local wisdom was effectively used with a percentage of learning implementation worth 94.12% and student responses 89.50%. then there are differences in communication skills and self-efficacy between experimental and control class students, as evidenced by the sig. (2-tailed) 0.000005 between the control and experimental groups. This study also found a greater increase in communication skills and self-efficacy of students who were taught using Discovery Learning based on local wisdom than conventional learning, as seen from the average scores of 76.12 (experimental group) and 58.00 (control group), indicating an increase of 12 0.04%.

Keywords: Discovery learning, Local Wisdom, Communication Skills, Self Efficacy, Independent Sample t Test

1. Introduction

The learning process in universities is different from the learning process in schools. In any case, students have been considered adults compared to school students. In general, it can be said that students have maturity in thinking and making choices in the learning process. Studying in college focuses on independence, students are required to read, search and analyze a problem independently. In Permendikbud 2020 learning is a process of student interaction with lecturers and learning resources in a particular learning environment (Permendikbud, 2020). With current government policies to implement learning, lecturers need to innovate using an effective, interactive, collaborative, and student-centered learning strategy, method or model that can be used today with the aim of building student communication skills.

According to Permendikbud, the Discovery learning model is able to create a student-centered learning process. Bruner (Roza et al., 2018) uses a method he calls discovery learning, in which students organize the material being studied in a final form. Discovery learning is a learning model that tries to emphasize the basis and build scientific thinking, where students are the subject of learning, while lecturers are trainers and facilitators in learning. Discovery learning will form active students based on student curiosity and students' willingness to find their own knowledge, where the

lecturer only functions as a supervisor and directs learning activities according to their goals (Ertikanto et al., 2018). The discovery learning model is a model that regulates learning so that students gain knowledge that has never been known before without direct notification, partial notification or fully discovering their own knowledge (Putriani & Rahayu, 2018).

Etymologically, local wisdom consists of two words, namely wisdom and local. In the English-Indonesian dictionary, local (local) means local, while wisdom is the same as wisdom. Local wisdom is a combination of sacred values and various values that exist in society where local wisdom is formed such as the cultural superiority of the local community in a broad sense (Parwati, 2016). Local wisdom is substantially a norm that is binding in a community whose truth is believed by the community and whose existence is used as the reference in daily activities and behaviors (Suastra at al., 2017). With this understanding, what is included as the elaboration of "local wisdom" are various patterns of action and the results of material culture. Often education is associated with culture. Without the educational process it is impossible for culture to take place and develop.

According to NCTM, mathematical communication is a way of sharing ideas and clarifying understanding. Through communication, ideas become objects of reflection, refinement, discussion, and change (NCTM, 2016). When students are challenged to communicate the results of their thoughts to others orally or in writing, students learn to be clear and precise, and convincing in the use of mathematical language. In learning mathematics, mathematical communication has an important role in expressing, explaining, describing, listening to understanding mathematics. Thus, the indicators obtained to measure mathematical communication skills are students can describe pictures or diagrams on mathematical ideas, students can draw or explain ideas and situations in writing, students can express situations into mathematical language or symbols (Tiffany et al., 2017). Communication skills need to be developed in learning mathematics because communication skills are not just patterns, tools to solve problems or draw conclusions, but communication skills also play a role in social activities, as interactions between students, and interactions between lecturers and students.

Self-efficacy is a belief or self-assessment of one's abilities in achieving the desired goals and overcoming obstacles that may arise in the future. According to Bandura, self-efficacy can be increased or decreased through four sources, namely performance experience (performance accomplishment), vicarious experience (vicarious experience), social persuasion (social persuasion), and emotional generation (emotional/psychological states) (Alwisol, 2017). Experience performance (performance accomplishment), is an achievement that has been achieved in the past. Past experiences greatly affect self-efficacy.

Economics mathematics is a scientific and skill course that must be studied with a total of 2 credits by students of the Management study program. However, in practice, many students have difficulty understanding the concept. This also happened in the implementation of economic mathematics courses at the UPMI Medan Management Study Program. Based on the value of the Mid-Semester Examination (UTS) semester 3 for classes A and B, the average score obtained by students is 52.00. This means that students have not been able to achieve learning graduates in economics mathematics courses. Where the minimum mastery value of students is 70. This means that students have not been able to achieve learning graduates in economics mathematics courses, besides that the interaction in learning is still unidirectional, namely lecturer-centered. Students are not independent in learning, just waiting for instructions from the lecturer, have not taken the initiative to look for other learning resources. In addition, based on the results of observations when discussions in class students have not been able to collaborate among fellow students, not all have an active role in solving problems given by the lecturer. In addition, students' communication skills have not been able to build basic skills (basic support), make conclusions (inferring), make further explanations (advanced clarification), set strategies and tactics (Strategic and Tactics) in solving problems given related to economic mathematics.

The purpose of this study was to find out that the Discovery Learning learning model based on local wisdom is effectively used as an alternative in learning activities by knowing the differences in improving communication skills and self-efficacy between students who are taught using the local

wisdom-based Discovery Learning learning model and students being taught. using conventional learning, where the increase in communication skills and self-efficacy of the experimental class is better than the control class.

2. Research Methods

This study uses a quasi-experimental approach with Posttest Only Control Group Design Research with descriptive analysis. By using this approach, the indicators of the variables in this study can be clearly measured and analyzed descriptively to strengthen the analysis in making conclusions. The data used in this study is primary data from respondents who became the sample. The population in this study were all UPMI students. The sample of this research is students of UPMI Medan Management Study Program which consists of 2 classes, namely class A and B. The sampling method is using Non probability sampling. Sampling was done based on purposive sampling. The sample calculation uses the slovin formula.

Data was collected using interview instruments, learning implementation observation sheets, questionnaires, documentation and tests. The interview process was conducted with economics lecturers in order to obtain information related to the problems faced by students during distance learning. The learning implementation observation sheet is used as an assessment guide to measure the suitability between SAP and the ongoing learning process. Questionnaires are used to see the level of self-efficacy as well as student responses. And the test instrument in the form of a posttest is used to measure learning outcomes. Before the questionnaires were distributed to students, the validity and reliability of the instrument were tested first, and for the posttest, different power tests were carried out as well as the level of difficulty of the questions. Analysis of learning implementation measurement data is calculated using the following formula:

Percentage of Learning Implementation: (Number item executed)/(Number item overall) $\times 100\%$

Furthermore, the average percentage of implementation of each meeting is calculated with the following formula:

$$Xp_k = \frac{AP_k}{n}$$

The average percentage of implementation is used to categorize the success of the learning that has been implemented. The following are the criteria for the average presentation of the implementation of learning:

Table of Learning Implementation Criteria

Intreval	Criteria
75 < Xpk ≤100	Well
50 < Xpk ≤ 75	Pretty good
25 < Xpk ≤ 50	Not good
0 < Xpk ≤ 25	Bad

Furthermore, data analysis of student responses to local wisdom-based Discovery learning was calculated using the following formula:

Response(%) = (Amount Score Total)/(Number Score Ideal) $\times 100\%$

Table of Student Response Criteria

Rentang Persentase	Criteria
0% - 20%	Very less
21% - 40%	Not enough
41% - 60%	Enough
61% - 80%	Well
81% - 100%	Very good

In this research, hypothesis testing uses the Independent Sample t Test. Hypothesis testing was conducted to determine the difference in the average level of communication skills and self-efficacy between the experimental class and the control class. Before the t-test, pre-requisites were tested on the data obtained, namely normality test and homogeneity test. This test is useful to find out the data obtained are normally distributed or not, homogeneous or not. Both tests are absolute requirements that must be met before conducting the T Test. Calculation of data analysis in this study using SPSS 25.

This research was conducted by giving a pretest accompanied by a self-efficacy questionnaire to 50 students of management study program where each class consisted of 25 people in Management class A and 25 people in Management class B. Giving a pretest as an initial stage is to determine the level of understanding students about the basic subject matter of economic mathematics and knowing the level of student self-efficacy before applying the Diasovery Learning learning model based on local wisdom. Student self-efficacy can be seen and measured from several aspects, namely aspects of initiative, self-confidence, and motivation.

The next stage is to carry out learning activities in the experimental class using the Discovery learning model based on local wisdom and the control class using conventional learning. The aim is to see the difference in the improvement of students' communication skills and student self-efficacy between the experimental class and the control class.

The learning process for the economics mathematics course using the Discovery learning model based on local wisdom is carried out in Management class A as the experimental class and management class B using conventional learning as the control class. The implementation of learning in each class is 4 meetings. To determine the level of communication skills and self-efficacy of students, at the final stage of the study, posttests and self-efficacy questionnaires were given to respondents. Then the post-test scores and questionnaires with the questionnaires given before applying the learning will be compared with the post-test scores and self-efficacy questionnaires at the final stage to find out the expected results.

The implementation of a learning process can be seen based on the observation sheet on the implementation of learning that has been observed by the observer. The observer in this study was one of the Mathematics lecturers at UPMI Medan. Observations of the implementation of learning were carried out in the experimental class, namely Management A class, which amounted to 25 people, while Management B class as control class consisted of 25 people.

In the observation sheet on the implementation of learning, there are three main aspects observed by the observer, which include aspects of independent asynchronous learning, virtual synchronous and collaborative asynchronous learning. Virtual synchronous learning includes introductory activities, core activities and closing activities. The learning process was carried out for 4 meetings. The following is the percentage of implementation of the Discovery learning model based on local wisdom in the experimental class.

3. Results and Discussion

1. The Effect of Profitability on Earnings Management

Based on the results of the study, it shows that profitability has a positive effect on earnings management, as evidenced by a significant value of 0.02 which is smaller than 0.05 and the value of t arithmetic is greater than t table (3.406 > 2.034). This is because companies that have high profits according to political costs will tend to be more noticed by the public and the government than companies with small profits.

The higher the profitability, the more earnings management occurs, and conversely the lower the profitability, the lower the earnings management. Companies that have high profitability tend to practice earnings management in the form of lowering profits, so that companies can minimize tax payments and make it easier for companies to borrow money from creditors. The results of this study are in line with Karamoy and Tala (2017), Astari and Suryanawa (2017), and Sari et al. (2020). However, this study is not in line with the research of Suryani and Agustia (2018).

2. The Effect of Solvency on Earnings Management

Based on the results of the study, it shows that solvency has a positive effect on earnings management, as evidenced by a significant value of 0.000 <0.05 and the t-count value is greater than t-table (3.965> 2.034). This is because the company has to carry out earnings management in order to fulfill the obligation to pay debts on time.

A high solvency value indicates that the company has higher loans for the company's operations so that this ratio is used as an indicator for investors in determining investment. The higher the solvency, the greater the possibility for managers to carry out earnings management because the company is threatened with default, which is unable to meet its debt obligations. Managers will carry out earnings management by increasing company profits, this is done to restore investor confidence. The results of this study are in line with Astari and Suryanawa (2017) and Suryani and Agustia (2018). However, this study is not in line with Karamoy and Tala (2017).

3. The Effect of Corporate Social Responsibility (CSR) on Earnings Management

Based on the results of the study, it shows that corporate social responsibility has no effect on earnings management, as evidenced by the partial significant test (t test) with a significant value of 0.105 > 0.05 and the t arithmetic value is smaller than t table (1.663 < 2.034). This is because the implementation of corporate social responsibility in Indonesian companies does not guarantee a reduction in earnings management practices. Differences in perspective and culture greatly affect the implementation of corporate social responsibility in Indonesia and developed countries.

The high or low value of the disclosure of corporate social responsibility of a company still does not ensure the existence or absence of earnings management practices, because earnings management is carried out through accrual management of the company's financial statements by increasing or decreasing the reporting on corporate social responsibility disclosure in the form of a sustainability report so that the report contains information on the company's corporate social responsibility activities. The results of this study are in line with Palupi and Alexander (2019). However, this study is not in line with Santi and Wardani (2018)

4. The Effect of Profitability, Solvency and Corporate Social Responsibility (CSR) on Earnings Management

Based on the results of the study, it shows that profitability, solvency, and corporate social responsibility have a significant effect on earnings management, as evidenced by the F test with a significant value of 0.00 less than 0.05. The coefficient value is 0.443 which shows the contribution of variables that have an influence on earnings management of 44.3%, namely profitability, solvency of corporate social responsibility, while 55.7% is influenced by other variables not examined in this study. This is because high profitability reflects the company's healthy financial condition. The high level of solvency indicates that the liabilities owned by the company are more than the assets owned so that it reflects the company's unhealthy condition. Corporate social responsibility expressed by managers in the financial statements is an added value for the company to increase the company's credibility in the eyes of the public. This research is in line with Karamoy and Tala (2017), Suryani and Agustia (2018) Santi and Wardani (2018) Pratiwi et al. (2020).

Table of Implementation of Discovery Learning based on local wisdom

Meeting 1	Meeting 2	Meeting 3	Meeting 4
100%	100%	86,50%	90%
Rata – rata = 94.12 %			

The average percentage of implementation of discovery learning based on local wisdom is 94.12% which can be categorized as good. This shows that the implementation of the learning process with the Discovery Learning learning model based on local wisdom has been carried out and is in accordance with the RPS / SAP that was compiled and the implementation of learning is categorized as well implemented.

Furthermore, to see the effectiveness of the discovery learning model based on local wisdom, one of which can be seen based on student responses after obtaining learning. The following is the percentage of student responses contained in the four indicators.

Student Response Percentage Table

No	Indicator	Average frequency
1	Interest or Attention	89.33 %
2	Relevance	88.00 %
3	Confidence	94.00 %
4	ICT literacy	86.67 %
	Total	89.50 %

In this study, the responses obtained only came from the experimental class that received treatment. In the results obtained, it is known that the student response to discovery learning based on local wisdom is categorized as very good, with a percentage of 89.50%. So it can be concluded that the application of the discovery learning model based on local wisdom in economics mathematics courses which, when viewed from student responses, is said to be effective to be applied during the Covid-19 pandemic and the new normal.

To find out the differences in communication skills and student self-efficacy in the experimental and control classes, a t-test was carried out. the following is the result of the calculation of the t test.

Table of Test Results Paired Sample t test Statistics Self Efficacy

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	EXPERIMENT	115.3600	25	2.48126	.49625
	CONTROL	110.8800	25	4.16653	.83331

Table of Test Results Paired Sample t tests Self Efficacy

Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	EXPERIMENT - CONTROL	4.48000	4.09390	.81878	2.79012	6.16988	5.472	24	.000

Table of Test Results Paired Sample t Test statistics Communication

Paired Samples Statistics

	Mean	N	Std. Deviation	Std. Error Mean

Pair 1	EXPERIMENT	76.1250	25	7.37747	1.47549
	CONTROL	58.5000	25	11.35799	2.27160

Table of Test Results Paired Sample t test Communication

Paired Samples Test

		Paired Differences							
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	T	df	Sig. (2-tailed)
Pair 1	EKSPERIMEN – KONTROL	17.62500	6.92219	1.38444	14.76766	20.48234	12.731	24	.000

Based on the t-test above, from the two samples studied, the results of the student self-efficacy questionnaire in the experimental and control classes after learning were applied, the average in the experimental class was 115.36 and the average in the control class was 110.88. Because the results of the average value of the level of student learning independence after applying learning to the experimental class is greater than the control class, it means that descriptively there is a difference in the average self-efficacy of students in the experimental and control classes.

Furthermore, the t-test of students' communication skills obtained an average value of 76.12 for the experimental class and 58.50 for the control class so that there was an increase of 17.62 or about 12.04%.

Based on the explanation of the data above, it is known that the posttest results of the experimental class are higher when compared to the control class. This means that the class that gets discovery learning treatment based on local wisdom has a better level of communication skills than the control class. The results of the study prove that by applying the discovery learning model based on local wisdom, students' communication skills increase.

In this study, the posttest score can be used as a measurement of the level of student communication skills. In the experimental class, students can conduct virtual question-and-answer activities through google meetings regarding economic material that is difficult to understand. Learning. Based on the hypothesis testing that has been done, it can be stated that the application of the discovery learning model based on local wisdom has an effect on increasing students' communication skills.

Then based on the pared sample t test, the sig value is known. (2-tailed) is 0.00 < 0.05 indicating that there is a difference in the average learning independence of the control class and the experimental class, meaning that there is a difference in the average level of student self-efficacy and student communication skills.

The results of the study explain that the application of the local wisdom-based discovery learning model in the experimental class can increase students' self-efficacy. In the experimental class, students are more active in participating in the learning process carried out by applying the discovery learning model based on local wisdom. This is because they feel that they can understand lecture material independently and purposefully, because lecture activities are not only online through google meet but can discuss in google classroom with clear and directed direction and guidance from lecturers, the learning process is also two-way.

In contrast to the control class, which only uses google meet to carry out recovery. With the limitations of current conditions, the application of the right learning model is needed by students in order to learn optimally and the desired target is achieved. This is in line with a research result, namely the use of an appropriate learning model can foster a sense of love and interest in students in learning so that they can get the maximum value (Aunurrohman, 2013), so it can be concluded that the discovery learning model based on local wisdom is effectively used as one learning model solutions that can be used during the covid-19 pandemic and the new normal.

Supported by research (Pigawati & Basuki, 2016) which states that Discovery Learning based on local wisdom is as expected to renew passive learning conditions to be active and creative, and change the expository mode where students get overall information only from the lecturer, to discovery mode where students obtain their own information, it has an effect on increasing communication skills and self-efficacy with high categories supported by research results (Nurmala & Priantari, 2017) and (Meikasari et al., 2020) there is an increase in communication skills and self-efficacy after applying the discovery learning model. One of the advantages of this model is that it helps improve and improve students' cognitive processes and skills (Salmi, 2019).

4.Conclusions

Based on the description of the results that have been described above, it can be concluded that: (1) The implementation of learning that has been observed by the observer shows the results which state that the learning carried out using the discovery learning model based on local wisdom can be carried out well with a percentage value of 94.12%; (2) Application of discovery learning learning model based on local wisdom in economic mathematics courses which, when viewed from student responses, is 89.50% and is categorized as good so that it is said to be effective to be applied during the Covid-19 pandemic and the new normal; (3) There is a difference in the level of self-efficacy as evidenced by the average and total score of self-efficacy in the experimental class which is superior to 2.88 and 2.77 in the control class. This means that the treatment of discovery learning learning models based on local wisdom in the experimental class is proven to increase students' self-efficacy; (4) There are differences in communication skills between students who are taught using discovery learning models based on local wisdom and conventional learning. With the value of Sig. (2-tailed) 0.00 not more than a significance level of 0.05, i.e. 0.00 < 0.05, meaning that there is a difference in posttest scores between the two classes. It can be shown based on the average value of 76.12 for the experimental class and 58.50 for the control class. There was an increase of 17.62 or around 12.04%.

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