

The Influence of Student Learning Motivation and Understanding Diagrams Using Microsoft Office Visio On Cognitive Learning Outcomes in Lessons of Software Modeling

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Article Info

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ABSTRACT

The purpose of this study was to determine whether there is an effect of motivation and understanding of student diagrams through the use of Microsoft Visio on cognitive learning outcomes of XI RPL class students in Software Modeling subjects at SMKN 2 Surakarta. This research is an ex post facto quantitative research and the subjects in this study were 32 students of class XI RPL SMKN 2 Surakarta in one class. Data were collected using questionnaires, tests, and documentation. Test the validity of the research instrument using Product Moment correlation, and reliability testing using Cronbach's Alpha. The prerequisite analysis consisted of a normality test, a linearity test, and a multicollinearity test. Hypothesis testing consists of simple regression and multiple regression. The results showed that: 1) there was a positive and significant influence of Learning Motivation on Cognitive Learning Outcomes with $r_{x1y} = 0.455$; $r^2_{x1y} = 0.207$; and $t_{count} (2.282) > t_{table} (2.093)$ at the 5% significance level. 2) there is a positive and significant influence of Diagram Understanding on Cognitive Learning Outcomes with $r_{x2y} = 0.669$; $r^2_{x2y} = 0.447$; and $t_{count} (4.020) > t_{table} (2.093)$ at the 5% significance level. 3) there is a positive and significant influence on Learning Motivation and Understanding of the Diagrams together on Cognitive Learning Outcomes with $R_y (1,2) = 0.716$; $R^2_y (1,2) = 0.513$; and the value of $F_{count} (9.990) > F_{table} (3.49)$ at the 5% significance level.

Keywords: microsoft visio; student motivation; understanding diagrams

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1. INTRODUCTION

Vocational education is believed to have a major contribution to the development of society in this era to improve the economy of a country, and is essentially a place to prepare knowledgeable, skill, and personable workforce to meet expectations in the world of work or industry today (Hanafi, 2013).

In the learning process in schools, especially in vocational schools, of the course students need motivation. Motivation is one of several things that determines the success of student learning activities. Without motivation, the learning process is difficult to achieve optimal success. The use of the principle of motivation is important in the learning and education process (Hamdu & Agustina, 2011). Another description of learning motivation, motivation to learn is encouragement that arises from within and outside the individual to make changes in behavior. The motivation to learn in every student is different from one another. Some students have high learning motivation and there are also those who have low learning motivation (Wulandari & Surjono, 2013). Motivation can also be a factor in obtaining learning outcomes. As stated by Aritonang, learning interest and motivation have a huge influence on learning outcomes (Aritonang, 2008). Meanwhile, in her research, Siti Suprihatin said, fostering student motivation is one of the techniques in developing the ability and willingness to learn (Suprihatin, 2015).

One of the vocational programs in SMK is the RPL (software engineering) expertise program. The RPL expertise program has several branches of knowledge, one of them is the Software Modeling subject which aims to create a good and correct data flow design. Software Modeling is one of the compulsory subjects of the RPL expertise package that students in SMK must achieve. And the Software Modeling learning process emphasizes the independence of students, the learning series is very dense and requires an adequate learning support tool (Prasetya, Wirawan, & Sindu, 2017).

The use of appropriate learning media will certainly help a lot in the process of achieving understanding in students, so that good learning outcomes can be achieved. The variety and types of media are quite numerous so that they can be used according to the conditions, time, finances, and material to be delivered (Wahyudi, Kosim, & Taufik, 2019). While understanding is the level of ability that expects to be able to understand the meaning or concept, situation, and facts that they know (Purwanto, 1994). One of the applications that can support the learning process in Software Modeling is Microsoft Visio. Microsoft Visio is a widely used commercial tool that is especially suitable for modeling and visualizing information. Visio defines a modeling language using stencils. This tool is part of the Microsoft Office Suite that allows integration into other Microsoft products (Heiko & Stefan, 2009). In this case, *ms. visio* is a means of student learning in understanding material related to understanding diagrams in software modeling subjects.

Meanwhile, what is the meaning of learning outcomes according to Mappede, is that the abilities possessed are knowledge (cognitive), attitudes (affective), and skills (psychomotor), all of which are obtained through the teaching and learning process (Mappede, 2009). Then, what we hope as educators or teachers is that the students we teach can follow the lesson well and understand what we teach so they can use or develop it at a later time. Especially if the learning outcomes are progressing, students will try to maintain it or even be motivated to be able to improve it (Suprihatin, 2015). The final result expected from this study is to determine the effect of motivation and understanding of diagrams through *ms. visio* on student cognitive learning outcomes.

2. METHOD

This research uses quantitative research, which is research that is used to examine a particular sample or population. This study uses an *ex post facto* method, namely causal-comparative to investigate possible causal relationships.

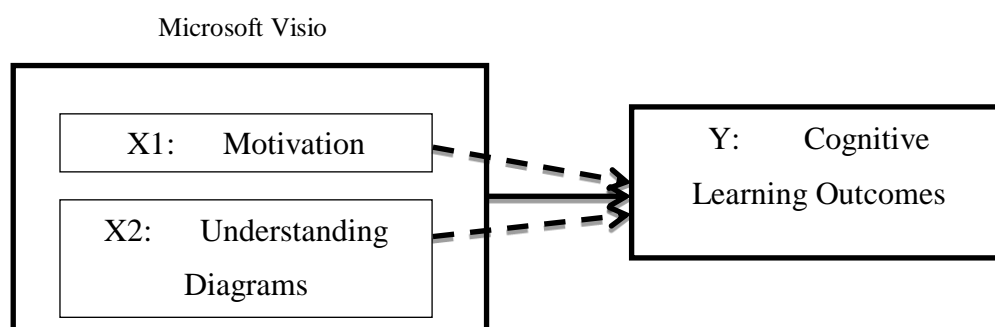


Figure 1. Influences Between Variables

The sampling technique was by distributing questionnaires, tests (exams) to students who were respondents, and documentation from the software modeling subject teacher. In this study, the respondents were all students of class XI RPL at SMKN 2 Surakarta, which consisted of 32 people. The research procedure can be seen in figure 2.

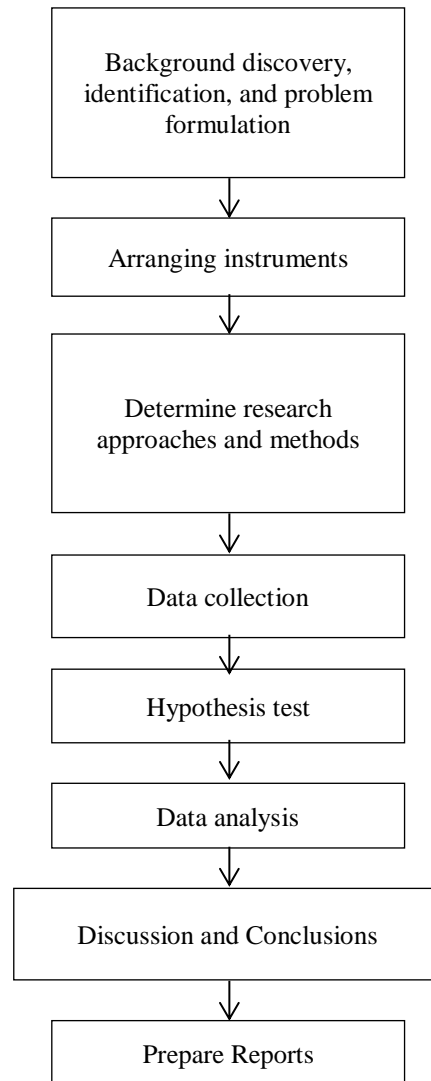


Figure 2. Research Procedure

3. Discussion

To carry out the research, an instrument test was conducted first to test the feasibility of the instruments used in this study. The tests carried out included validity and reliability tests for all instruments, difficulty level tests, differential power tests, and distractor tests for instruments in the form of questions (tests). From the results of the instrument test, it was obtained that the valid questionnaire was 16 items and 23 questions were valid. And the reliability results obtained value 0.929 for the motivation questionnaire and 0.884 for the test (understanding diagram), where these results are categorized as instruments in the very strong reliability category.

Table 1. First Hypothesis Test Results

Source	Coef.	r	r ²	t _{count}	t _{table}	Info
Kons	23,175					Positive Significant
X1	0,656	0,455	0,207	2,282	2,093	

Table 1 shows the test results on the first hypothesis with the t-count value greater than t table, which means that there is an effect of learning motivation on cognitive learning outcomes.

Table 2. Second Hypothesis Test Results

Source	Coef.	r	r ²	t _{count}	t _{table}	Info
Kons	40,850					Positive Significant
X2	0,428	0,669	0,447	4,020	2,093	

Table 2 shows the test results on the second hypothesis with a t-count value greater than t-table, which means that there is an effect of understanding the diagram through msvisio on student cognitive learning outcomes.

Table 3. Third Hypothesis Test Results

Source	Coef.	Tolerance	VIF	R	R ²	F	p	Info
Kons	17,289							Positive Significant
X1	0,390	0,900	1,111	0,716	0,513	9,990	0,001	
X2	0,373	0,900	1,111					

Table 3 shows the test results on the third hypothesis with the value of Fcount > Ftable which means that there is an influence of motivation and understanding of the diagrams through ms. visio together on student cognitive learning outcomes.

Sometimes students are at a low level of motivation to learn even though it has been facilitated with the help of software such as ms. visio. Especially during this pandemic, all activities were diverted online, including teaching and learning activities which were usually carried out face-to-face in class. This could be the reason why understanding in learning contributes more than motivation itself. And as has been found in this study, motivation has a lower relative contribution and effective contribution than relative contribution and effective contribution to understanding the diagram as in table 4.

Table 4. Relative Contribution (SR) and Effective Contribution (SE)

No	Variables Name	Relative Contribution	Effective Contribution
1	Student Motivation (X1)	24,00%	12,285%
2	Understanding Diagrams (X2)	76,00%	39,0027%
	Total	100%	51,28%

From the data that has been obtained regarding the students' motivation and understanding of diagrams, then the normality test, linearity test, and multicollinearity test are carried out with the help of SPSS. And the test results show that all variables are normally distributed, linear, and there are no multicollinearity symptoms which further confirm that there is a relationship or influence between the independent variable and the dependent variable.

4. CONCLUSION

Based on the above research results, it can be concluded that:

1. There is a positive and significant influence of Learning Motivation on Cognitive Learning Outcomes of Class XI RPL Students at SMKN 2 Surakarta. With $r_{x1y} = 0.455$ and $r_{2x1y} = 0.207$. The value of $t_{count} (2.282) > t_{table} (2.093)$ at the 5% significance level. The amount of effective contribution of the use of learning media on learning achievement is 12.285%. This shows that the higher the level of learning motivation, the higher the cognitive learning outcomes achieved by students.

2. There is a positive and significant influence of Diagram Understanding through ms. Visio on Cognitive Learning Outcomes of Class XI RPL Students at SMKN 2 Surakarta. With $r_{xy} = 0.669$ and $r^2_{xy} = 0.447$. And the t test results obtained $t_{count} (4.020) > t_{table} (2.093)$ at the 5% significance level. The amount of effective contribution of diagram understanding to cognitive learning outcomes is 39%. This shows that the higher the understanding of students' diagrams through ms. Visio, the higher the cognitive learning outcomes it achieves.
3. There is a positive and significant influence on Learning Motivation and Diagram Understanding through ms. visio together on Cognitive Learning Outcomes of Class XI RPL Students at SMKN 2 Surakarta. With $R_{y(1,2)} = 0.716$ and $R^2_{y(1,2)} = 0.513$. And the value of $F_{count} (9.990) > F_{table} (3.49)$. The amount of effective contribution of learning motivation and understanding of the diagram through ms. Visio on cognitive learning outcomes 51.28%, while 48.72% comes from other variables not discussed in this study. This shows that the higher the learning motivation and understanding of students' diagrams, the higher the cognitive learning outcomes achieved by students.

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