THE INFLUENCE OF COOPERATIVE LEARNING MODELS TO INCREASE LEARNING MOTIVATION ON OBJECT-ORIENTED PROGRAMMING MATERIALS

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Abstract

The world of education requires an interesting learning process for students, with the aim that the students being taught do not feel bored in following the learning process. Learning methods that use conventional methods are one of the causes of students feeling bored in the learning process. The research carried out was Classroom Action Research (PTK) with a cooperative learning model applied to third-semester students in the Information Systems study program at Universitas Pignatelli Triputra. Cooperative learning is a teaching method that involves students studying in small groups to achieve common goals when completing assignments. It is based on the idea that when students work together and exchange knowledge, they learn more effectively. Based on the results of the data analysis that has been carried out, it is known that the initial reflection scores achieved by students were only 22.2% of students who achieved completeness, 55.5% in cycle I and cycle II, and as much as 83.3%. This shows that the use of appropriate teaching strategies can produce real improvements and help students learn enthusiastically and achieve the desired goals.

Keywords : Motivation, Object Oriented Programming, Cooperative Learning, Learning model

Abstrak

Dalam dunia pendidikan membutuhkan proses pembelajaran yang menarik bagi mahasiswa dengan tujuan agar mahasiswa yang diajarkan tidak merasa bosan dalam mengikuti proses pembelajaran. Metode pembelajaran yang menggunakan cara konvensional salah satu penyebab mahasiswa merasa bosan dalam proses belajar. Penelitian yang dilakukan merupakan Penelitian Tindakan Kelas (PTK) dengan model pembelajaran cooperative learning yang diterapkan pada mahasiswa semester III pada program studi Sistem Informasi di Universitas Pignatelli Triputra. Cooperative Learning merupakan suatu metode pengajaran yang melibatkan mahasiswa yang belajar dalam kelompok kecil untuk mencapai tujuan bersama dalam menyelesaikan tugas. Hal ini didasarkan pada gagasan bahwa ketika mahasiswa bekerja sama dan bertukar pengetahuan, mereka belajar lebih efektif. Berdasarkan hasil analisis data yang telah dilakukan diketahui nilai refleksi awal yang dicapai mahasiswa hanya 22,2% mahasiswa yang meraih ketuntasan, 55,5% pada siklus I dan siklus II sebanyak 83,3%. Hal ini menunjukkan bahwa penggunaan strategi pengajaran yang tepat dapat menghasilkan peningkatan yang nyata dan membantu mahasiswa belajar dengan antusias dan mencapai tujuan yang diinginkan.

Katakunci: Motivasi, Pemrograman Berorientasi Objek, Cooperative Learning, Model Pembelajaran

Introduction

In today's rapidly developing globalization, education is an effort to develop and improve the quality of human resources. This is based on the idea that education is something that everyone considers very basic. Therefore, educational activities must be prioritized, especially in the very

tight, competitive, and clear market environment of the current millennium. Education is carried out in a methodical and planned manner to ensure that learning objectives are achieved through productive and successful learning experiences (Silviana Nur Faizah, 2017). Everyone has the right to get a decent education to improve their quality of life. One way to make this happen is by studying. Learning is one of the activities carried out by students to gain knowledge both theoretically and practically (Muh. Hasan Marwiji, 2023). In the learning process, it is not uncommon for us to notice that one of the problems arises, namely the lack of student motivation in learning.

According to research (Pangemanan et al., 2002), motivation is divided into two elements: intrinsic motivation, which generally comes from within oneself or one's own desire to carry out an activity without being forced, for example, liking to read books. Meanwhile, extrinsic motivation is motivation that is outside of a person by being forced to carry out an activity without desire or willingness (Dzuhriawan et al., n.d.). In the world of education, there is a need for an interesting learning process for students with the aim that the students being taught do not feel bored while following the learning process. Learning methods that use conventional methods are one of the reasons students feel bored during the learning process (Kusumawati, 2019). As stated in research (Hidayatullah, 2020), using the lecture method can cause boredom because students do not understand the material being taught, which can reduce students' motivation to learn. A learning model is a conceptual framework that outlines the methodological process for allocating learning experiences to meet learning objectives (Santyasa, 2018). Another opinion states that a learning model is a procedure or series of learning steps that are used so that the objectives or competencies of the expected learning outcomes can be achieved quickly and effectively (Kaban et al., 2020).

Cooperative learning is a teaching method that involves students studying in small groups to achieve common goals when completing assignments. It is based on the idea that when students work together and exchange knowledge, they learn more effectively. Research (Felder & Brent, 1980) explains that cooperative learning is a group-work approach that minimizes the occurrence of unpleasant situations and maximizes learning and satisfaction resulting from working in high-performance teams. Students are encouraged to take responsibility for their own education and that of their friends through cooperative learning through groups consisting of students with varying cognitive abilities (Cahayu et al., 2020). They should respect each other's opinions, speak clearly, and actively listen to each other. The instructor, in the role of facilitator, leads the group through the learning process and offers help and feedback when needed (Sarah, 2021). According to Denise et al. (Woods & Chen, 2011), research revealed that cooperative learning environments can improve student learning and academic achievement, increase student information retention, and help students further develop their social skills. This is due to increased student motivation in the learning process.

The groups formed consisted of students with varying cognitive abilities. The consideration is that humans are social creatures who need each other, so students are conditioned to study and work together in groups, sharing tasks, responsibilities, and experiences. In gaining benefits from implementing the cooperative learning model, according to Jhonson and Jhonson's research (Ali, 2021), they suggest involving students working in teams to achieve common goals in conditions that include the following elements:

a. **Positive interdependence**. Team members must rely on each other to achieve goals. If any team member fails to do their part, everyone will suffer the consequences.
b. **Individual accountability**. All students in the group are responsible for carrying out their duties and mastering all the material to be studied.
c. **Face-to-face promotional interactions**. Although some group work can be broken up and done individually, some must be done interactively, with group members providing each other

with feedback, challenging their reasoning and conclusions, and perhaps most importantly, teaching and encouraging each other.

d. **Appropriate use of collaborative skills**. Students are encouraged and helped to develop and practice confidence-building, leadership, decision-making, communication, and conflict management skills.

e. **Batch processing**. Team members set group goals, periodically assess what they did well as a team, and identify changes they will make to function more effectively in the future.

In the field of computer science, the problem is twofold. In fact, programming is a very difficult task for students because it requires high metacognitive skills such as abstraction, deep understanding, and long awareness, as well as many steps in problem solving, from analysis to debugging and testing (Boudia et al., 2019). In addition, lecturers stated that further difficulties were encountered during programming practicum sessions due to several reasons, such as a lack of student motivation in learning coding and the large number of students (Purwanto, 2023).

Object-oriented programming, often known as OOP (Object-Oriented Programming), is a programming paradigm that describes a system as a collection of objects that have attributes and methods. In their research, (Nwokoro et al., 2021) explain that object-oriented programming is a programming language designed for objects, not procedures, and the emphasis is on data, not logic. Meanwhile, in other research, object-oriented programming is a new way of thinking and logic to deal with problems that are solved with the help of computers, where each object is a single entity that has a certain combination of functions and data structures (Siddik & Sirait, 2018). The object-oriented paradigm suggests that we should model instructions in computer programs with data that is manipulated and stored as components together (Yusri, 2020).

Learning programming involves many techniques, such as verifying arguments using methods provided by programming tools, understanding the importance of each code block, and experimenting by executing some test data (Rohandi et al., 2023). Learn more by reading program output to find errors in software code and using open source code, both in books and on sites that host and release millions of lines of software (Boudia et al., 2019). Some of these programming techniques can help in a pinch, while others focus on programming tools and environments. Regardless of the nature of each technique, when used with awareness and persistence, it can help students, both beginners and experts, develop their abilities. Therefore, this research provides benefits in providing knowledge about the application of cooperative learning models to improve and build students' motivation and social, cognitive, and practical competence towards learning achievement.

To facilitate an effective learning experience in programming and to support students in understanding concepts, acquiring skills, and improving their thinking performance, as well as increasing student motivation in learning programming languages, researchers conducted research with the title The Effect of Cooperative Learning Models on Increasing Learning Motivation on Materials Object-Oriented Programming.

Methods

In the research carried out, the method chosen for problem solving was classroom action research using the cooperative learning model, which has a very important role in increasing student motivation and the quality of learning if implemented well. The subjects in this research were odd semester students taking the Object-Based Programming course, with a total of 18 students.

The classroom action research model used in this research is the cooperative learning model. According to Purbayantin in research (Agustin et al., 2023) there are 4 stages in classroom action research (PTK), namely (1) planning, namely a series of actions that will be followed to improve, modify, or improve behavior and attitudes as a solution; (2) acting, namely something that researchers do in taking action, or acting, to modify, improve, or change the desired results;

(3) observing, namely monitoring the consequences or results of activities carried out or mandated to students; and (4) reflecting, namely when a researcher reflects, they examine, observe, and weigh the impact of actions, which will then be revised based on previous plans.

The data used in this research is data obtained from students using observation and documentation techniques. Learning actions were developed during the reflection process up to the preparation of the report. Data from the results of this classroom action research were examined. Qualitative and descriptive analyses were carried out on the data. This classroom action research was carried out over two cycles, starting with initial reflection first.

Initial reflection

Initial reflection learning in the object-oriented programming course in the Information Systems study program at Universitas Pignatelli Triputra for the 2023–2024 academic year with conditional and looping material in VB.Net 2012 Visual Studio, the results were not satisfactory. The results of the initial reflection can be seen in the following table.

Table 1. Initial Reflection Results

Intervals	Frequency
80-100	1
60-79	3
40-59	7
20-39	5
< 20	2

Based on table 1 above, it can be concluded that the mastery of conditional and repetition material in the third semester of the information systems study program is still very small, with 1 student getting a score of 80 to 100, 3 students getting a score of 60 to 79, 7 students getting a score of 80 to 59., 20 to 39 as many as 5 students, and a score below 20 as many as 2 students.

Cycle I

After the initial reflection has been carried out and the results as described in Table 1, Cycle I will be carried out. Cycle I includes organizing how to use role-playing techniques with the cooperative learning model, taking concrete steps to practice what has been learned by matching activities. , evaluating what is learned, and reflecting on the process.

Table 2. Cycle I Learning Results

Intervals	Frequency
80-100	3
60-79	7
40-59	5
20-39	3
< 20	0

Based on Table 2 above, it can be concluded that there has been an increase in student learning motivation after implementing improvements to the learning model in the classroom. The details of student scores are: 3 students scored 80 to 100, 7 students scored 60 to 79, 5 students scored 40 to 59, 3 students scored 20 to 39, and 0 students scored below 20.

Cycle II

Based on the findings in cycle I, which showed an increase in student scores but had not yet reached the target of an 80% increase, This reflection can be used as a guide to see the shortcomings and challenges of the actions carried out during Cycle I. Next, the action planning for cycle II is improved to achieve the goals and ensure that weaknesses or obstacles in cycle I are

not repeated in cycle II. The researcher gave students the opportunity to use appropriate learning models, be more active in asking questions, and provide complete and clear material to help them correct errors in cycle I. So that after making the necessary corrections, students obtained results such as those shown in the table below.

Table 3. Cycle II Learning Results

Intervals	Frequency
80-100	5
60-79	10
40-59	3
20-39	0
< 20	0

Based on the results in the second cycle learning table, student learning outcomes can increase. In detail, it can be seen that 5 students scored 80 to 100, 10 students scored 60 to 79, 3 students scored 40 to 59, 0 students scored 20 to 39, and 0 students scored below 20.

Results and Discussion

Based on the results of the initial reflection carried out by researchers, it was seen that student motivation was low, and several deficiencies were found during the learning process. Based on what was found, the researcher conducted classroom action research by implementing a cooperative learning model. This is one way to increase student motivation in object-oriented programming courses in the Information Systems study program at Universitas Pignatelli Triputra. The learning model applied is something new for students, so their curiosity increases. Through several stages of action in the initial reflection cycle, cycles I and II, a recapitulation of values can be made in the table below.

Table 4. Completeness of Learning Outcome Values

No.	Completeness	Initial Reflections	Cycle I	Cycle II
1	Complete	2	7	15
2	Not Completed	16	11	3

Based on the values in Table 4 above, it is known that the initial reflection scores achieved by students were only 22.2% of those who achieved completeness, 55.5% in cycles I and II, and as much as 83.3%. This demonstrates that appropriate teaching strategies can produce real improvements and help students learn enthusiastically and achieve the desired goals. So a chart of increasing student grades can be made as follows:.
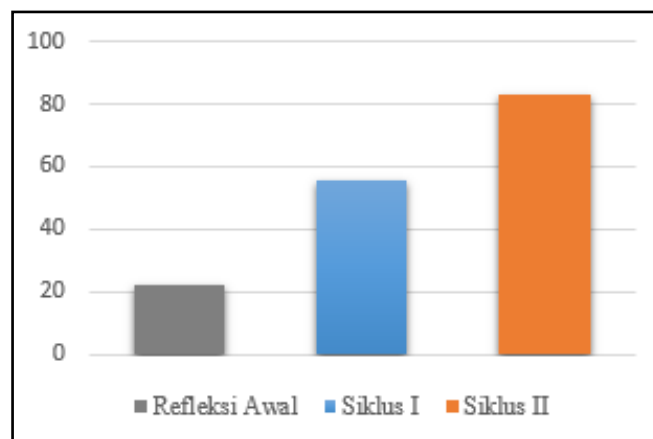

Figure 1. Increase in Student Average Score

According to the graph above, the cooperative learning model has a percentage increase in student grades. This classroom action research aims to determine the increase in student motivation

in object-oriented programming courses. The results of the research carried out show a significant influence of using the cooperative learning model on student motivation, as seen from the percentage of student grades.

Conclusion

Based on the results of the data analysis that has been carried out, there has been an increase in student motivation to study object-oriented programming courses using cooperative learning models more than conventional learning models. With the help of the cooperative learning model, students can work together to achieve goals more successfully than if they worked alone, which can improve students' cognitive and affective skills, as well as involve teaching students how to learn in structured small groups where they work together to complete learning activities.

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