The Effectiveness of Blended Learning Model During Covid-19 Pandemic on Automotive Engineering Major Program Students of SMK Negeri 10 Samarinda

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Abstract:- This study is aimed to determine the effectiveness of the implementation of Blended Learning model learning at SMK Negeri 10 Samarinda. In this pandemic situation, the learning process is by online therefore strategic steps are needed to create a learning model for supporting the learning process. To accommodate two different situations whereas students and teachers are restricted to have a physical encounter but learning has to be carried out, a teaching method by using a blended learning model is chosen. This research technique is implemented to collect data that is used as a basis for determining the feasibility of the research developed by the researcher. Data collection techniques and instruments must be determined precisely so that accurate data is obtained in accordance with the problems and research objectives. The student response instrument is a questionnaire which is consist of two aspects, Blended Learning implementation assessment and the appearance aspects assessment.

Based on the data from the research that has been carried out, it can be concluded that Blended Learning can be an effective learning method in the implementation of learning during the COVID-19 pandemic with a percentage of 66% as in Good category. Teachers can monitor student learning activities, such as filling the attendance list, delivering subject materials with explanation and tasks. As for the teaching plans prepared by the teacher in carrying out these online learning activities are syllabus, lesson plans with teaching materials (learning videos, pictures, slides), student worksheets, and assignments that will be given later.

Keywords:- Blended Learning, Online Learning, Automotive Engineering, Covid-19 Pandemic.

I. INTRODUCTION

Education is the maturity of students so that they can develop their talents, potential, and skills in living life, therefore education is designed to provide understanding and can improve student achievement. Education can also be a determinant of the value and quality of individual life. Seeing from how big the role of education in life, it has a good point that education in this country can be further developed to the fullest and provide various benefits to each individual. As stated in Law no. 20 of 2003 concerning the National Education System, in article 3, that the ultimate goal of (national) education is essentially to improve the quality of human resources (HR). To achieve these educational goals, a quality education and learning process is needed.

Advances in science and technology in various fields of life bring changes, especially in improving the quality of education. Many factors affect the development of education in the future, including the rapid development of information technology and increasingly fierce competition in obtaining employment which is caused by the development of new technologies that demand higher competence. Currently e-learning programs are becoming a hot topic in the world of education, as technology becomes more sophisticated, it will affect learning methods and will become more sophisticated as well.

To switch from a face-to-face learning model or meet in person then turns into online, it really requires a lot of effort and costs. However, it can be started with a blended learning model. Blended learning is basically a combination of learning excellence from face-to-face and online learning methods.

According to Semler (2005) "Blended learning combines the best aspects of online learning, structured face-to-face activities, and real-world practice. Online learning systems, classroom training, and on-the-job experience have major drawbacks by themselves. The blended learning approach uses the strengths of each to counter the others' weaknesses." Semler, S. (2005). Use blended learning to increase learner engagement and reduce training cost.

In face-to-face learning, there are usually still obstacles when teaching and learning activities take place, especially in lower grades. In low grades, teachers usually deliver learning material with the lecturing method so that it is easily understood by students. So that in the implementation of online learning which is still relatively new, there will be obstacles faced by teachers, students and schools. The implementation of online learning that has not been maximized in schools, or teachers who only give assignments without explaining the material to students will have impacts on students. Besides those obstacles, benefits are surely exist in implementing online learning during this pandemic. In a learning situation like this, teachers are required to be more active in understanding how to communicate with students with distinctly different language and tools. The use of

learning media and online learning methods must be used by teachers to the maximum. It is to support the online learning activities in an undetermined period of time of its implementation.

Thus, the development of children's learning will depend on whether the teaching and learning process delivered by the teacher is good or not. The development of children's learning at home during the COVID-19 pandemic will tend to be different from the development of learning in schools so that teachers as facilitators must have various innovations, providing motivation for students in carrying out teaching and learning activities.

Based on the description of the problem above, the author is interested in taking the title of the study on the Effectiveness of Blended Learning Models during the Covid-19 pandemic, Grade XI SMK Negeri 10 Automotive Engineering Major Program for the 2021/2022 Academic Year.

A. Research Problem
Based on the background explanation above, the research problem in this study is whether the implementation of the Blended Learning model at SMK Negeri 10 Samarinda is proven effective?

B. Research Purposes
The purpose of this study was to determine the effectiveness of the implementation of the Blended Learning model at SMK Negeri 10 Samarinda.

II. LITERATURE REVIEW

A. Theoretical basis

➢ Learning Effectiveness
According to Ravianto (in Masruri, 2014), effectiveness is a measure of how well a job is done. This means that a job is considered effective if it is completed in accordance with the plan, in terms of time, cost, and quality. The definition of effectiveness in accordance with Permendagri Number 59 of 2007 is the achievement of program results with predetermined targets, namely by comparing outputs with results. Meanwhile, the effectiveness shows the level of achievement of the results, or in simple language it can be explained that: the effectiveness of the local government is when the objectives of the local government can be achieved in accordance with the planned needs.

Alisman (2014), states that effectiveness is a state of achieving the expected or desired goals through completing work in accordance with a predetermined plan. Whether an organization succeeds or fails is when it has achieved the goals or not. Then it can be said that it has been run effectively. From the opinion above, then effectiveness can be interpreted as an achievement to be accomplished by the organization. Effectiveness is oriented to the organization's goals. If these goals are achieved, it will be considered effective.

The effectiveness of learning according to Rohmawati (2015) is the measurement of a success in an interaction process among students, between students and teachers in educational situations to achieve learning goals. The effectiveness of learning can be seen from student activities during learning, student responses to learning and students' mastery of concepts. To achieve an effective and efficient learning concept, it needs to be a reciprocal relationship between students and teachers to achieve a common goal, besides that it must also be adapted to the conditions of the school environment, facilities and infrastructure, as well as learning media are needed to help achieve all aspects of student development.

So, the effectiveness of learning can be interpreted as a measure of the success of a learning process between students and students, or students and teachers in achieving learning objectives.

According to the Law of the Republic of Indonesia Number 20 of 2003 concerning the National Education System, it states that "Learning is a process of interaction between educators and students and learning resources that take place in a learning environment" (Depdiknas, 2003). Nationally, learning is seen as an interaction process that involves the main components, namely students, educators, and learning resources that take place in a learning environment. Therefore, a learning process is a system that involves a unified component that is interrelated and interacts with each other to achieve an expected result optimally in accordance with the goals that have been set.

The learning process is characterized by an educational interaction that occurs, namely an interaction that is aware of the goal. This interaction is rooted in the educators (teachers) and pedagogical learning activities for students, proceed systematically through the stages of design, implementation, and evaluation. Learning does not occur instantly, but proceeds through certain stages. In learning, educators facilitate students so that they can learn well. With this interaction, it will produce an effective learning process as expected. In simple terms, learning can be interpreted as a product of continuous interaction between development and life experience.

Learning is an activity carried out to initiate, facilitate, and increase the intensity and quality of learning in students. Because learning is a systematic and systemic effort to initiate, facilitate, and improve the learning process, learning activities are closely related to the nature, type of learning and learning outcomes.

So, it can be concluded that this learning activity is carried out by two people, they are teachers and students. Teacher is teaching and student is learning. Teaching and learning behavior can not be separated from the lesson material. Thus, learning is basically a planned activity that conditions or stimulates a person to learn well, so that this learning activity leads to two main activities, namely how people take action to change behavior through learning activities and how people take actions to transfer knowledge through teaching activities. Therefore, the meaning of learning is an external act of learning, while learning is an internal act of learning.

➢ *Blended Learning*

In general model of blended learning is learning the combination, so that students will gain experience of online learning that can be accessed anytime and anywhere and face-to-face learning experiences that connect directly with the teacher. Blended learning is a combination of two instructional learning models, namely traditional learning systems and learning systems that emphasize the role of computer technology or better known as online learning (Hendarita, 2018). While Munir (2017) states that it is not only based on face-to- face situation, but combined with the resources of science and technology that are online or offline. While Camel (2018) states that blended learning is a learning approach that integrates the traditional face-to-face teaching and learning method and distance teaching and learning method that uses online media learning and a wide range of communication tools that support communication between students and teachers.

Consequently researchers can summarize that blended learning is a plan or approach to learning that combines between face-to-face learning with online learning which uses technology. With the expectation that students do not only master the learning material, but they also master the technology gained from the experience of learning by online. Because of it, teachers ability in managing the teaching and learning method is directed to blended learning and resulting in a more meaningful learning (Dwiyogo, 2018).

• *Blended Learning Goals*

In the implementation of learning, blended learning has several objectives, Onta (2018) states that the objectives of the blended learning model are:

✓ Helping students to get better learning that is tailored to their learning style and learning needs.
✓ Provide opportunities for educators and students for independent, beneficial and growing learning.
✓ Increased scheduling flexibility for students, by combining face-to-face and online aspects.
✓ face-to-face class can be used to engage the students in an interactive experience
✓ Online classes give students the content of multimedia that is rich in knowledge at any time as long as students have internet access.

In addition to the learning objectives, Onta (2018) also mentions the characteristics of the blended learning learning model as follows:

✓ Blended learning provides students independence because more time is spent on trying in doing exercises independently before consulting and training students to do self-assessment.
✓ Students must have the skills in managing the time and adjust their schedule to the nature of the assignments within their own pace.
✓ Students perceive an integrated learning environment that requires more responsibility.
✓ The blended learning model teaches students to be disciplined because students study more regularly and actively in doing online assignments.

Based on the objectives and characteristics of the blended learning model that has been described, we can see that this learning model gives solution and appropriate to be applied during the current Covid-19 pandemic. It is because the blended learning model offers convenience to acquire distance learning goals by utilizing advances and sophistication of technology. The application of blended learning model is not only be a solution for the learning process on a future pandemic Covid-19, but it also can be seen as an innovation to integrate the advancement of technology in the era of 4.0 industry revolution.

Blended learning combines the best characteristics of classroom learning (face-to-face) and the best features of online learning to increase active independent learning by students and reduce the amount of face-to-face time (Husamah, 2014). Therefore, there are many benefits and experiences that will be obtained by students, teachers or schools in the application of this blended learning model.

The composition of blended learning that is often used is 50 versus 50, it means that from the provided time allocation, 50% of the learning activities is face-to-face and the rest is for learning online or in the network. However, there are also those who use a composition of 75 versus 25, which means 75% for face-to-face learning and 25% for online learning. Composition of 25 versus 75, 25% of the learning face-to- face while on learning online is 75%. Considerations for determining the composition of which is used in the learning process is tailored to the needs of learning such as competencies that will be achieved, the learning location, students and teachers ability as well as the suitable source of study (Munir, 2017: 64). As the condition is happening today, where the composition of the most appropriate to be used is 25 to 75, where teachers and students are more likely doing the online learning compared to face-to- face due to the pandemic situation. However, whatever the form and composition of the combination, the implementation of blended learning method always aims to facilitate students in achieving the required competencies (Pribadi, 2017).

• *Blended Learning Components*

The blended learning model has 3 learning components which are combined into one form of blended learning (Istiningsih and Hasbullah, 2015). The components are including the following;

✓ Online learning. Online learning is the environment of learning that uses Internet technology to access learning materials and allows the interaction of learning among fellow students and teachers anywhere and anytime
✓ Face-to-face learning. Face-to-face learning is a model that is still being carried out and very often in the learning process. Face-to-face learning is one of the conventional forms of learning models, which seeks to transfer knowledge to the students. Face-to-face learning will bring together teachers and students in one room to study. By learning face-to-face, students can further deepen what they have learned through online learning, or online learning is to deepen the material that has been taught by face-to-face method.

✓ Independent Learning (individualized learning). In individualized learning, students can learn independently by accessing information or learning materials via online. independent learning does not mean learning by themselves, independent learning means learning by initiative, with or without the help of the others to study. So that the independent learning process is a learning process where students are in control of making decisions about their learning needs with little help from the teacher.

In general, the components of blended learning which has been described above, are the most common use in blended learning method.

- *Blended Learning Stages*
  According to Hendarita (2018) there are three basic stages in the blended learning model which refers to ICT-based learning, which are as follows;

✓ Seeking of information from various sources of information by online and or offline based on the learning needs. Teachers play a role in providing input for students to seek information effectively and efficiently

✓ Acquisition of information, students individually or in groups try to find, understand and configure ideas that have been in their minds previously. Then students interpret the information or knowledge from various sources available, until they are able to re- communicate and interpret ideas either by using online or offline tools.

✓ Synthesizing of knowledge, at this stage the students construct / reconstruct knowledge through a process of assimilation and accommodation from the analysis results, discussing and formulating the conclusions from information that is obtained and interpret ideas either by using online or offline tools.

Stages in blended learning this in general is a step-by-step learning that is commonly done by teachers in the process of learning. Those can be done by online or offline by adjusting the needs of the learning process which will be implemented. In addition, these stages can also be simplified considering the current conditions by reducing learning hours, especially in face-to-face method.

B. Conceptional Definition
  The conceptual definition is the most important element and it is used by researchers to abstractly develop a social role or natural phenomenon. So in this study the researchers set several conceptual definitions as follows:

- Learning Effectiveness can be interpreted as a measure of the success of a learning process among students, or students and teachers in achieving learning objectives.

- Blended Learning is a plan or approach to learning that combines between the direct learning with online learning by using technology with the intention that students master the material and the technology by experiencing this learning model.

C. Research Hypothesis
  The hypothesis is the answer from the researcher based on the theory that has not been proven (temporary answer) to the research problem formulation, where the research problem formulation is in the form of a question sentence (Sugiyono, 2015). The hypothesis in this research is "The implementation of the Blended Learning Model for XI Grade Students at SMK Negeri 10 Samarinda is proven to be effective.

III. RESEARCH METHOD

A. Place and time of research
➢ Research Place
SMK Negeri 10 Samarinda
➢ Research time
July - August

B. Data Collection Technique
  This research technique was carried out to collect data that was used as a basis for determining the feasibility developed by the researcher. Data collection techniques and instruments must be determined precisely so that accurate data is obtained in accordance with the problems and research objectives.

The students' response instrument is in the form of a questionnaire consisting of two aspects, blended learning implementation aspect assessment and the appearance aspects assessment. For the blended learning implementation aspect assessment are seen from the following indicators

- Determining the types and materials of teaching materials. In this stage, it is necessary to prepare teaching materials that meet the distance learning requirements. Because of the blended learning learning model, teaching materials should be designed for students to able to study the materials by themselves. They could do it by interacting through face to face and through online learning

- Determining the blended learning design. At this stage the learning design must contain components of online learning and face-to-face learning. Therefore, it is necessary to develop teaching plan based on the blended learning model.

- Setting the online learning format. At this stage it is necessary to identify what online media will be used in online learning.

- Doing a test run on the design. It is necessary to do so therefore it can be known whether the design can be accomplished easily or otherwise

- Performing the blended learning well

- Preparing criteria for evaluating the implementation of blended learning

C. Data analysis technique
  The data analysis technique in this study was carried out in 2 stages. The steps in data analysis are as follows:

➢ *Converting category value to assessment scores*

The assessment in category value is converted into an assessment score. (Adhi, Marhadini, Akhlis, & Sumpono, 2017) said that "The analysis of the questionnaire instrument used to test the feasibility of the media is a questionnaire that uses options with 1-5 Likert scale ". The answer categories are very poor (VP), poor (P), fairly good (FG), good (G) and very good (VG).

Changing the category value into an assessment score with the following criteria:

No.	Category	Score
1.	Very Poor (VP)	1
2.	Poor (P)	2
3.	Fairly Good (FG)	3
4.	Good (G)	4
5.	Very Good (VG)	5

Table 1. Blended Learning Effectiveness Assessment Score

➢ *The types of data used in this study are quantitative and qualitative data.*

According to Endang Mulyatiningsih in Silvia Diar Malista (2012) quantitative data is data in the form of numbers or data that has been rated. While qualitative data is data in the form of sentences or pictures. Qualitative data in the form of assessments, collected through questionnaires. Percentage is intended to determine the status of something then interpreted with qualitative sentences. According to Soegiyono (2014) the purpose of qualitative research is not merely seeking the truth but more on the subject's understanding of the world around him.

After the data is collected, the average score is calculated using the formula:

Information:

$$\bar{X} = \frac{\sum x}{N}$$

$\bar{X}$ = mean score of each component

$\sum x$ = total score

N = number of assessed indicators

Changing the average score into a qualitative value, adopting the formula from Eko Putro Widoyoko (2009:238) as follows:

Formula	Score Average	Clasification
$X > \bar{X}_i + 1{,}8 \times sb_i$	>4,2	Very good
$\bar{X}_i + 0{,}6 \times sb_i < X \le X_i + 1{,}8 \times sb_i$	>3,4 -4,2	Good
$\bar{X}_i - 0{,}6 \times sb_i < X \le X_i + 0{,}6 \times sb_i$	>2,6 – 3,4	Fairly Good
$\bar{X}_i - 1{,}8 \times sb_i < X \le X_i - 0{,}6 \times sb_i$	>1,8 – 2,6	Poor
$X \le \bar{X}_i - 1{,}8 \times sb_i$	≤1,8	Very Poor

Table. 2. The formula for the average score to be qualitative

Next to calculate the percentage use the formula below:

$$P = \frac{f}{N} \times 100\%$$

Description: f = frequency of the subject
    N = Total number

To make a decision using the criteria set by Sudjana as follows.

No	Percentage	Score	Category
1	81% - 100%	A	Very good
2	61% - 80%	B	Well
3	41% - 60%	C	Fairly good
4	21% - 40%	D	Poor
5	0% - 20%	E	Very Poor

Table 3. valuation conversion by percentage
(Source: Sudjana, 2005: 46-47)

IV. RESULTS AND DISCUSSION

A. *The Effectiveness of the Blended Learning Model for Students*

The data obtained from students is a response to Blended Learning taught in schools. The summary of the questionnaire given to students is as follows:

No	Rated aspect	Evaluation				
		VG	G	FG	P	VP
1	The device that I use supports the use of learning videos as learning media.					
2	you can follow the online learning well					
3	I'm easy to follow online learning					
4	I like learning activities during the COVID-19 pandemic using learning videos					
5	I am happy because there are various types of online learning					
6	online learning during a pandemic is very efficient and effective					
7	teachers master technology well					
8	material can be accessed at any time					
9	teacher responds quickly to questions					
10	teachers use various learning media					
11	easy to understand learning because learning uses interesting media					

12	I am more enthusiastic when I enter class				
13	I access learning easily				
14	Time is given to discuss during the lesson				
15	online learning made by the teacher is suitable with the characteristics of the subjects being taught				

Table 4. Assessment of the effectiveness of Blended Learning by students

B. Discussion

The data obtained from the questionnaire which are distributed to students can be seen in the table below:

Source person	Amount	Percentage	Category
Source Person 1	39	52%	Fairly good
Source Person 2	49	65%	Good
Source Person 3	60	80%	Good
Source Person 4	53	70%	Good
Source 5	49	65%	Good
Source Person 6	56	74%	Good
Source 7	56	74%	Good
Source Person 8	37	49%	Fairly Good
Source 9	32	42%	Fairly Good
Source 10	41	54%	Fairly Good
Source 11	57	76%	Good
Source Person 12	54	72%	Good
Source Person 13	73	97%	Very good
Source Person 14	43	57%	Fairly Good
Source Person 15	49	65%	Good
Source Person 16	31	41%	Fairly Good
Source Person 17	50	66%	Good
Source Person 18	60	80%	Good
Source Person 19	71	94%	Very good
Source Person 20	42	56%	Fairly Good
Source Person 21	43	57%	Fairly Good
Source Person 22	60	80%	Good
Source Person 23	62	82%	Very good
Source Person 24	31	41%	Fairly Good
Source Person 25	64	85%	Very good
Source Person 26	53	70%	Good
Amount	**1315**		
Average	**50**	**66%**	**Good**

Table 5. Data on assessment results
Source: Research Result Data

V. CLOSING

➢ *Conclusion*

Based on the data from the research that has been carried out, it can be concluded that Blended Learning can be an effective learning method with a percentage of 66% included in the good category in the implementation of learning process during the COVID- 19 pandemic. Teachers can monitor students learning activities, such as filling the attendance list, delivering subject materials with explanation and tasks. As for the plans prepared by the teacher in carrying out these online learning activities, of course the teacher prepares the syllabus, lesson plans, students worksheet, and assignments that will be given later. The teacher also prepared a learning video. For media, teachers used videos, pictures and slides.

➢ *Suggestions*

During the research conducted, the researchers obtained several findings that can be used as input for improvements in using the learning videos therefore the videos can be effective learning media in implementing learning method during the COVID-19 pandemic.

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