

Application of project based learning learning models to improve student learning results techniques of manufacturing images of vocational school students

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Abstracts. The purpose of the study was to determine the increase in learning outcomes of manufacturing engineering subjects in class XI Vocational School 3 Muhammadiyah Yogyakarta. This research is Classroom Action Research. Subjects were students of class XI TP 1 of Vocational School 3 Muhammadiyah Yogyakarta, amounting to 21 students, while the object of the research was the activity and learning outcomes of manufacturing drawing engineering subjects. The technique of collecting data uses observation, tests and documentation. The instruments used were learning outcomes tests and observation sheets. The data analysis technique uses quantitative analysis to determine learning outcomes. The results of this study indicate that the Project Based Learning Model can improve student learning outcomes in the lathe machining engineering subjects of class XI Muhammadiyah 3 Yogyakarta Vocational School, the average value of student learning outcomes in the first cycle is 66.67% increasing to 78.81%, in the second cycle, then increased to 89.52% in the third cycle so as to reach the determined minimal completeness criteria.

Keywords: project based learning models, learning outcomes, manufacturing drawing techniques

Introduction

Education has an important role as the spearhead in determining the future of the nation, without education there will be no successor of noble ideals to achieve prosperity and progress of the nation. One of the efforts made is through learning. Learning reflects conceptual knowledge that is widely used and has many different meanings [1].

Learning in mechanical engineering drawing subjects requires active involvement of students to be able to understand deeply about mechanical engineering drawings.

Learning outcomes are behavioral changes that cover the fields of cognitive, affective, and psychomotor [2]. Learning outcomes are a learning process that is characterized by changes in behavior as a whole both concerning cognitive, affective, and psychomotor [3].

Based on the results of observations carried out on August 1, 2017, subject matter engineering teachers suggested that in the classroom students often show boredom when

taking mechanical engineering drawing lessons because students do not practice directly [4].

One suitable learning model is the Project Based Learning (PjBL) model, through this learning model makes students active, fosters collaboration among students, fosters ideas, fosters the character of students who are responsible and creative [5]. This learning model allows students to make their own decisions about the framework and determine solutions to the problems given [6].

Based on the description above the researcher intends to carry out research to be able to find out how far the application of the project based learning learning model in improving the learning outcomes of manufacturing drawing engineering subjects of class XI students of Muhammadiyah 3 Yogyakarta Vocational School 2017/2018.

Research Methods

This research was conducted in Muhammadiyah 3 Yogyakarta Vocational High School 2017/2018 academic year. This type of

research is classroom action research (Action Research) with research design Kemmis & Mc. Taggart, which consists of 3 cycles. Each cycle consists of 4 stages, namely: 1) planning; 2) implementation; 3) observation; 4) reflection.

The study population was all students of class XI of Muhammadiyah 3 Yogyakarta Vocational High School. The research sample was taken randomly and obtained in class XI TP 1.

Data collection techniques in this study include: test results of learning, observation, and documentation. While the instruments used in this study are question sheets consisting of 20 multiple choice questions & 5 descriptions of answers that have been tested for validity and reliability. Test the validity of the question using the product moment formula, namely:

$$r_{xy} = \frac{N \cdot XY - (EX)(EY)}{\sqrt{[N \cdot EX^2 - (EX)^2][N \cdot EY^2 - (EY)^2]}} \quad [7]$$

While for the reliability test using the KR-20 formula, namely:

$$r_{11} = 2 \left[1 - \frac{V_1 + V_2}{V_t} \right]$$

The observation sheet of the results of the student's workpiece contains an assessment of the activity before carrying out the practice and the results of the student's workpiece, and the documentation in this study is a photo at the time the research took place.

Data analysis techniques in this study include: 1) the percentage of student learning activities based on observations and 2) analysis of the average values and percentages of students who meet the KKM.

Result

Based on the results of the research, it shows that each cycle has increased. The results of the pre-action show 12 students who completed the KKM or 21% of the 21 students, while the KKM incomplete students were 9 students or 43% with an average of 72.05. In the first cycle there was an increase compared to pre-action. Cycle I shows students complete KKM as many as 14 of 21 students or 67%, while students who have not finished KKM as many as 7 students or 33% with an average value of 75.19. In the second cycle also experienced an increase compared to the first cycle. Cycle II showed students completed KKM as many as 16 of 21 students or 76%,

while students who have not completed KKM as many as 5 of 21 students or 24% with an average value of 78.00. The results in cycle III show that all students have received KKM completion scores of 21 or 100% with an average value of 80.95. In detail, it is presented in Diagram 1.

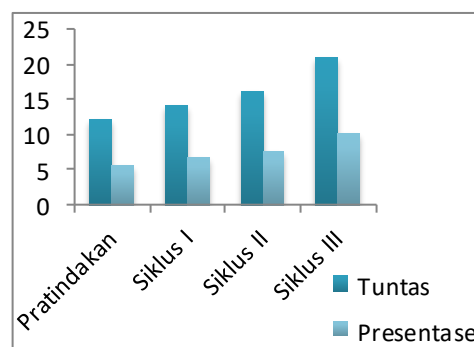


Figure 1. Persentase dan jumlah siswa yang memenuhi KKM

Discussion

The Results Of Research Conducted At Muhammadiyah 3 Vocational School Of Yogyakarta Showed That Student Learning Outcomes In Manufacturing Engineering Drawing Lessons In Class Xi Tp1 Using The Project Based Learning Model Had Increased. Improving Student Learning Outcomes Can Be Seen From Student Learning Outcomes And The Percentage Of Students Who Complete Kkm.

In The Pratindakan Results Showed Students Who Completed Kkm As Many As 12 Of 21 Students Or 57% While Students Who Had Not Finished Kkm Were 9 Out Of 21 Students Or 43% With An Average Of 72.05. In The First Cycle There Was An Increase Compared To Pre-Action. In The First Cycle, There Were 14 Students Who Completed The Kkm With 21 Students Or 67% While The Kkm 7 Incomplete Students From 21 Students Or 33% With An Average Of 75.19. In The Second Cycle, There Were 16 Students Who Completed The Kkm With 21 Students Or 76%, While Kkm Students Who Had Not Completed As Many As 5 Out Of 21 Students Or 24% With An Average Of 78.00. The Results In Cycle Iii Show That All Students Have Completed Kkm Or As Many As 21 Out Of 21 Students Or 100% With An Average Value Of 80.95.

Indicators In This Study Have Been Achieved, Namely The Learning Outcomes Of Each Student Has Reached A Complete Value Of Kkm 75 And The Average Value From Cycle I To Cycle Ii And From Cycle Ii To Cycle Iii Has Increased With The Number Of Categories 75% Of Students Achieve The Kkm 75 Complete Score. Then It Can Be Concluded That The Use Of The Project Based Learning Model Can Improve The Welding Learning Outcomes Of Class Xi Tp1 Students Of Muhammadiyah 3 Vocational School Yogyakarta. It Is Evident That This Study Achieves The Criteria That Have Been Determined Which Shows That Between 76% - 100% Of Students Have Completed (Getting Scores Above The Kkm) So That This Research Can Be Said To Be Successful. This Is Like The Research Conducted By Edo & Tika That With The Same Learning Model Can Increase Student Motivation And Learning Achievement. Research Conducted by [8] Using The Recitation Model Can Improve Student Learning Outcomes.

Conclusion

Based On The Results Of The Research And Discussion It Can Be Concluded That The Application Of The Project Based Learning Model In The Subjects Of Manufacturing Drawing Techniques Can Improve The Learning Outcomes Of Class X Tp1 Muhammadiyah 3 Vocational School Yogyakarta. This Can Be Seen In The Success Of Learning Outcomes.

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