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Implementation of Project-Based Case Method to Improve Student Problem- Solving and Creativity

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Abstract: Current learning is not only in the form of theory but also, in direct practice to provide students with experience that can provide them with skills in the world of work. Problem-solving as applied to work environment also needs to be accompanied by person and team creativity. This research aims to improve the problem-solving and creativity of multimedia engineering students in videography material. The students involved in this research were class A computer education students, FKIP, Universitas Mulawarman. This type of research is classroom action research carried out over 2 cycles. The result obtained increased using case method in cycle I with an average value 78.74 to 84.24 in cycle II. Project with creativity also experienced a slight increase in the average score from 83.89 in cycle I to 84.76 in cycle II. Student responses to multimedia engineering learning using the project-based case method are positive and provide real contributions.

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Introduction

Learning in Indonesia in the independent learning curriculum provides ample opportunities for students to able to solve problems and express their creativity to achieve learning goals that are centered in the students themselves. Studying in groups to solve problems related to real-word realities and industry is a must because currently, college graduates need to have creativity but rather direct practice in lectures. Direct practice provides students with relevant learning experiences while solving problems by studying in groups. Take the time to discuss and explain the findings. One of the methods use today is the case method and project-based learning. In accordance with the independent learning curriculum, students' learning processes need to be directly involved so that students can develop their knowledge, thinking power and abilities (Aulia et al., 2023)

We can see collaboration between the case method and project-based learning in 21st-century learning, namely 4 skills including critical thinking, creativity, communication, and collaborative skills (Handayani et al., 2023). The case method use is a policy from the government, especially the Ministry of Education, for universities to achieve Key Performance Indicator (KPI) of 7 in learning so that students can develop the ability to work together in solving problem (Sundari et al., 2023). The case method provides an effort to familiarize

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students with analyzing and finding solutions to problems around them (Anggraeni, 2012). Innovative learning is expected to be implemented in the form of collaborative and participatory classes, with a high level of curiosity, so that graduates have skills active learning method is very suitable to use because it focuses students on real-world situations (Rizka & Permatasari, 2023). Current developments in the digital era require adaptation to technological changes and societal needs, providing skills, one of which is collaboration skills (Hikmawati et al., 2024). So it can be concluded that the case method provides space for students to be active and collaborative in solving real problems.

As for relevant research on the application of the case method in classroom action research, the results obtained from learning the case method with a lesson study approach can increase student participation and problem-solving activities (Sundari et al., 2023). Study of case method learning models and team-based projects can improve student higher thinking and creative writing skills (Rosmawaty et al., 2024). Other relevant research shows that case method learning can improve critical thinking skills and develop students skills as a learning innovation (Hodijah et al., 2022). Case method-based learning is a discussion-based method for solving cases or problems. This application will help students hone and improve their critical thinking skills to solve problems, have communication, collaboration and creativity skills (Wahyuni et al., 2023).

The project-based case method is a learning option implemented in multimedia engineering courses. Students are given case studies and complete them as learning progresses. Apart from that, it provides students with the opportunity to be creative in making videography works using Camtasia software and other software studied by students in video editing. Students create videogragphy works using the techniques they have learned. Making this project takes the project-base learning model. George Lucas Education and Dopplet stated that the project-based learning model has 6 learning steps; namely determining basic questions, designing a project plan, preparing a schedule, monitoring student progress, testing work, and evaluating experience (Priatna et al., 2021). Project-based learning is almost the same as team-based projects because they both provide opportunities for students to be able to work on projects as a team. The benefit of implementing the team-based project method is that interactive discussions arise in certain material, students can share information with each other after studying different material, and can convey it to other friends (Sudiyono et al., 2023). The project-based learning model is an effective tool for educators as facilitators in developing students' skills to provide contextual and relevant learning experiences(Amalia & Tahar, 2024)

The multimedia engineering course emphasizes how students can solve problems and apply manufacturing techniques related to multimedia in various fields. Especially in videography material, students apply more videography production flow techniques, editing processes, posters, and storyboards to produce videography works. This research aims to improve student problem-solving and creativity through a project-based case method to provide a good learning experience.

Research Method

This research uses the classroom action research method which is a systematic, cyclical scientific method used to study social situation, understand the problems, and then find knowledge in the form of action to improve the social situation (Sugiyono, 2013). Action research aims to contribute to the practical concerns of the people in problematic situation directly and simultaneously further the goals of social science (Emzir, 2017). Classroom action

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research is a type of research that describes both the process and results, to improve quality of learning(Arikunto et al., 2019). The approach used is a quantitative approach with a survey of student responses. This research was carried out in class A as many as 36 students in the multimedia engineering course of Computer Education Study Program, Faculty of Teacher Training and Education, Mulawarman University. In cycle I, there were 2 meetings with material on production flow and poster videography. Student also got creative in making poster using canva. For cycle II, 2 meetings were also held with storyboarding and video editing material. The storyboard was made using canva software, while video editing used Camtasia or other software studied. Each meeting is given a case study which is discussed by each group. The responses given by students were related to the project-based case method in multimedia engineering learning using surveys with the criteria of feeling challenged, feeling difficult, feeling new to learning, feeling normal, needing to read again, feeling the benefits, feeling other benefits, working on assignments as a team, feel happy (Sundari et al., 2023). The classroom action research models used are the Kemmis and McTaggart in Figure 1.

Kemmis & Mctaggart's model in the design of the classroom action research model involves planning, carrying out actions, and observing, then reflecting during the cycle. Planning is the initial stage of preparing lessons and materials that will be taught in the classroom. Actions in the classroom are carried out when learning is taking place and at the same time carrying out observations to see the process carried out by students collaboratively or studying in groups. Reflection in cycle I is an improvement in action so that it can provide follow-up in cycle II. Reflection in cycle II provides improvements for the next action, but if you feel you have achieved enough in cycle II there is no need to continue to the next cycle.

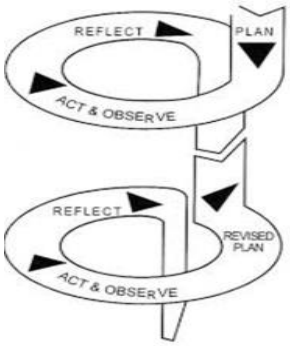

Figure 1. Model Kemmis & MC Taggart (Sundari et al., 2023)

Result and Discussion

This research was conducted in March 2024 with subject of 36 class A students of Computer Education Study Program, Faculty of Teacher Training and Education, Mulawarman University. The type of research used is classroom action research. For the first cycle, prepare to make open materials in Power Point, prepare case studies in the form of questions at the beginning of the slide, students will be in groups of 5-6 people, and prepare case assessment methods according to the rubric in the semester learning plan and project. Second, take action by providing case studies related to videography production flow material at meeting 1. The case studies provided are discussed with each group to solve production flow problems, both pre productions, during production, and post-production. The 2nd meeting was about making posters and the elements in them. Third, observe students if there are several things that students do not understand or have question about, then loo their activities in solving case

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studies, including students who have explained their findings. Answer sheets and initial project assignments for assessing student creativity were collected and examined as reflections for the next lesson in cycle II at meeting 3 and 4. The reflections carried out in cycle I were actions taken to make the two cycles better.

In cycle II, prepare or plan again form making slides on storyboard material and video editing which is meetings 3 and 4 including the assessment. The implementation action provides case studies relate to storyboard and video editing material as well as projects for videography to assess student creativity. Carrying out observations, the lecturer sees student activities in solving case study problem and move directly to video editing with Camtasia software and other software used by students and continues with project assignments. Answer sheet were collected for further reflection on whether just two cycles were enough to describe improvements. The following are results of cycles I and II presented in the diagram in Figure 2.

It can be seen that in cycle I problem solving increased with an average increase of 5,15 in cycle II. Problem solving which is a case method has an average value of 78,74 increasing to 83,89 in cycle II. An increase of 5,15 in problem solving, student working as a team were able to do itu well and some even presented their findings. Student creativity in multimedia engineering projects increased by an average of only 0,52 in cycle II. In terms of student creativity in making initial project in cycle I, the average score was 84,24 increasing to 84,76 in cycle II. This shows that the project-based case method can improve problem-solving and student creativity in multimedia engineering learning. The increase of only 0,52is probably due to active and enthusiastic student in both cycles, so there is a small difference in the average sores. In connection with relevant research, the result of researchers in applying the case method both provide increased problem-solving or critical thinking skills, as well as creativity, including student skills, written by Sundari, Rosmawaty, and Hodijah.

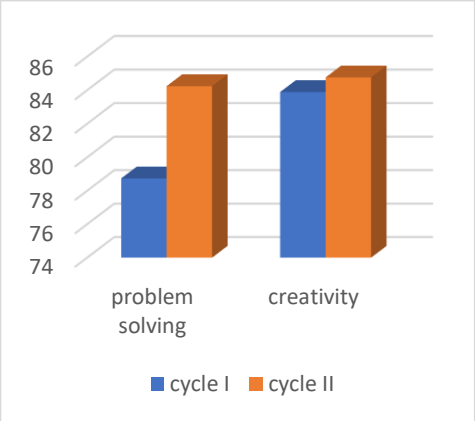

Figure 2. The Result Of Cycles I And II On Problem Solving And Creativity

Student responses in figure 3 have nine categories related to multimedia engineering learning using a project-based case method. This survey was completed by 27 students. As many as 56% of students felt challenged in working on case studies and answered maybe 7,1%. In the learning difficulties category, around 11,1% expressed difficulties, and perhaps as many as 44.4%. as many as 51,9% felt they had just learned about multimedia techniques, especially videography, and 29,6 answer maybe. For the ordinary category in multimedia engineering

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learning, it was 25,9% and 18,5% answer maybe. Student who needed to read more in learning multimedia engineering were 55,6% and answer maybe 33,3%. The real benefits obtained by students answered yes as much as 70% and answer maybe as much as 29,6%. For other benefits 51,9% answered yes and 40,7% answered maybe. Working together as a team to speed up completion and division of roles, student answered 70,4% and answered maybe 29,6%. As much as 63% of student felt happy presenting their findings and answered maybe 25,9%.

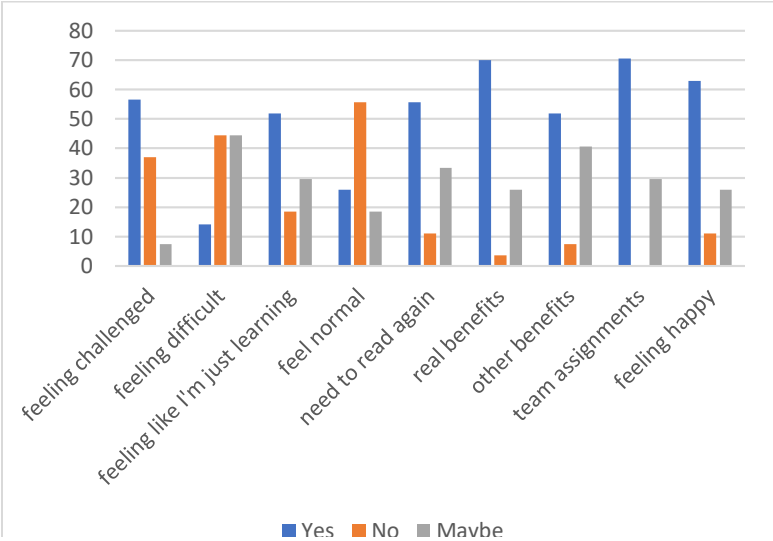

Figure 3. The Result of the survey on student

From the result of the survey on student, it can be concluded that learning using the project-based case method can have a positive impact on both problem-solving and creativity in creating videography projects. This is because students feel challenged even though they experience a little difficulty, get real benefits, and other benefits that can be felt are actively collaborative as a team when completing case studies and projects, and feel happy when presenting the findings. The result of this survey is also relate to sundari's research which has the same category but the researcher made modifications, namely team aasignments and feelings of happiness. The results are positive, students feel the benefits, and working together as a teman can speed up assingnment completion.

Conclusion

From the results of research and discussion regarding the implementation of this project-based case method model which was carried out over 2 cycles. The average value increase was 5.15% from cycle I to cycles II form problems solving in videography material. There was an increase of 0,52% form cycle I to cycle II for student creativity in making videography projects. The student responses regarding learning using the project-based case method can be said to be a positive responses and has a real impact on students in problems solving and showing creativity as a team with the role of each member being able to speed up the solution.

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Recommendation

Suggestions for future research are that the case method be collaborated with other learning models and also about the four 21st-century learning skills in learning activities.

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