Application of Flipped Blended Learning Model at SMK 2 Payakumbuh

Rijal Abdullah [1,*], Nizwardi Jalinus[2], Unung Verawardina[3], Muhammad Anwar[4],

Dochi Ramadhani[5,] Arina Luthfini Lubis[6]

[1,2,3,4,] *Engineering Faculty, Universitas Negeri Padang, Indonesia*
[5]*Pendidikan Teknologi Informasi dan Komputer, IKIP PGRI Pontianak, Indonesia*
[6]*Universitas Ibnu Sina Batam, Batam, Indonesia*
[*]*Corresponding author. Email: Rijalabdullah@ft.unp.ac.id*

ABSTRACT

The growth of science and technology always moves dynamically in the education sector. Vocational education plays a central role in preparing the graduates who are ready to work, so efforts need to perform regarding the demand for technology and science development. Vocational education shall also be prepared in all situations, for instance, when the COVID-19 outbreak happens. Various learning issues that happened can be solved by improving the use of technology, the relevancy of learning in the classroom with industries, from face-to-face meetings to a combination of online and face-to-face meetings. One of the solutions is implementing flipped blended learning model. This study aimed to improve the learning with weaknesses in the classroom and to identify the students' mastery achievement of learning outcomes using the flipped blended learning model. This study used a class action research method using the following steps: preparation, action, observation, and reflection. The sample of this study was 30 students at SMKN 2 Payakumbuh in the light vehicle engineering expertise program grade 11. The data analysis technique was descriptive. The finding concludes that the flipped blended learning model can improve the students' learning outcomes shown in their learning outcomes in cycle I from 56.67% in the low category to cycle II of 86.67%; this result proves that there is an ideal improvement in the achievement of learning outcomes.

Keywords: *Flipped Blended, Action Research, Vocational High School, COVID-19, Cycle*

1. INTRODUCTION

The rapid development of technology becomes an evolutionary potential strength in the education sector. Currently, the role of information technology in the education sector has entered the learning domain. Information and Communication Technology (ICT) has been introduced. Vocational education is a type of education providing the students with the special knowledge and skills required for starting a job. This includes training given to someone for improving his/her competency related to his/her current/future job. Learning at Vocational High School certainly shall be relevant to the post-COVID-19 condition, situation, and the students' needs, teachers' needs, and the requirements in the working world. The aim is to make the students have the knowledge, skills, and soft skills. Besides, the vocational high school

program in the 21st century shall combine and consistently use various relevant learning models as well as the use of updated technology based on the current development and the needs in the working world. Three components need to be perceived in discussing the vocational teachers' competency in the 21st century in Indonesia are the field of vocational teachers' competence, new roles and competency requirements for vocational education teachers, and standards of professional competence for vocational education teachers [1].

Teachers as professional teaching staff shall have pedagogic competence, professional competence, personality competence, and social competence. The effort to perform a continuous improvement can be done by conducting Class Action Research (CAR). Class Action Research is one of the alternative models of educators' professional development

through a lesson study in some cycles collaboratively and sustainably based on the principle of collegiality and mutual needs [2]. With this CAR, the teachers can seek excellence and weakness during the learning activity [3]. Thus, the teachers play a role in improving the learning.

The problem occurring in the learning is the effect of the COVID-19 outbreak [4]. The problems are the students' difficulties in understanding the learning materials, poor social interaction due to fully online learning, and irrelevancy between the learning at vocational high school and the requirements in industries. Consequently, students' learning outcomes do not fulfill the minimum mastery criteria. One of the efforts to improve the learning is by implementing flipped blended learning model. This learning model combines online and face-to-face learning containing activities providing 4C skills (critical thinking, creativity, collaboration, and communication), namely project, video conference, discussion forum, and teaching sources [5].

Teachers should be able to implement the learning model well because it aimed to solve the problems in learning and improve the learning. Besides, this CAE was required to strengthen the teachers' active involvement in learning development both in the classroom and at school, especially at vocational high schools, as well as to measure and evaluate the teachers' performance regarding the effective learning implementation aiming at improving the learning from the aspect of using the learning model, method, teaching & learning facilities, assessment, instruments, media, etc. Therefore, it is important for the teachers, once in a while, to conduct class action research for improving the learning activity [6]. This study aimed to solve the learning problems occurring in the classroom at vocational high schools. Therefore, the researchers implemented the flipped blended learning model.

2. METHODE

This study used Class Action Research since the study was conducted to improve and solve the learning problems occurring in the classroom. The stages in this CAR started from preparing the required teaching materials, learning implementation, observation, and reflection [7]. The reason for selecting class action research was because it aimed to improve the students' learning outcomes; besides the teachers were involved in the learning starting from planning, action, observation, and reflection. The sampling was conducted in SMKN 2 Payakumbuh, Automotive Engineering Program, the

Light Vehicle Engineering Expertise Program, grade 11, on the subject of the Machine Maintenance of Light Vehicles with a total sample of 30 students. The instruments used in this study were an achievement test and observation. The data analysis technique was descriptive.

3. RESULT AND DISCUSION

3.1 Hasil

In this study, the flipped blended learning model was implemented in SMKN 2 Payakumbuh, automotive engineering program, the Light Vehicle Engineering Expertise Program, grade 11, on the subject of the Machine Maintenance of Light Vehicles. Currently, due to the COVID-19 condition, the learning is conducted online [8][9]

The flipped blended learning model is important to solve the problems occurring in the learning conducted in the classroom. The study was implemented by adopting the CAR method since it could provide an effective solution [10].

For implementing the flipped blended learning model using the class action research method, the following steps shall be done:

a. Preparing the learning by arranging Semester Learning Plan, Syllabus, teaching materials, learning media, and the guidance of flipped blended learning model

b. Planning the learning by determining the syntax of flipped blended learning model consisting of 6 syntaxes [5]

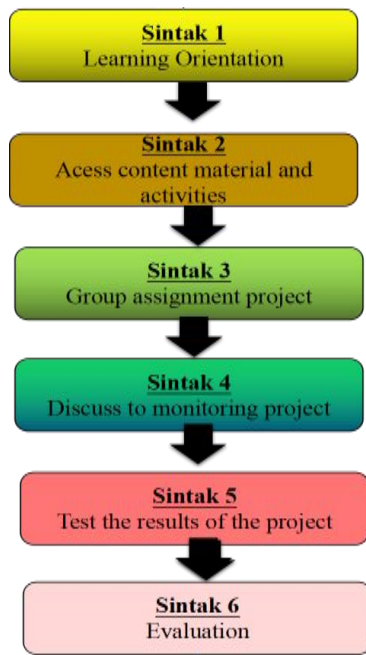c. Conducting the learning by implementing the flipped blended learning model based on the syntaxes shown in figure 1.

Figure 1. Sintak Model Flipped Blended Learning

d. Observing and taking notes of the students' learning activities during the implementation of Flipped Blended Learning Model

e. Reflecting to see the learning achievement by providing a test, measuring, and assessing for determining if there was a requirement to continue the next stage.

Meanwhile, the data analysis per cycle in the implementation of Flipped Blended Learning Model is described as follows:

3.1.1. Cycle I

a. Planning

In this stage, the researchers prepared the learning set consisting of a learning plan, teaching materials, e-learning website, learning media, questions for the test I.

b. Activities and Implementation

The implementation of teaching and learning activities for the cycle 1 was conducted in 30 students at SMK 2 Payakumbuh, Automotive Engineering program, the Light Vehicle Engineering Expertise Program, grade 11. The learning process was based on the learning plan that had been prepared previously. Next, the observation was done during the learning process.

At the end of the learning process by implementing the flipped blended learning model, the students were given a test to know the students' success in the learning. The learning outcomes in cycle 1 are shown below.

Table 1. The Result of Students' Formative Test in Cycle 1

NO	SCORE	PASS	FAIL
1	75	√	
2	70		√
3	68		√
4	78	√	√
5	80	√	
6	72		√
7	76	√	
8	78	√	
9	78	√	
10	74		√
11	70		√
12	66		√
13	70		√
14	72		√
15	76	√	
16	80	√	
17	75	√	
18	78	√	
19	78	√	
20	78	√	
21	76	√	
22	68		√
23	70		√
24	78	√	
25	80	√	
26	75	√	
27	76	√	
28	74		√
29	70		√
30	72		√
Total	2231	17	13
Average score	74,37		
Percentage of Mastery		56,67%	43%

Table 2. Recapitulation of Test Results in Cycle 1

No	Description	Results in Cycle 1
1	Average score of the test	74.37
2	Total students passed the minimum mastery	17
3	Percentage of Mastery	56.67%

From table 1 and 2, it can be known that the flipped blended learning model obtains an average score of students' learning performance is 74.37 and the proportion of the mastery learning reaches 56.67%, or 17 out of 30 students pass the minimum criteria of mastery learning. From the result, in cycle 1 for the classical learning, the students were failed since they only achieved 56.67%, lower than 85% as the percentage of predetermined minimum criteria of mastery learning. It is because the students felt that they did not understand what their teachers told and used by implementing the flipped blended learning model

3.1.2. Cycle *II*

a. Planning

In this stage, the researchers prepared the learning set consisting of a learning plan, teaching materials 2, e-learning website, learning media, questions for test 2.

b. Activities and Implementation

The implementation of teaching and learning activities for cycle 2 was conducted in 30 students at SMK 2 Payakumbuh, Automotive Engineering program, the Light Vehicle Engineering Expertise Program, grade 11. The learning process was based on the learning plan that had been prepared previously. Next, the observation was done during the learning process in cycle II.

At the end of the learning process by implementing the flipped blended learning model, the students were given a test to know the students' success in the learning. The learning outcomes in cycle 2 are shown below.

Table 3. The Result of Students' Formative Test in Cycle 2

No	Score	Pass	Fail
1	88	√	
2	85	√	
3	78	√	
4	78	√	
5	82	√	
6	88	√	
7	76	√	
8	80	√	
9	82	√	
10	76	√	
11	74		√
12	72		√
13	78	√	
14	80	√	
15	80	√	
16	80	√	
17	85	√	
18	82	√	
19	85	√	
20	80	√	
21	80	√	
22	72		√
23	78	√	
24	82	√	
25	88	√	
26	80	√	
27	78	√	
28	85	√	
29	75		√
30	74		√
Total	2401	26	7
Average Score	80,03		
Percentage of Mastery		86,67%	13,33%

Table 4. Recapitulation of Test Results in Cycle 2

No	Description	Results in Cycle 2
1	Average Score of Formative Test	80.03
2	Total students passed the minimum mastery	26
3	Percentage of Mastery	86.67%

From table 3 and 4, it is known that the average score of students' learning outcomes is 80.03 and their mastery learning reaches 86.67%, or 26 out of 30 students pass the minimum criteria of mastery learning since their percentage exceeds 85%. Therefore, the result in cycle II showed the mastery learning in the classical learning was improved from cycle I. it can be inferred that the student learning outcome improvement happens because the teachers have clearly explained the implementation of the flipped blended learning model, and the students have been motivated to learn through a project. Besides, the students start to understand the learning by applying the flipped blended learning model

c. Reflection

The stage of reflection was aimed to identify the implementation of the flipped blended learning model if it is operated well and if there was still a weakness. The results of the reflection from the implementation of the flipped blended learning model are as follows:

1) The strength is that the flipped blended learning model is implemented well by the teachers. However, several weaknesses still occur in cycle 1 of the flipped blended learning model implementation, namely unclear implementation, in the state of the adaptation process, and poor student motivation.

2) During the flipped blended learning model implementation, the students are known active during the learning process.

3) The weakness encountered in cycle 1 is the inability of the students to achieve the minimum criteria of mastery learning, therefore, an improvement is required to make the learning better

d. Revisions of the Implementation

The flipped blended learning model implementation in cycle 1 to the students still had several weaknesses, so the learning improvement was required to elucidate the learning steps, motivate the students, and involve the students to be active in the group project. Meanwhile, in cycle 2, the teachers had implemented the flipped blended learning model well, and it proved that the student mastery level of learning increased and achieved the mastery criteria in the classical learning. Therefore, in cycle 2, it did not need too many revisions. It can be inferred that the result of implementing the flipped blended learning model can increase the students' learning outcomes and achieve the learning goals.

3.2 Discussion

3.2.1 The Mastery of Student Learning Outcomes

The result of implementing the flipped blended learning model is proven to improve the students' learning performance, whereby the students have a better understanding of the materials they have learned. Their mastery level of learning increases from cycle 1 to cycle 2 with a percentage of 56.67% and 86.67% respectively. The mastery of students' learning outcomes in classical learning was achieved in the cycle

3.2.2. Teachers' Competency in the Learning Management

During the learning process with the flipped blended learning model implementation, the learning outcome increases from cycle 1 to cycle 2. Thus, it positively influenced the students' learning performance shown by a continuous increase in the average score of the students' learning outcomes in each cycle.

4.2.3. Teachers' and Students' Activities in the Learning

During the flipped blended learning model implementation, the teachers were shown to be able to create an enjoyable atmosphere and implement the model well and systematically. It is proven when the teachers prepare the learning very well by preparing the teaching materials, learning set, explaining materials, monitoring, and giving feedback for the learning evaluation to make the learning process implemented well. Besides, the student activities during the learning process can initiate the students' active involvement. The most dominant students' activity in the learning process is cooperating and collaborating in making a project. The result of the students' activities is also categorized as active

5. CONCLUSION

This finding concludes that the flipped blended learning model implementation has a positive impact on improving the students' learning performance; it can be seen from the increase from cycle 1 (56.67%) to cycle 2 (86.67%), and the students are getting more motivated by the flipped blended learning model implementation

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