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Dear Presenter Seminar Hasil Penelitian LP2M UNM

Artikel Bapak/Ibu telah kami terima dengan baik. Seminar nasional akan dilaksanakan pada tanggal 30-31 Oktober 2021. Jika ada pertanyaan, silahkan menghubungi narahubung berikut (Yusri: 085255602827).

Best Regards
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The Effectiveness of Project-Based Blended Learning in Accommodating Digital Literacy Skills

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Abstract. The purpose of this study was to test the effectiveness of project-based blended learning strategies for digital literacy skills. This study used a quasi-experimental design with a one group pre-post test only design. The research subjects consisted of 40 students of the Agricultural Technology Education study program in the third semester of the 2020-2021 academic year, Faculty of Engineering, Universitas Negeri Makassar. Data were analyzed using paired t-test. The results showed that there was an effect of project-based blended learning on digital literacy skills with a value (p-value of 0.000)

Keywords: blended learning, digital literacy, PjBL

INTRODUCTION

Blended learning in the Covid-19 pandemic era is learning that is presented online by utilizing three learning quadrants, namely virtual synchronous, independent asynchronous, and collaborative asynchronous. Its presentation requires innovation and learning creativity that is no less interesting than face-to-face learning in class. Blended learning combines face-to-face and virtual methods (Husamah, 2014). By blending these two methods it is believed to be able to increase activeness, independence, constructivism in learning. Thorne (2003) suggests that blended learning combines multimedia technology, video streaming CD ROM, virtual classes, voicemail, email and telephone conferencing, online text animation and video-streaming.

In online blended learning, interesting scenarios are needed so that the presentation can provide a truly challenging learning atmosphere and provide good experiential learning. The implementation of blended learning that seems monotonous and does not provide a collaborative learning experience is believed to only provide saturation in learning. Students can do other activities in cyberspace that have nothing to do with learning activities.

One of the learning strategies that can make the presentation of blended learning more interesting and challenging is project-based learning (PjBL). The practice of PjBL has been proven to be effective in providing meaningful learning experiences. Presenting a discussion space and finding creative ideas, so that product innovation results from creative ideas are obtained. Blended learning which presents learning activities such as presenting material, giving discussion forums, giving assignments, quizzes and evaluating. PjBL, if it is not

designed as attractive as possible, then its implementation tends to be passive and only certain students are active.

Designing blended learning in online learning by integrating the PjBL strategy, will make the implementation of discussion forums and task work independently, collaboratively and online actively presented. Students can interactively pour their thoughts into concrete solutions that can be converted into innovative and creative product work. Blended learning in an online setting based on PjBL promises interesting learning activities, starting from the stage of building basic questions related to problem issues, gathering information and supporting literature to solve fundamental questions, to designing methodologies used in solving problems. Lastly is how the real work of the developed fundamental project question is presented in the project discussion. Implementation can be presented in a blended learning setting, half face-to-face, and half online.

Seeing that the blended learning learning setting that combines the three quadrants of virtual face-to-face (synchronous), independent asynchronous and collaborative asynchronous learning that presents a project-based learning setting as a way to encourage online learning (learning engagement), has encouraged the importance of this research being conducted.

RESEARCH METHODS

This study used a quasi-experimental design. Quasi experiments try to find the relationship of certain variable relations (Vockell & Asher, 1995; Gall, 2003; Salkind, 2006). In this study the subjects received the same treatment, namely blended learning based on project-based learning strategies. The experimental design of this research is a version of the one group pre-post test only. The treatment of blended learning strategies with project-based learning designs is applied to three learning quadrants, namely: virtual synchronous, independent asynchronous, and collaborative asynchronous. The subjects in this study were 40 students of the Agricultural Technology Education Department who were in the third semester of the 2020-2021 academic year.

The instrument in this study was an instrument (check-list) to measure digital literacy skills, which consisted of: 1) basic digital literacy skills, 2) background information knowledge, 3) digital literacy main competencies and, 4) attitudes and information perspectives. This instrument is set forth in the form of a pre-test and post-test of the ability to accept, process, and use media as a mediated learning. The instrument was then developed in the form of a rubric. The number of items was 10 items with a range of scores for each item from 0-4, so that the scores obtained by students ranged from 0-40. The pre-test and post-test scores were obtained by dividing the obtained score by 40 and multiplying by 100.

Data collection was carried out through the following steps: 1) providing a pre-test, 2) carrying out learning (experiment) with the PjBL-based blended learning method and 3) giving post-tests to students. The analysis requirements test used data normality test and variant homogeneity test. The data normality test used the Kolmogorov-Smirnov technique and the variance homogeneity test used the Levene test. The normality and homogeneity test is intended to fulfill the parameter assumptions. The parameter assumptions are 1) the sample must come from a normally distributed population, this is better known as the normality assumption concept, 2) the variance values in the sample groups must be homogeneous, or better known as the homogeneity assumption, 3) the data which must be processed must be on an interval or ratio scale, and 4) the research sample must be taken randomly. Data analysis used paired t-test analysis. The null hypothesis testing (H0) is carried out at a significance level of 5% or $\alpha = 0.05$. To test the research hypothesis used SPSS 24.00 for windows.

RESULTS AND DISUCUSSION

To obtain data on the results of understanding students digital literacy skills, this was done by conducting a pre-test and post-test using digital literacy skills instruments in the courses being taught.

1. Results

a. Description of the Pre-test and Post-test Value of Students Digital Literacy Ability

The data on the results of measuring student's digital literacy skills before and after being given the PjBL-based blended learning treatment are presented in Table 1.

Table 1. Description of the pre and post test scores of student's digital literacy skills

Respondent Number	Pretest Score of BL_PjBL	Posttest Score of BL_PjBL	Gain
1	25	40	15
2	25	38	13
3	18	40	22
4	25	38	13
5	24	38	14
6	25	38	13
7	25	40	15
8	16	38	22
9	15	40	25
10	15	35	20
11	13	35	22

12	25	40	15
13	25	35	10
14	20	30	10
15	25	40	15
16	25	35	10
17	25	40	15
18	25	38	13
19	19	40	21
20	20	38	18
21	26	38	12
22	22	40	18
23	18	40	22
24	20	40	20
25	26	40	14
26	22	36	14
27	26	40	14
28	25	40	15
29	16	38	22
30	18	40	22
31	20	40	20
32	20	40	20
33	16	38	22
34	20	40	20
35	27	40	13
36	20	36	16
37	20	38	18
38	18	40	22
39	14	38	24
40	14	40	26
Mean	**21.08**	**38.45**	**17.38**

Table 1 shows the mean pre-test score was 21.08 and there was an increase of 38.45 in the post-test score, and the gain score was 17.38. The results of the descriptive test on digital literacy skills before and after PjBL-based online learning are given to students are presented in Figure 1 below:
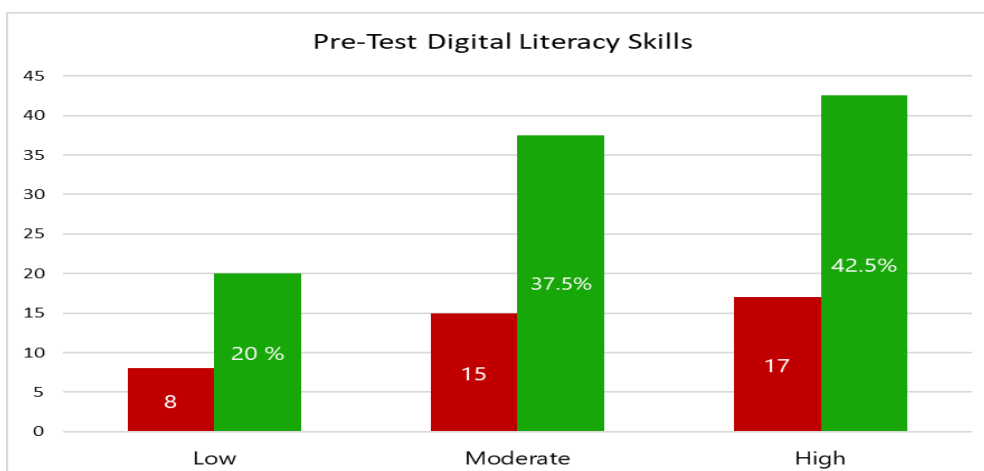
Figure 1. Pre-test Results Description of Digital Literacy Ability

The results of the descriptive analysis in the picture above show that the level of student understanding of digital literacy before PjBL-based blended learning is given has a high understanding. As many as 8 (20%) students had low digital literacy skills, 15 (37.50%) students had moderate digital literacy skills, and 17 (42.5%) had high digital literacy skills. The graphic above also confirms that students generally have good digital literacy skills from the start. However, PjBL-based blended learning can contribute to improving student's literacy skills. This contribution can be seen in Figure 2 below:
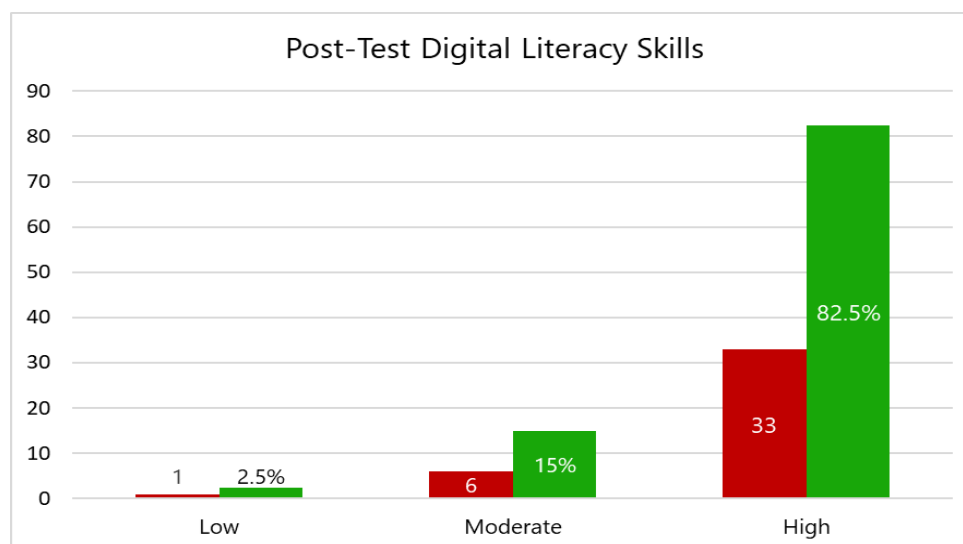

Figure 2. Post-test Results Description of Digital Literacy Ability

The figure above shows a description of digital literacy skills based on the results of the post-test data. Descriptively, it is explained that the level of digital literacy skills of students is higher, reaching 33 (82.5%), as many as 6 (15%) with

moderate digital literacy skills, and the remaining 1 (2.5%) with low digital literacy skills. The results of statistical tests that compare the mean score of pre-test and post-test of digital literacy skills are presented in the form of a score as presented in Table 2 below:

Table 2. Statistical test of differences in pre-test and post-test scores of digital literacy skills

Assesments Aspect	Mean Score			
	Pre -test	*Post-test*	Gain (Pre-Post Test)	Gain (percentage) %
Digital Literacy SKills	21.08	38.45	17.38	82.44 %

In Table 2 above, the mean difference between before and after blended learning based on PjBL can be seen. The results of the analysis of the research subjects showed the average pre-test and post-test scores for digital literacy skills. In accordance with table 2 above, the mean pre-test score is 21.08 and the mean post-test score is 38.45, meaning that the strengthening of the value of the anti-violence character has increased on average from 21.08 to 38.45, or it can be said that there is a difference in value. The score between pre-test and post-test is 17.38 or a relative increase of 82.44%. The difference in score scores with a percentage of> 80% shows a significant increase, from low knowledge of digital literacy to higher after participating in PjBL-based online learning.

The results of statistical tests using paired sample t-test on student's digital literacy abilities are intended to determine whether or not there is a significant difference in an average value. The results of statistical tests with the t test on digital literacy skills are presented in Table 3 below:

Table 3. Test Results of *Paired Sample t-Test*

		Paired Samples Test							
		Paired Differences							
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
Pair 1	Pre-test - Post-test	-17.375	4.430	.700	-18.792	-15.958	-24.806	39	.000

Table 3 shows the results of statistical tests using paired sample t-test, obtained a significance value (2-tailed) of 0.000 <0.05. The significance value of 0.000 is less than 0.05, and the value of t count (-24.806) is greater than t table

(-2.042). These results indicate the effectiveness of PjBL-based online learning which has provided a better understanding in improving student's digital literacy skills.

2. Discussions

The results of hypothesis testing indicate that there is an effect of PjBL-based blended learning on digital literacy skills. The mean score of student's digital literacy skills after using the PjBL-based blended learning method was higher than before using the PjBL-based blended learning method. The difference in the mean score of student's digital literacy skills in this study indicates that the use of the PjBL-based blended learning method has a good influence on digital literacy skills.

The results of this study indicate that the PjBL-based blended learning method has significantly improved student's digital literacy skills. Through PjBL-based blended learning, students in groups make inventions and are curious about the concepts of digital literacy knowledge, practice in developing instructional video media, selectivity in selecting and sorting useful digital media as a learning resource. This is possible because when PjBL-based blended learning takes place, students carry out three study rooms for each meeting session, namely using: 1) virtual synchronous learning, namely learning at the same time in different places, students learning through video conference with google meet, 2) self-directed asynchronous learning, namely learning anytime anywhere, about anything, without the presence of other people (independently), students learn to explore the material independently through a menu folder, page, and URL, and 3) collaborative asynchronous learning, namely learning anytime, anywhere, about anything, with anyone, students study together in groups, communicate together such as discussion forums, chat, assignments, and exercises (Horton, 2006; Piskurich, 2006; Norberg et al, 2011; Miller, 2014; Chaeruman, et a l, 2018; Smaldino et al, 2019).

As a method, PjBL-based blended learning, the learning scenario that presents learning in three learning spaces is present in the framework of accommodating the characteristics and characteristics of students in the 21st century era. An era marked by the progress and diversity of digital literacy-based learning design systems. An era that prioritizes independent learning with the characteristics of students such as: able to think critically and solve problems, be creative, skilled at communicating and working in groups. This is in line with the objectives of project-based learning, which is to bring students to think critically, innovatively, creatively, be able to communicate, collaborate, be skilled at utilizing information, media and technology such as digital literacy (Rais, 2010; Lai & Viering, 2012; Annahita, Hillary. & Dawn, 2016).

This is what underlies why students seem to enjoy the learning atmosphere when using project-based blended learning strategies. All because the nuances of learning are presented independently in solving problems, finding solutions to given tasks with high cognitive flexibility (Orendain & Wood, 2012; Yurdakul, 2014; Leana, 2016). Students carry out thinking constructs looking for information from reading sources on the internet in the form of text, graphics, pictures, charts, and learning videos as reference material for discussion. The accumulated use of information sources presented in blended learning shows good digital literacy skills.

The characteristics of digital literacy for students are seen when learning shows the speed of learning an object and processing information more quickly Ghaith (2010) while still prioritizing the aspects of mastery and maturity of knowledge of digital technology devices, social media technology, and mobile technology (Ng, 2012). The ability and maturity to choose material that is in accordance with what is presented in PjBL-based blended learning shows the level of maturity of students in digital literacy. This confirms that PjBL-based blended learning is presented in three learning spaces, namely learning through video conferences (synchronous), learning to explore material through folders, videos and URLs (personal asynchronous), and learning to practice thinking, communicating, conveying ideas. ideas through discussion, chat, assignments, and quizzes (collaborative asynchronous) have been effective in accommodating student's ability to obtain, process, and evaluate information based on sources obtained in cyberspace / internet.

This ability is called digital literacy, which includes three dimensions: 1) the first dimension is called technical, namely operational / fundamental mastery of digital technology devices and critical thinking, 2) the second dimension is called cognitive, namely mastery of information literacy skills, critical thinking (critical literacy), photo-visual, audio, gestural, spatial, linguistics, 3) the third dimension is called the social emotional dimension, which is knowledge on the aspects of social-emotional literacy and critical literacy (Ng, 2012). In the combination of these two dimensions, it is emphasized that there is an understanding of the use of LMS SYAM OK in a responsible manner to communicate, interact, explore learning, respect each other's rights in discussing, doing assignments, working together in project teams in the use of digital technology tools.

CONCLUSION

Based on the research objectives and the results obtained, it can be concluded that there is a significant effect of PjBL-based online learning on student's digital literacy skills. At the same time emphasizing that in the Covid-19 pandemic era, if online learning can be packaged properly, following online

learning modes and typologies that are communicative, interactive, full of collaborative, activate the synchronous menu (face to face), independent asynchronous, and collaborative, with assignment-based learning. the project, will be able to encourage student learning skills which in turn are in line with good digital literacy skills such as encouraging selective, critical, and analytical attitudes in sorting and selecting learning media according to student learning needs.

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