JOURNAL OF PRAGMATICS RESEARCH – Vol xx, No xx (20xx), pp. xx-xx
DOI: http://dx.doi.org/10.18326/jopr.vxxixx.xx-xx
e-ISSN: 2656-8020

Implementation of Project Based Learning for Improve Student Activity and Learning Motivation Grade X Informatics Student in X SMK Bhina Bhakti Juwana

Rias Septiyaningrum,[1*]

English Literature, Faculty of Humanity and Education, University of Muhammadiyah Semarang, Semarang, Indonesia[1]

*) Corresponding Author
Email: Riasningrum1922@gmail.com

DOI: 10.18326/jopr.vxxix.xx-xx

Submission Track:
Received: xx-xx-20xx
Final Revision: xx-xx-20xx
Available Online: xx-xx-20xx

Abstract

This research aims to improve activation and motivation learning informatics grade X at Bhina Bhakti Buana through the implementation of Model Based Learning. The baground of this study is the low of activation and less motivation caused by the dominan teacher based teaching method, which make student pasif, less participate and get bored easly during the learning process. The study employed Classroom Action Research (CAR) using the Kemmis and McTaggart model, conducted in two cycles consisting of planning, action, observation, and reflection stages. The research subjects were Grade X students in the Informatics subject with learning material on computer hardware introduction. Data were collected through observation, questionnaires, and documentation, while data analysis was carried out using, descriptive, quantitative, techniques. The results showed that the implementation of the Project Based Learning model was able to improve students' activeness and learning motivation gradually in each cycle. Students' learning activeness increased from 71.87% in Cycle I to 75.35% in Cycle II. Meanwhile, students' learning motivation increased from 71.86% in Cycle I to 74.61% in Cycle II. Based on these

findings, it can be concluded that the Project Based Learning model is effective in improving students' activeness and learning motivation in the Informatics subject.

Keywords: Project Based Learning, leaening activity, motivation learning, Informatics.

INTRODUCTION

Educarion in Indonesia currently faced with the demand to produce human resources (HR). therefore, education is a crucial element in the development of human recources. From the education, human can learn all of things that unknown before. Thus, it is clear that education plays a very important role in improving the quality of human resourrces.

Improving the quality of formal education in schools cannot be seperated from the succes of the learning progress. The learning process is influenced by several interrelated factors, including teachers, students, learning methods, and supporting facilities. These four components play an important role in determining the success of learning activities, which in turn affect students' activeness and learning motivation.

SMK Bhina Bhakti Juwana has adequate supporting facilities with students who have diverse abilities. Supporting facilities in the Information Systems, Networks, and Applications department include a computer laboratory equipped with computers, LCD projectors, and other practical equipment. Based on observations conducted in Grade X classes consisting of 36 students and interviews with Informatics subject teachers, it was found that the learning method commonly used was the teacher method. The use of teacher-based learning was considered less effective and did not sufficiently involve students in the learning process, causing students to become passive.

During the learning process, activity of student id very important. particularly activeness in exploring learning materials. However, monotonous learning

activities can cause students to lose focus and become passive. Students also tend to perceive the material as difficult to understand, which results in a lack of comprehension of the material delivered in the Informatics subject.

Acording of (Sardiman, 2009) one of the characteristics of learning motivation is the enjoyment of seeking and solving problems. Boring learning methods can negatively affect students' learning motivation in the classroom, leading to passive learning behavior. Therefore, it is necessary to implement an engaging learning model to improve students' learning motivation.

As educators, teachers are required to possess good teaching competence. The learning methods used should consider students as active subjects of learning. Each student has different abilities and learning styles, resulting in different individual learning needs. However, this does not mean that learning should be conducted individually; instead, an appropriate learning model is needed to accommodate students' individual needs.

Project Based Learning (PjBL) is a learning model that uses projects or activities as the core of instruction. Students engage in exploration, assessment, interpretation, and synthesis to produce various learning outcomes. PjBL involves in-depth investigation of real-world topics. The steps of Project Based Learning include determining essential questions, designing project plans, creating schedules, monitoring project progress, testing outcomes, and evaluating learning experiences. Project Based Learning uses problems as an initial step in gathering and integrating new knowledge through real activities.

Based on the results of observations, several problems were identified as the causes of low student activeness and learning motivation among Grade X students at SMK Bhina Bhakti Juwana. Teachers used less varied learning methods and involved students minimally in exploration, assessment, interpretation, and

synthesis activities. This learning process resulted in low levels of student activeness and motivation in the Informatics subject, causing students to become passive, show low respect toward teachers, and have difficulty understanding the learning material.

Based on these problems, this educational research was conducted by implementing the Project Based Learning model to improve student activeness and learning motivation in the Informatics subject on the topic of computer hardware introduction for Grade X students of SMK Bhina Bhakti Juwana in the 2022/2023 academic year. Through the implementation of this learning model, it is expected that passive students will become more active in their learning, both individually and in interaction with teachers, peers, and the learning environment.

RESEARCH METHOD

The research conducted was Classroom Action Research (CAR), which focuses on efforts to change existing real conditions toward expected conditions. This study is a descriptive quantitative analysis research aimed at improving and finding solutions to real and practical problems in enhancing the quality of classroom learning that are directly experienced through interaction between teachers and students during the learning process.

According to Franco Vaccarino (2007) in his book entitled *Action Research Reflection*, there are several models or designs of Classroom Action Research that can be applied, one of which is the Kemmis and McTaggart model. This model was developed by Stephen Kemmis and Robin McTaggart in 1988 (Sukardi, 2003:210).

This research was conducted in two cycles, namely Cycle I and Cycle II. Cycle I consisted of one meeting, and Cycle II consisted of one meeting. Each cycle consisted of four stages: planning, action, observation, and reflection.

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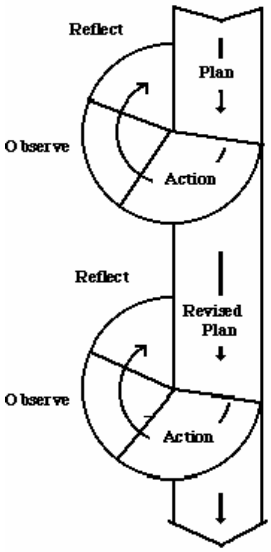
In accordance with the type of research selected, namely Classroom Action Research, this study used the action research model developed by Kemmis and McTaggart in the form of a spiral cycle from one cycle to the next. Each cycle includes planning, action, observation, and reflection. The next cycle is conducted with revised planning, followed by action, observation, and reflection. Before entering Cycle I, a preliminary action was carried out in the form of problem identification, often referred to as the pre-cycle stage. The data collection cycle follows the Kemmis and McTaggart model, and the stages of its implementation can be seen in Picture 1.1.



Picture 1.1 Classroom Action Research Cycle According to Kemmis & McTaggart

The subjects of this research were students of Grade X SIJA A in the 2017/2018 academic year who were taking the Simulasi dan Komunikasi Digital subject, totaling 36 students, consisting of 18 female students and 18 male students. This research was conducted in Grade X of the Computer Network Engineering Study Program at SMK Bhina Bhakti Juwana in the 2022/2023

academic year.

The research was conducted over a period of two months, from March to April 2022, with two meetings using Cycle I and Cycle II. However, if the indicators of student activeness and learning motivation had not been achieved, the research would have continued to the next cycle.

The main instrument in this research was the observation of student activeness and motivation. Observation is defined as the systematic observation and recording of visible elements or phenomena in the research object (Wagiran, 2013:265).

Data were collected through two main methods, namely observation of student activeness and motivation and student response questionnaires. The observation method in this research was used to obtain data on student activeness and learning motivation toward the material taught by the teacher. The observation sheet used was based on a rating scale. The observation sheet was filled out by the observer by giving a checklist (√) on the appropriate option according to the observation results. This research used a four-point rating scale with the following categories: 4 = Very Good, 3 = Good, 2 = Fair, and 1 = Poor.

The questionnaire is a set of written questions that must be answered in writing by the respondents (Wagiran, 2013:274). The questionnaire was given to students to collect data on student responses toward the implementation of the Project Based Learning model. The questionnaire used was based on a Likert scale, which is an attitude scale designed to cover positive and negative attitudes or agreement and disagreement toward an object. The form of the questionnaire used in this research was a checklist format, in which respondents marked a check (√) in the provided column. Each item had four alternative answers. For positive items, the scores ranged from 4 to 1, while for negative items, the scores were

reversed from 1 to 4. The answer options for each instrument item consisted of four choices: 4 = Always, 3 = Often, 2 = Rarely, and 1 = Never.

RESULTS & DISCUSSION

Pra Cycle

Before the research was conducted, discussions were held with the teacher in charge of the Informatics subject on December 4, 2022 at SMK Negeri 2 Klaten. The initial observation was carried out to identify problems commonly faced by teachers during the learning process. The results of the initial observation in the Simulasi dan Komunikasi Digital subject in Grade X showed that most students paid little attention during the learning process.

Before the research began, the basic competencies used as the learning material in the implementation of the Project Based Learning model were determined. The selected material was based on the syllabus of the Simulasi dan Komunikasi Digital subject, namely analyzing the production of video, animation, and digital music. A lesson plan (RPP) was then prepared. During the research, learning activities were conducted by the researcher as the instructor, assisted by three observers who helped observe.

Observations were carried out through interviews with the teacher in charge of the Simulasi dan Komunikasi Digital subject. The teacher explained that during the learning process, students were less active in listening to the teacher, and some students were busy playing games and showed little interest in classroom learning. In addition, students were not quick in solving problems related to learning activities. Based on the interview results, it was found that students' activeness and motivation during the learning process were still low, so it was necessary to change the learning model in the classroom by implementing Project Based Learning.

Before the research began, the basic competencies were determined to establish the learning material to be taught using the Project Based Learning model. The basic competencies were selected based on the syllabus of the Simulasi dan Komunikasi Digital subject for the even semester. The determined basic competency was analyzing the production of video, animation, and digital music.

futhermore, the research instruments were validated through an expert judgment process by expert lecturers. Based on the results of expert judgment, several suggestions were obtained for improving the instruments, including: (1) the formulation of indicators in the observation sheets should be adjusted without using conjunctions so that each indicator is specific and measurable; (2) the preparation of student questionnaires should include positive and negative statements to improve the accuracy of measuring learning motivation; and (3) the identity of the instruments should be clarified and completed in more detail, both in the observation sheets and questionnaires.

Siklus I

a. Planning stage

The first action taken at the planning stage was preparing a lesson plan (RPP) containing the identity of the educational program, core competencies and basic competencies, indicators of competency achievement, learning objectives, learning materials, approaches, strategies and methods, learning activities, learning tools and media, learning resources, learning assessment, knowledge and skills test items, and scoring guidelines. The lesson plan was prepared based on the applicable syllabus for the Simulasi dan Komunikasi Digital subject. In Cycle I, the material taught was the basic competency of analyzing the production of video, animation, and digital music, which was carried out in one meeting with a

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duration of 5 × 45 minutes. The determination of the research schedule referred to the semester program (Prosem). In Cycle I, students learned about storyboards for animation. At the planning stage, research instruments were also prepared as data collection tools, including observation sheets for activeness, observation sheets for motivation, and student questionnaires.

b. Acting stage

The implementation of classroom action in Cycle I was carried out on Monday, March 19, 2022, in Grade X at SMK Bhina Bhakti Juwana. The stages of the learning plan were as follows: (1) introduction/initial activities (30 minutes); (2) core activities (165 minutes); and (3) closing activities (30 minutes).

c. Observing stage

Based on the observation results of student activeness in Cycle I, it showed that students' activeness and learning motivation had not yet reached the success indicators, as evidenced by the average activeness score of 71.87% and the average motivation score of 71.86%. Most activeness indicators in Cycle I had not yet achieved the expected success indicators. From the observations conducted by the researcher and three observers, the following data were obtained:

1. Pengamatan terhadap Keaktifan Belajar Siswa

In Cycle I, the observation results showed that the average student activeness score was 72.08%, while the average questionnaire result was 71.67%. The detailed results for each aspect of student activeness in Cycle I are presented in Table 1.1.

Tabel 1.1 Precentage Of Activitness Observation In Cycle I

NO	Indicator	Ciclus I	Average

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		Ovservation	Quisionere	
1	Prticipation in carrying out learning task.	71,53 %	72,92 %	72,22 %
2	Learning drives and needs	72,92 %	68,40 %	70,66 %
3	Problem solving	71,53 %	74,77 %	73,15 %

Based on tabel 1.1 in general, some students in Cycle I did not yet have sufficient motivation during the learning process using the Project Based Learning model. After calculating the average percentage of student activeness in Cycle I, the motivation indicators had not yet reached the expected success indicators.

2) Observation of Student Learning Motivation

The result of observation shows that the average of student learning motivation in cicluc I is 70,60 % and the result of quisionere is 73,12 %. The detailed results for each aspect of student motivation in Cycle I are presented in Table 1.2.

Tabel 1.2 Precentage of Motivation Observation in cycle I

No	Indikator	Siklus I		Rata-rata
		Observsi	Angket	
1	Perseverance facing task	71,53 %	73,26 %	72,39 %
2	Desire and willingness to succeed	71,18 %	70,83%	71 %

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3	Interesting learning activities	68,75 %	74,58 %	71,66 %
4	Showing interest in various peoblem	70,83 %	72,22 %	71,52 %
5	Condusive Learning Evironment	70,14 %	76,39 %	73,26 %

Based on Table 1.1, in general, some students in Cycle I did not yet have sufficient motivation during the learning process using the Project Based Learning model. After calculating the average percentage of student activeness in Cycle I, the motivation indicators had not yet reached the expected success indicators.

d. Tahap refleksi (reflecting)

The result of cycle I shows that activity and student motivation learning had not yet reached idicators. Some student did not parcitipate in group discussion which is affeted to low participate in problem solving. In addition, student motivation to ask question to the teacher was sill low because student lacked covidence in expressing their question. This finding became basis improvmenst in cycle II, including provriding animation as first learning stimulus and increasing teacher guidance by visiting each group. Seating arrangements were also adjusted to encourage interaction and cooperation among students.

Cycle II

a. Planning

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The planning stage in Cycle II was based on the reflection results from Cycle I. The first action taken at this stage was preparing a lesson plan containing the identity of the educational program, core competencies and basic competencies, indicators of competency achievement, learning objectives, learning materials, approaches, strategies and methods, learning activities, learning tools and media, learning resources, learning assessment, knowledge and skills test items, and scoring guidelines. The lesson plan was prepared based on the applicable syllabus for the Simulasi dan Komunikasi Digital subject. In Cycle II, the material taught was the basic competency of analyzing the production of video, animation, and digital music.

At the planning stage, research instruments were also prepared as data collection tools, including observation sheets for activeness, observation sheets for motivation, and student questionnaires. Observation sheets for activeness were used to assess student activeness during the learning process from beginning to end. In addition, group member lists and documentation tools in the form of a digital camera were prepared to document activities during the implementation of the Project Based Learning model.

b. Tahap Pelaksanaan *(Acting)*

The implementation of classroom action in Cycle II was carried out on Monday, March 26, 2018, in Grade X Axioo at SMKN Klaten. The implementation of actions followed the learning plan that had been prepared.

c. Tahap Observasi

based on the result of observation to activity and student learning motivation cycle I had not reached succes indicator. Berdasarkan hasil pengamatan terhadap keaktifan dan motivasi belajar siswa pada siklus I belum

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mencapai indikator keberhasilan. From the observations carried out by the researcher and three observers in Cycle II, the following data were obtained.

1) Observation of student learning activeness

In Cycle II, the observation results showed that the average student activeness score was 75.14%, while the average questionnaire result was 75.56%. The detailed results for each aspect of student activeness in Cycle II are presented in Table 1.2.

Tabel 1.2 Presentase Observasi Keaktifan Siklus II

NO	Indicator	Siklus I		Average
		Observation	Questionnaire	
1	Prticipate in carring out learning tasks	77,08 %	75,46 %	76,27 %
2	Learning drive and needs	74,31 %	73,26 %	73,78 %
3	Problem solving	72,92 %	78,70 %	75,81 %

Based on the tabel 1.2 for general in cycle II, some student had begun active using Project Based Learning model. After calculated precented average of student activity in cycle II, the activenees indicators had reached the expected succes indicator. Many student had participated in carrying out their learning tasks.

2) observation of student learning Motivation

The result of observation showed that the average student motivation cycle II is 74,42 % and the result of questionaire 74,80 %. The detailed result each aspect student motivation in cycle II are presented in Tabel.

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e-ISSN: 2656-8020

No	Indicator	Cycle I		Average
		Observation	questionaire	
1	Preseverance complting tasks	77,08 %	75 %	76.04 %
2	Desire and willingness to succes	73,26 %	72,64%	72,95 %
3	Interesting learning activation	72,22 %	76,53 %	74,37 %
4	Shoeing interest in several problem	73,61 %	73,84 %	73,72 %
5	Condusive learning environtment	77,08 %	77,08 %	77,08 %

Based on the table. In gereal to cycle II some student had begun show motivation during the Project Based Learning model. After calculated average presentage student activity in cycle II the motivation indicators had reached the expected success indicators. The indicators that had not yet been achieved were the desire and willingness to succeed, interesting learning activities, and showing interest in various problems.

CONCLUSION

Subject for Grade X SIJA A students of SMK Negeri 2 Klaten shows that the implementation of learning in the Informatics subject using the Project Based Learning model in Grade X of SMK Bhina Bhakti Juwana is able to improve student activeness. This is based on observation data from all predetermined indicators which showed results in Cycle I of 58.75%, increased in Cycle II to 75.35%, and increased again in Cycle III to 76.77%. The increase in student activeness from Cycle I to Cycle II was 4.8%.

Based on the result of research and discussion, it can be conclude that the

classroom action esearch conducted in the simulation and communication digital ubject for Grade X SIJA A students of SMK Negeri 2 Klaten shows that the implementation of learning in the Informatics subject using the Project Based Learning model in Grade X of SMK Bhina Bhakti Juwana is able to improve student activeness. This is based on observation data from all predetermined indicators which showed results in Cycle I of 58.75%, increased in Cycle II to 75.35%, and increased again in Cycle III to 76.77%. The increase in student activeness from Cycle I to Cycle II was 4.8%.

Futhermore the implementation of learning in informatics wich using Project Based Learning model at in grade X Bhina Bhakti Juwana can improve student motivation. dapat meningkatkan motivasi siswa. This is based on observation from all specific which obtained result in cycle I of 71,86% increased in cycle II to 74,61 %, There was an increase of 3.8% from Cycle I to Cycle II.

Based on the results of the research that has been conducted, learning using the Project Based Learning model has proven to be effective in improving the activeness and learning motivation of Grade X SIJA A students of SMKN 2 Klaten. This is evidenced by the data obtained which show an increase in student activeness and learning motivation in each cycle. Therefore, learning using the Project Based Learning model needs to be applied as a variation of classroom learning by teachers.

AI Declaration

The authors declare that Artificial Intelligence (AI) tools were used only as assistive instruments during the preparation of this manuscript. Specifically, [name of AI tool, e.g., ChatGPT, Grammarly, Quillbot] was used to support language clarity, grammar, and formatting. The AI tool did not generate, fabricate, or manipulate research data, analysis, interpretations, or references. All AI-generated

outputs were carefully reviewed, verified, and edited by the authors, who take full responsibility for the content of the manuscript. This use of AI complies with the Publication Ethics and Malpractice Statement of the ***Journal of Pragmatics Research.***

Acknowledgments

The researchers would like to gratefully acknowledge the Rector of …and Prof …for their support and grant given in finishing this research.

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DOI: http://dx.doi.org/10.18326/jopr.vxxixx.xx-xx
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