The Effectiveness of the PONTA Learning Model Based on Blended Learning in Vocational High School

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ABSTRACT----- ***This study aims to determine the effectiveness of the blended learning-based PONTA learning model in vocational high schools. The model developed consists of 5 stages, namely: preparation, observation, negotiation, transfer, and apply. The trial design was carried out using a pretest-posttest group design. The test was carried out on class XII students of SMK Negeri 3 Makassar and SMK 10 Makassar. Data analysis used (1) gain score index data analysis; (2) normality analysis; (3) homogeneity analysis. The results showed that the results of testing the effectiveness of the blended learning-based PONTA learning model at SMK 3 Makassar obtained an n-gain value of 0.40 in the medium category with 81.92% learning completeness in the high category. While at SMK 10 Makassar, the n-gain value was 0.42 in the medium category with 83.24% learning completeness in the high category. Based on the research results, blended learning-based PONTA learning model in vocational high schools is effective and feasible to use to increase knowledge of occupational safety and health in the environment.***

Keywords: PONTA Learning, blended learning, Vocational High School

1. INTRODUCTION

The era of the industrial revolution 4.0 provides challenges and opportunities in all fields that require humans to change the way they carry out their activities. These challenges and opportunities arise in line with the development of science and technology, especially in the field of information technology. Digitization appears everywhere, from the digital economy, digital bureaucracy, to the education space which also requires digitization. Even globally, humans can be said to live in uncertainty, if they are unable to respond to these changes (Yahya, 2018).

The emergence of changes as referred to above, also has implications for changes in the world of education. The trend of the development of science and technology is also increasingly advanced. This means that educational institutions must undertake broad change efforts. Innovation towards learning is the most important part of efforts to make big changes (Kamdi, 2011). One of the educational institutions that is expected to be able to provide answers to changes in the 4.0 era is a vocational secondary education institution.

The development of learning in vocational education institutions or Vocational High Schools must remain goal-oriented as part of the national education system. Vocational high school is a secondary education that prepares students especially to work in certain fields, can adapt to the work environment, can see job opportunities and can develop themselves in the future. The purpose of the Vocational High School (SMK) is

realized with a curriculum structure that contains three programs, namely normative, adaptive, and productive programs (Susanto, 2013).

The learning models above still need to be completed in accordance with the development of information technology. The internet as an icon of information technology or today's virtual world, must be used as well as possible, not least in learning. Therefore, on-line learning or e-learning also needs to be implemented in SMK. E-learning is an online learning model (distance learning) which is expected to be able to shift the conventional learning model which is considered to have

various shortcomings. However, in its implementation the e-learning learning model has a series of limitations compared to face-to-face learning.

These limitations include; Weak control is caused by the lack of mastery of the concept of using e-learning application methods by both educators and students, limited internet network access, availability of learning modules and the lack of other infrastructure by students (Usman, 2018). Blended learning can combine the positive aspects of two learning environments, namely learning done in the classroom with learning with e-learning (Sutopo, 2012). Blended learning can show better differences in terms of motivation, interest, and student learning outcomes compared to other methods, especially direct learning methods, so that the blended learning method has succeeded in becoming a trend and is widely used in leading universities in the world (Matheos & Cleveland-Innes, 2018). Therefore, various compromises are offered as alternative solutions, namely by combining a face-to-face learning model with an e-learning-based learning model which is often referred to as blended learning.

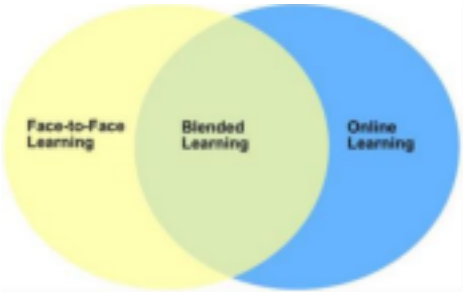

Figure 1. Blended Learning Concept

Based on the results of observations, researchers conducted observations in class XI of the Industrial Electronics Study Program at UPT SMK Negeri 10 Makassar for the 2019/2020 academic year which consisted of 20 students to obtain information about the description of students' conditions during the teaching and learning process. When learning takes place, the teacher still uses the traditional method, namely face-to-face in class. Teachers and students are guided by handbooks and modules, but not infrequently teachers use PowerPoint/slide learning media that is displayed through the LCD Viewer screen. The findings from observations in the field also show that at the beginning of learning students seem not ready with the material to be studied because they have not been able to answer the apperception questions posed by the teacher. When the teacher explained the material in front of the class, there were only 5 students who listened intently. There are some students who talk with their classmates? Overall, there are 6 students who focus on listening to the subject matter, the remaining 14 students still do not focus when the teacher explains the material in front of the class. So far, teachers have not optimized the use of Internet facilities in the learning process. In addition, most students use Internet facilities only to access their social media accounts.

To overcome the above, a varied learning innovation is needed to improve the learning process. Blended Learning is a learning that combines the application of traditional learning in the classroom with online learning that utilizes information technology. According to (Garrison & Vaughan, 2012), optimizing the integration of oral communication in face-to-face learning with written communication in online learning is the basic concept of the blended learning model. Furthermore, another understanding of blended learning is flexible learning, besides the use of e-learning or online learning is one form of flexible learning examples in the blended learning method (Sumantri, 2015). Until the application of this model is able to increase mutuality and the quality of learning. This learning can show better differences in terms of motivation, interest, and student learning outcomes compared to other methods, especially methods in direct learning, so that the blended learning method has succeeded in becoming a trend and is widely used in leading universities in the world (Matheos & Cleveland-Innes, 2018).

Based on the description above, a study will be conducted on the development of a vocational school learning model, namely the blended learning-based PONTA learning model. The PONTA learning model is a development of the blended learning (BL) model by adding the concepts of Preparation, Observation, Negotiation, Transfer, and Apply. With the addition of this concept, it is hoped that the Blended Learning model can further improve the quality of learning in SMK. Furthermore, this learning model will be developed in Vocational High Schools.

2. RESEARCH METHOD

This type of research is an experimental study using a pretest-posttest group design model. The subjects of this study were class XII students at SMK Negeri 3 Makassar and SMK Negeri 10 Makassar in the academic year 2020/2021, totaling 25 students. The learning material being tested is the occupational safety and health of the environment. The data collection technique used a knowledge test of occupational safety and health in the environment. Data analysis was carried out using the following analysis: (1) gain index data analysis, (2) normality test, (3) homogeneity test. In addition, the normality and

homogeneity of the data were also tested. The trial design of the effectiveness of the blended learning-based PONTA learning model is as follows:

Table 1. One Group Pretest Posttest Design

Pretest	*Treatment*	*Posttest*
O_1	*X*	O_2

Information:

O_1 : Pretest of environmental occupational safety and health

X : Treatment given to students

O_2 : Posttest of environmental occupational safety and health

3. RESULT AND DISCUSSION

3.1. Design of PONTA Learning Model Based Blended Learning

Model Learning Model PONTA Learning Model based on Blended Learning is carried out based on components of the learning model consisting of compiling learning syntax based on theoretical relevance, establishing social systems; formulate the principle of reaction; establish a support system consisting of learning tools and learning facilities; and determine learning impact.

Syntax

Syntax of PONTA Learning Model is a collaborative learning model and modified from various learning models as described previously. After analyzing the various learning models, the relevant syntax was chosen according to the PONTA Learning Model. The syntax of the PONTA Learning Model consists of five stages, namely: (1) Preparation; (2) Observations; (3) Negotiation; (4) Transformation; and (5) Application. The syntax of the PONTA Learning Model is designed to be continuously interrelated between the first and subsequent stages so as to provide hands-on experience for students.

Table 2. Syntax Modification of PONTA Learning Model based on Blended Learning

Learning Model	*Syntax*	*Selected Syntax*
SAVI	*1. Preparation* *2. Presentation* *3. Training* *4. Performance*	*Preparation*
POE	*1. Prediction* *2. Observation* *3. Explanation*	*Observation*
Conflict Resolution	*Attitude Assurance* *Cooperation Coaching* *Negotiation*	*Negotiation*
Cognitive Growth	*Confrontation With Stage Relevant Tasks* *Inquiry* *Transfer*	*Transfer*
Generative	*Exploration* *Focussing* *Challenges* *Apply*	*Apply*

Social System

Social System of Blended Learning-based PONTA Learning Models facilitate cooperative learning so that interactions are established between students, between students and teachers, between students and learning materials. In the PONTA Learning Model based on Blended Learning in SMK, the teacher acts as a facilitator and motivator during the learning process. As a facilitator, the teacher prepares learning starting from the lesson plans, Learning Modules, LMS, LKPD, and the Assessment Rubric. After that, the teacher gives phenomena at the beginning of learning which will then be observed by students. The interaction of students with students and students with teachers occurs in the syntax of learning negotiation and transfer. At this stage the teacher helps students define and organize learning tasks related to the problem then together students discuss and review learning topics that have been set by the teacher and determine solutions to problems that

occur. After that, the teacher provides a discussion room to serve the questions asked by students.

Reaction Principles

PONTA Learning Model based Blended Learning in Vocational Schools makes the teacher's role as a facilitator and motivator. The teacher provides learning resources in the form of learning modules that contain material, assignments, and test questions. In addition, it also presents learning materials that are integrated with internet-based learning (online). At the end of the lesson the teacher provides responses and feedback to students and guides students in applying the learning outcomes in working on assignments. Based on the teacher's role as a facilitator and motivator, it is expected that teachers have the attitude of Facilitator, Innovator, Leader, Motivator, and Sharing. As a facilitator, the teacher is expected to orient learning that is centered on students and no longer centered on the teacher. Teachers as innovators are expected to be able to provide forms of innovation in learning so that learning is more interactive, interesting, and modern. As leaders, teachers are expected to be able to manage integrated learning between face-to-face learning and internet-based learning (online) as well as organize learning materials and direct students to learn. As a motivator, the teacher encourages and awakens students to foster enthusiasm in learning. In addition, the teacher guides students in discussing the experience of learning outcomes and provides feedback.

The effects

The effects of Blended Learning-based PONTA Learning Model Accompaniments in Vocational High Schools are: (1) Learning Implementation Plans (RPP); which is student-centered. The method used is a contextual learning method, namely an independent and guided learning pattern; (2) Learning Module for Environmental Occupational Health and Safety (K3L); namely as a complement to learning in which it has been equipped with material descriptions, assignments, and learning evaluations; (3) Student Performance Sheet (LKPD); which contains task objectives, job descriptions to be carried out by students; and (4) Assessment Rubric; which will be used by the teacher as a guide for giving test scores for learning outcomes.

Social System

The impact determined by the application of the Blended Learning-based PONTA Learning Model in SMK is the mastery of K3L learning materials. K3L learning that is integrated between face-to-face learning and online learning is expected to have an impact on increasing K3L knowledge. The material presented is appropriate and relevant to current K3L needs and developments. The expected accompaniment impacts of the Blended Learning-based PONTA Learning Model in Vocational High Schools are as follows (1) Independence in Learning; The PONTA Learning Model based on Blended Learning in SMK has facilitated students to learn independently. This can be seen with the learning modules that have been provided. Learning by using the module, students are required to be able to learn independently. The learning module has been equipped with material descriptions, formative questions to reflect on learning, and learning tasks that can be done individually or in groups; (2) Activeness in Learning; The learning materials contained in the learning module have been packaged interactively and attractively through the use of online-based learning. Learners can interact directly either face-to-face or online. The interaction and interest in learning make students more active in learning activities; and (3) meaningfulness in learning; Students will experience meaningful learning because they learn directly by developing knowledge, understanding, and reasoning scientific ideas as well as communication between students. The drafting of the Blended Learning-based PONTA Learning Model is realized in the learning model book which is described in Table 2 as follows.

Table 3. Main Components of the PONTA Learning Model Book

Chapter	*Description*
1	*Introduction*
2	*Component PONTA Learning Model based Blended Learning*
3	*Implementation PONTA Learning Model based Blended Learning*
4	*Closing*

3.2. Effectiveness of Blended Learning-based PONTA Learning Model

The results of knowledge tests on occupational safety and health at SMK Negeri 3 Makassar obtained an average score the average pretest is 70.08 and the average value for the posttest is 81.92. Meanwhile, at SMK Negeri 10 Makassar, the average pretest score was 71.12 and the posttest average was 83.24. At SMK Negeri 3 Makassar obtained a completeness score of 81.92% with a high category and an average score of n-gain 0.40. While at SMK Negeri 10 Makassar obtained a completeness value of 83.24% in the high category with an n-gain score of 0.42.

Table 4. The Result Student

SMK Negeri 3 Makassar			*SMK Negeri 10 Makassar*		
Score		***N-Gain***	***Score***		***N-Gain***
Pretest	*Posttest*		*Pretest*	*Posttest*	
70.08	*81.92*	*0.40*	*71.12*	*83.24*	*0.42*
Complete Percentage		*81.92%*	*Complete Percentage*		*83.24%*
Category		*High*	*Category*		*High*

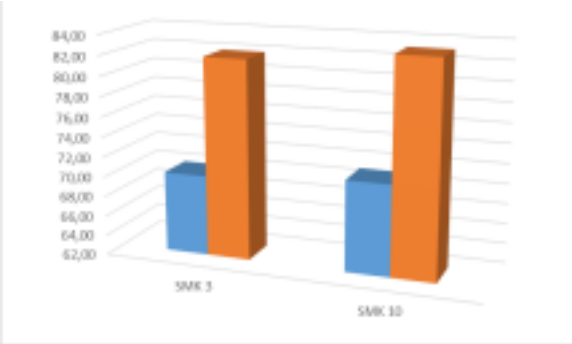

Figure 2. Graph of pretest-posttest results

Testing Normality of Data Normality

Test aims to determine whether the data is normally distributed or not. This normality test uses the Shapiro-Wilk test statistic by taking a significance level of 5%. Guidelines for decision making by taking a significance level of 5% is a significance value (sig) <0.05, meaning that the distribution is not normal. While the significance value (sig) 0.05 means a normal distribution. Based on the results of the normality test of student learning outcomes at SMK 3 Makassar, the sig value was 0.189 0.05 and at SMK 10 Makassar, the sig value was 0.290 0.05. This shows that the data is normally distributed.

Table 5. Test of Normality Data

Group	*Statistic*	*df*	*Sig.*	*Conclusion*
SMK 3 Makassar	*.148*	*25*	*.189*	*Normal*
SMK 10 Makassar	*.114*	*25*	*.290*	*Normal*

Data Homogeneity

Test The homogeneity test was carried out with the aim of showing that two or more groups of sample data came from populations that had the same variance. The reading of the data output results in the sig column. there are numbers that indicate a significance level of 0.05. If the obtained significance is > 0.05, then the variance of each sample is the same (homogeneous). Meanwhile, if the obtained significance is <0.05, then the variance of each sample is not the same (not homogeneous).

Table 4. Homogeneity Test of Data

Levene Statistic	**df1**	**df2**	**Sig.**
1.189	1	48	0.273

Based on the calculation of the results of the homogeneity test above, it was found that the significance value was 0.020 0.05, so it can be concluded that the variance of each sample is the same (homogeneous).

4. CONCLUSION

Based on the results and discussion of the research, it can be concluded that the blended learning-based PONTA learning model in SMK is effectively used in increasing knowledge of occupational health and safety in the environment. The increase in student learning outcomes at SMK 3 Makassar is 0.40 with the medium category and SMK 10 Makassar is 0.42 with the medium category. This is in accordance with previous research that blended learning is able to improve learning outcomes and learning independence (Ningsih et al., 2017). In addition, blended learning-based learning can also increase

students' learning motivation (Sjukur, 2012).

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