



Effect of Method Reciprocal Learning, Student Learning Interest on Learning Outcomes Construction Management

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Abstract

This study aimed to examine the effect of learning methods and learning interest on learning outcomes in construction management courses. Conducted research in the Building Engineering Education study program at Nias University. This research method is an experimental method with a 2x2 treatment by level design. Data analysis techniques using (anova) two paths, then continued with the Tuckey test. The results of the study are (1). there are differences in learning outcomes between students who use reciprocal learning methods and students who use discussion learning methods; (2). there is an interaction between learning methods and student learning interests; (3). the learning outcomes of students who use reciprocal learning methods are higher than those who use discussion learning methods in students with high learning interests; (5). the learning outcomes of students who use reciprocal learning methods are lower than those who use discussion learning methods in students with low learning interests.

Keywords: *reciprocal learning method, learning interest, construction management, learning outcomes*

Abstrak

Tujuan penelitian ini adalah menguji pengaruh metode pembelajaran dan minat belajar terhadap hasil belajar mata kuliah manajemen konstruksi. Penelitian dilaksanakan di Program studi Pendidikan Teknik Bangunan, Universitas Nias. Metode penelitian ini adalah metode eksperimen dengan rancangan *treatment by level 2x2*. Teknik analisis data menggunakan (anova) dua jalur, kemudian dilanjutkan dengan uji *Tuckey*. Hasil penelitian yakni (1). terdapat perbedaan hasil belajar antara mahasiswa yang menggunakan metode pembelajaran resiprokal dan mahasiswa yang menggunakan metode pembelajaran diskusi; (2). terdapat interaksi antara metode pembelajaran dan minat belajar mahasiswa; (3). hasil belajar mahasiswa yang menggunakan metode pembelajaran resiprokal lebih tinggi dari mahasiswa yang menggunakan metode pembelajaran diskusi padamahasiswa yang memiliki minat belajar tinggi; (5). hasil belajar mahasiswa yang menggunakan metode pembelajaran resiprokal lebih rendah dari mahasiswa yang menggunakan metode pembelajaran diskusi pada mahasiswa yang memiliki minat belajar rendah.

Kata Kunci: metode pembelajaran resiprokal, minat belajar, manajemen konstruksi, hasil belajar.

Introduction

Learning outcomes are a measure of the success of implementing a learning program. Learning outcomes are not independent but are influenced by several factors. Factors that affect learning are internal factors (factors from within students), external factors (factors from outside students), and learning approach factors. Internal factors include two aspects, namely physiological (physical) and psychological (spiritual), such as intelligence or intelligence, attitudes, talents, interests, and student motivation.

Based on existing data, the learning outcomes of Unias Building Engineering Education (PTB) students in the construction management course still need to catch up to the classical passing standard. Based on limited interviews with students who contracted this course and observations, several factors influenced the low learning outcomes. The most dominant factor is the use of methods that differ from the characteristics of students; the methods used are also less relevant to the characteristics of construction management courses.

We should assume that the low learning outcomes of students in construction management courses are influenced by the use of learning methods that are not relevant to both student characteristics and course characteristics. Learning methods in construction management courses at PTB Unias, most of them are still conventional. Based on further investigation, it is still limited to a one-way expository. In delivering the substance of construction management material, the use of learning methods used by lecturers is less varied. In addition, the lack of knowledge of lecturers in the use of learning methods is an obstacle to improving student learning outcomes (Nasruddin & Jahring, 2019; Telaumbanua, 2022). These efforts are expected to construct student interest and learning outcomes through appropriate learning

methods in delivering construction management courses.

Responding to these problems requires a specific learning method to improve student learning outcomes. Practices are learning procedures studied to help learners achieve goals or internalize content or messages. Aspects that influence the learning process so that it can produce optimal learning outcomes, namely: Intelligence, Motivation, Attitude and Interest, and Memory (Zagoto, yarni & Dakhi, 2019; Zebua & Harefa, 2022).

The learning outcomes of construction management in this study are the learning outcomes of student construction management, namely the competencies obtained by students after participating in the construction management learning process in the cognitive domain during a predetermined period, covering the subject matter of (1) construction management, (2) management processes and functions, (3) construction projects, (4) construction project organizations, (5) elements of development implementers, (5) regulations/requirements and technical specifications, (6) cost and time estimates, (7) cost budget plans, (8) work plans, (9) field plans, (10) simple work networks. The resulting learning outcomes are largely determined by the learning methods taught to students. Meaningful learning can develop student creativity to create effective learning. Creative learning is realized because it can foster creative power in students and equip them with various abilities that aim to make students master the targeted skills. Student-centered learning can generate interest, and indirectly they understand the concept and its relation to aspects of life.

One of the learning methods applied in the Construction Management course is the reciprocal learning method. The reciprocal learning method is a student-centered learning method that trains students' learning independence to develop abilities, build interpersonal understanding and skills, and interact socially with peers

where lecturers help clarify student tasks by providing guidance assistance including explanation, summary, questions, and predictions (Gulo, 2022; Hidayati, 2018). The reciprocal method is learning through peers. In this method, students play an active role so that guidance is carried out through scaffolding (providing a certain amount of assistance) during the early stages of learning, reducing aid and providing opportunities for students to think creatively (Halawa, Telaumbanua & Zebua, 2022; Hulu & Telaumbanua, 2022). Scaffolding assistance can be in the form of instructions, encouragement, warnings, breaking down problems into solution steps, providing examples, and other actions that allow students to learn independently (Bangun & Syahputra, 2017; Dakhi et al., 2022).

Reciprocity in this study is assistance provided by students in the size and level needed, then gradually, the assistance and guidance are reduced little by little. At the end of the learning program with the reciprocal method, students learn independence in developing individual and group abilities, building interpersonal understanding, having relevant skills, and interacting socially with peers and other individuals around them.

In addition to the reciprocal method, the application of the discussion method can also improve student learning outcomes in students with low interest in learning (Astriani, 2017; Dakhi, 2022). The discussion method presents the subject matter in which the lecturer provides opportunities for students (groups of students) to hold scientific conversations to gather opinions, make conclusions, or compile various alternative solutions to a problem.

A discussion method is a form of learning management that is dynamic if adequately managed. In this case, a discussion is a learning method that demands the active role of students (Zagoto & Dakhi, 2018; Telaumbanua, Dakhi & Zagoto, 2021). Discussion is an

instructional or teaching strategy that involves students sharing ideas about a common topic and can be combined efficiently with group work and cooperative learning. It is concluded that the discussion method is a learning method that requires student involvement to be active in learning. In the discussion method, there is a process of interaction between lecturers and students or between students and other students, talking to each other and sharing opinions in solving each problem in groups.

Another aspect that determines learning success, besides teaching methods, is student interest in learning. Without an interest in learning, students have difficulty following every learning process. Student learning interests also support achieving an increase in student learning outcomes. Interest is understood as attention or tendency toward something, usually accompanied by a sense of like. Thus interest is the interest of students in what they learn and is one of the most important factors in education. There are two kinds of interest: personal (individual) and situational. Personal interest in learning is the longer-lasting aspect of a person. In contrast, situational interest in learning generally seeks new information and has a more positive attitude toward the learning environment (Dakhi et al., 2020).

Interest is a sense of preference and connection to a science or activity without anyone telling you. Interest is an acceptance of a relationship between oneself and something outside oneself—the stronger or closer the relationship, the greater the interest. Interest has aspects of attraction to a particular object, response to a thing, and desire for something. Interest in learning between one student and another is different (Masril et al., 2020; Zagoto, 2022). There are students with tremendous or high interest in learning. Students with a high interest have characteristics including being creative, always curious, studying diligently, having a high will, always trying to fulfill their needs, and having high ideals. Meanwhile, students with low interest in

learning have the opposite characteristics, such as a lack of creativity, apathy, always wanting to be served, unwillingness to change, etc. Based on the description of interest, we can conclude that what is meant by student interest in learning is the student's interest in participating in learning activities consistently to understand a concept in achieving learning goals that can be seen from indicators: interest, pleasure, desire, and attention (Telaumbanua, 2022; Zega, Zagoto & Dakhi, 2021).

Based on these conditions, it is necessary to research the effect of learning methods and student learning interests on construction management learning outcomes which operationally, this study aims to test: (1) The difference in construction management learning outcomes between students taught by reciprocal learning methods and students taught by discussion learning methods; (2) The interaction between learning methods and student learning interests on student construction management learning outcomes; (3) The difference in construction management learning outcomes between those taught by reciprocal learning methods and those taught by discussion learning methods, for students with high learning interests; (4) The difference in construction management learning outcomes between those taught by reciprocal learning methods and those taught by discussion learning methods, for students with low learning interests.

Method

This study uses an experimental method with treatment by level design 2 x 2. The variables in this study are: (a) The dependent variable Y is the learning outcomes of PTB Unias students' construction management. (b) The first independent variable is the learning method consisting of reciprocal learning methods and discussion learning methods. (c) The second independent variable is student learning interest, which consists of two levels: high learning and low learning. The

experimental research design compares two learning methods, namely the reciprocal learning method and the discussion learning method, by distinguishing high and low learning interest and learning outcomes as the dependent variable.

Result And Discussion

1. The learning outcomes of construction management of students taught by reciprocal learning method and students taught by discussion learning method.

The learning outcomes of construction management of student groups taught with reciprocal learning methods show that the average score obtained by student groups = 21.25 with a standard deviation = 5.15. In comparison, the learning outcomes of construction management of student groups taught by the discussion learning method show that the average score obtained by the group is 19.00, and the standard deviation is 4.84. The results of the variance analysis of the construction management learning outcomes scores of these two groups of students obtained the calculated F value is 5.791. table value obtained from the F distribution table with $df = 36$, and the significance level is 4.11. These results indicate that $F_{count} > F_{table\ value}$ ($5.791 > 4.11$). Then H_0 is rejected, so it can be concluded that the average construction management learning outcomes of students taught with the reciprocal learning method are higher than the construction management learning outcomes of students taught with the discussion method.

2. Interaction between learning methods and students' interest in learning on students' construction management learning outcomes.

The results of the analysis of the interaction between learning methods and interest in learning on student construction management learning outcomes obtained an F count of 72.30, while the F table with $df = 36$ and significance level $\alpha = 0.05$ is 4.11.

These results indicate that $F_{count} > F_{table}$ ($72.30 > 4.11$). Thus H_0 is rejected. It is concluded that there is an interaction between learning methods and learning interest in student construction management learning outcomes.

The results of hypothesis testing lead to the conclusion that there is an interaction between learning methods and student learning interests on student construction management learning outcomes, which indicates that the application of the reciprocal method and the discussion method provides different student construction management learning outcomes when applied to students who have certain learning interests.

3. Construction management learning outcomes of students taught with reciprocal learning method and discussion learning method for students who have high learning interest.

The learning outcomes of construction management reveal that the average score of students who have high learning interest taught with the reciprocal learning method is 25.5, and the standard deviation is 3.21. While the average score of the group of students who have high learning interest taught by the discussion learning method is 15.30, and the standard deviation is 2.31. The results of the variance analysis of the construction management learning outcomes scores of these two groups of students obtained a Q_{count} value of 10.91. The Q_{table} value obtained from the Q distribution table with $n = 10$ and the significance level is 3.88. This result shows that Q_{count} is greater than Q_{table} ($10.91 > 3.88$), so H_0 is rejected.

Based on the results of hypothesis testing, it can be concluded that the learning outcomes of construction management in students taught with the reciprocal learning method who have high learning interest are higher than the learning outcomes of construction management in students taught

with the discussion learning method who have high learning interest. This shows that the learning outcomes of construction management for students who have high learning interests are better if taught with the reciprocal learning method than with the discussion learning method.

4. Learning outcomes of construction management between students taught with reciprocal learning method and discussion learning method for students who have low learning interest.

The learning outcomes of construction management revealed that the mean score of students with low learning interest who were taught through the reciprocal learning method was 17.00, and the standard deviation was 2.36. The average score of the group of students who have low learning interest taught through discussion learning is 22.70, and the standard deviation is 3.71. The results of the variance analysis of the construction management learning outcomes scores of these two groups of students obtained the calculated Q value is 6.10. The Q table value obtained from the Q distribution table with $df = 10; 3$ and significance level α is 3.88. This result shows that the Q table ($6.10 > 3.88$).

Based on the results of hypothesis testing, it can be concluded that the learning outcomes of construction management in students taught with the reciprocal learning method who have low learning interests are lower than the learning outcomes of construction management in students taught with the discussion learning method in students who have low learning interests. This shows that the learning outcomes of construction management for students who have low learning interests are better if taught with the discussion learning method than with the reciprocal learning method.

Conclusion

Based on the results of data analysis in this study, it can be concluded that: The

learning outcomes of construction management of students taught with the reciprocal learning method are higher than the learning outcomes of construction management of students taught with the discussion learning method. These results indicate that the construction management learning outcomes of students taught with the reciprocal learning method are better than the learning outcomes of students taught with the discussion learning method. There is an interaction between learning methods and student learning interests that influence student construction management learning outcomes. These results indicate that the application of reciprocal learning methods and discussion learning methods provides different construction management learning outcomes when applied to students who have certain learning interests.

The learning outcomes of construction management in students taught with reciprocal learning methods are higher than the learning outcomes of students taught with discussion learning methods in students who have high learning interests. These results indicate that to improve the learning outcomes of construction management, students who have high learning interests are better taught with the reciprocal learning method than with the discussion learning method.

Construction management learning outcomes in students taught with reciprocal learning methods are lower than the learning outcomes of students taught with discussion learning methods in students who have low interest. These results indicate that to improve the learning outcomes of construction management, students who have low interest in learning are better taught with the discussion learning method than with the reciprocal learning method.

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