



The Effect of Fungi Blended Learning Model on Scientific Communication Skill and Reading Literacy of Tenth Grade Students

Dewi Lengkana^(✉), Ismi Rakhmawati, and Ratna Komala Sari

Biology Education, University of Lampung, Bandar Lampung, Lampung, Indonesia
{dewi.lengkana, ismi.rakhmawati}@fkip.unila.ac.id

Abstract. The 2013 curriculum which is applied to 21st century learning supports students to have skills and literacy. However, students still have difficulty conveying ideas due to the low reading literacy so that they have not received detail information. This research analyzed scientific communication skill and reading literacy, conducted Blended Learning Model assisted with Zoom Meeting on experiment class and WhatsApp Group on control class of tenth grade students. Each class consists of 36 students using purposive sampling. The research method was quasi experiment with instrument test of Fungi reading literacy and scientific communication skill which tested for validity and reliability. Data were analyzed using independent sample t-test. The result showed average data of scientific communication skill and reading literacy on experiment class was higher than control class while both categories were medium. Reading literacy of Fungi material on tenth grade students was $0.002 < 0.05$ which means there is significant effect of Blended Learning with Zoom Meeting on reading literacy. Another result was significant effect of Blended Learning on students' scientific communication skill ($0.00 < 0.05$). Blended learning with Zoom Meeting can facilitated students and teacher to have quality time for discussion and extend material understanding.

Keywords: blended learning · reading literacy · scientific communication skills

1 Introduction

The 2013 curriculum applied to 21st century learning supports students to have 4C skills (*communication*, creativity thinking and innovation, critical thinking, and collaboration) in order to be able to compete in the era of the industrial revolution 4.0. One of the important skills to have in human civilization is the ability to communicate [1]. Later, with this ability, it is hoped that students can communicate ideas and ideas effectively using oral, written, and technology media [2].

In addition to scientific communication problems, literacy is also an important thing in learning. The results of the 2018 PISA test conducted research which showed Indonesian students were ranked 72 out of 79 test-taking countries [3]. The existence of AKM can improve students' reading literacy and numeracy literacy skills, stimulate students to

think critically, and be able to solve problems in various contexts to overcome problems in the 21st century [4].

The results of interviews conducted by researchers at SMAN 1 Gedong Tataan, students experienced difficulties in conveying ideas and thoughts. This can be seen from the responses of students when discussing and expressing opinions on learning. Some of the problems in online learning activities are core competency skills that are difficult to develop because the media used cannot facilitate the development of skills, especially scientific communication skills and reading literacy. Teachers also have difficulty in monitoring the activity of students during online learning, then the learning is more dominant in theory than practice, so it is feared that basic competencies (KD) related to scientific communication skills cannot be achieved.

The low reading literacy causes Indonesian Human Resources (HR) to be uncompetitive due to the lack of mastery of science and technology which is the result of weak interest and ability to read. Reading literacy has a relationship that is in line with one's communication skills in society [5]. The *blended learning model* is a solution so that students can communicate optimally even in the midst of a pandemic. The *blended learning model* emphasizes active learning techniques, so that the *blended learning model* can increase student interaction with other students and teachers. To support *blended learning*, a *zoom meeting* application is used with camera features that are very supportive for communication as well as direct communication [6]. Based on the description of the background and problems above, the researcher will carry out a study with the title *Effect of Blended model Zoom Meeting Assisted Learning on Scientific Communication and Reading Literacy Skills for Class X Students*.

2 Research Methods

The research design used is a quasi-experimental. Reading literacy design using *pretest design* non-equivalent group *posttest*, while scientific communication skills using a two-group static design. This research was conducted at SMAN 1 Gedong Tataan, Pesawaran Regency in the Even Semester of the 2021/2022 Academic Year. Data collection techniques with observation and documentation. The research instruments used were test questions, scientific communication ability observation sheets, and learning implementation observation sheets. Test instrument test using validity, reliability, level of difficulty, and discriminatory power. Data on scientific communication skills were tested with pre-requisites, namely normality test and homogeneity test. Literacy data were analyzed using *independent sample t-test* and scientific communication data were analyzed using *Mann-Whitney*.

3 Research Result

The data obtained are reading literacy data, scientific communication skills, and the implementation of learning. Reading Literacy Data can be seen in Table 1.

The results of the normality test showed that the research data were normally distributed. The homogeneity test of the data has also been carried out to determine the distribution of the sample which shows that the research data is homogeneous. The

Table 1. Data on Reading Literacy Ability

Score	Class	$\pm SD$	Normality test	Homogeneity Test
Pretest	E	47.08 \pm 5.12	Sig 0.129 > 0.05	Sig 0.074 > 0.05
	K	47.01 \pm 6.73	Sig 0.200 > 0.05	
Posttest	E	71.59 \pm 6.81	Sig 0.200 > 0.05	Sig 0.556 > 0.05
	K	66.52 \pm 7.54	Sig 0.196 > 0.05	

Table 2. Statistical Test Results for N-gain. Data

Score	Class	$\pm SD$	Normality test	Homogeneity Test	Independent Test Sample t-test
N-gain	E	0.46 \pm 0.11	Sig 0.200 > 0.05	Sig 0.700 > 0.05	Sig 0.002 < 0.05
	K	0.36 \pm 0.14	Sig 0.073 > 0.05		

experimental class increased from 47.08 to 71.59 while the control class increased from 47.01 to 66.52 (Table 1).

Table 2 shows that the average score obtained by students in the experimental class is higher (0.46: moderate category) than the control class (0.36: medium category). The results of the N-gain reading literacy normality test for experimental class students were Sig 0.200 > 0.05, meaning that the data was normally distributed and in the control class was Sig 0.073 > 0.05, meaning that the data were normally distributed. After that, the homogeneity test was carried out with the result Sig 0.700 > 0.05, which means that the reading literacy data on the mushroom topic in the study was homogeneously distributed. After it is known that the reading literacy data is normally distributed and homogeneous so that an *independent sample t-test can be performed* using SPSS 25. The test results show that the value of Sig. (2- tailed) is 0.002 < 0.05, which means H_{1is} is accepted and H_{0is} is rejected, that is, there is an effect of the *blended learning model* assisted by *zoom meeting* on the reading literacy of class X students on the topic of mushrooms.

Next is the scientific communication ability data which can be seen in Table 3.

The average data of scientific communication skills in the experimental class is 80.99 which is included in the good category while in the control class is 66.78 which is included in the good category (Table 3). The average value in the experimental class is

Table 3. Statistical Test Results of Scientific Communication Ability

Class	$\pm SD$	Normality test	Homogeneity Test	Mann Whitney test
E	80.99 \pm 4.78	Sig 0.200 > 0.05	Sig 0.020 < 0.05	Sig 0.000 < 0.05
K	66.78 \pm 6.68	Sig 0.190 > 0.05		

known to be higher than the average value in the control class so that it can be defined that scientific communication skills are higher in the experimental class.

The results of the normality test of scientific communication ability data Sig 0.200 > 0.05 which means that the scientific communication ability data sample in this study is normally distributed. After that, the homogeneity test was carried out with the results of Sig 0.020 < 0.05, which means that the scientific communication ability data in this study were not homogeneously distributed. After it was known that the data were normally distributed and not homogeneous, a non-parametric test was carried out, namely the *Mann Whitney test* using SPSS 16. The test results showed that the value of Sig. (2-tailed) is 0.000 < 0.05, which means that H_1 is accepted and H_0 is rejected, that is, there is a significant difference in scientific communication skills in the experimental and control classes. Thus, the application of *blended learning* has an influence on the scientific communication ability of the experimental and control classes (Table 3).

Based on the results of the data sheet on the implementation of learning in the experimental class, it shows that the total average percentage in 2 meetings is 96.5%, which means that almost all activities are carried out (Table 4).

Table 4. Results of Observation of the Implementation of Experimental Learning

Stage	Percentage (%)		Criteria
	Meeting 1	Meeting 2	
Introduction			Almost all activities carried out
Enthusiastically open the lesson	10	10	
Attract students' attention with varied interactions	10	10	
Core			
<i>Seeking of Information</i>			
Provide a reference by stating goals and task limits	10	10	
Make a connection by explaining the concept or understanding before working on the material in detail	9	9	
<i>Acquisition of Information</i>			
Facilitate students to explore information both <i>offline/online</i>	10	10	
Guiding students in working on group worksheets	9	9	

(continued)

Table 4. (continued)

Stage	Percentage (%)		Criteria
	Meeting 1	Meeting 2	
<i>Synthesizing of Knowledge</i>			
Encourage students to communicate completed tasks	9	10	
Confirming the work of students	9	9	
Closing			
Reviewing by making a summary	10	10	
Evaluating students' opinions	10	10	
Total	96	97	
Average	96.5		

4 Discussion

The increase in reading literacy that occurred in the experimental class and control class was due to the application of a *blended learning model* with several syntaxes that supported the improvement of reading literacy skills. The average value of reading literacy on mushroom topics in the experimental class increased from 47.08 to 71.59 in the *posttest*. While the control class increased from 47.01 to 66.52 in the *posttest*. The difference in results between the experimental and control classes was due to differences in treatment in the two classes (Table 1).

The results of the research application of the *blended learning model* assisted by the *zoom meeting* have a significant effect on reading literacy in students. These results were obtained from the reading literacy *pretest - posttest* data of class X students at SMAN 1 Gedong Tataan. The average value of N-gain in the experimental class is higher (0.46) with moderate criteria than the control class, which is 0.36 with moderate criteria (Table 2). Learning in the control class looks more passive because of the media used. Students seem less enthusiastic to seek information related to the material when discussion activities are carried out through *whatsapp groups*. Only a few students seemed to be actively paying attention and giving opinions, either questions or suggestions (Fig. 1).

During the learning process through *whatsapp groups*, some students also dared to give conclusions regarding the results of the discussions at the meeting (Fig. 2). This means that concluding skills can be developed on mushroom material.

An easy indicator for students in reading literacy on mushroom material is finding information (Fig. 3). This can be seen by the answers of students who answered correctly on multiple choice questions accompanied by the right reasons so that they obtained the maximum score.

The difficult indicators are evaluating and reflecting (Fig. 4). This can be seen by the answers of students who choose the wrong answer in multiple choice accompanied by incorrect reasons.

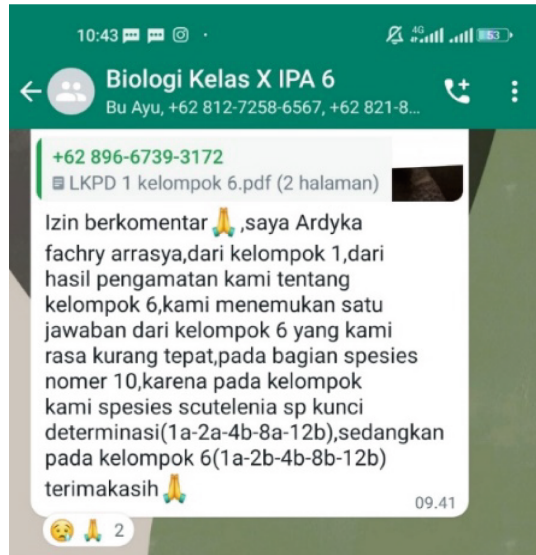


Fig. 1. Ability to Express Opinion of Control Class

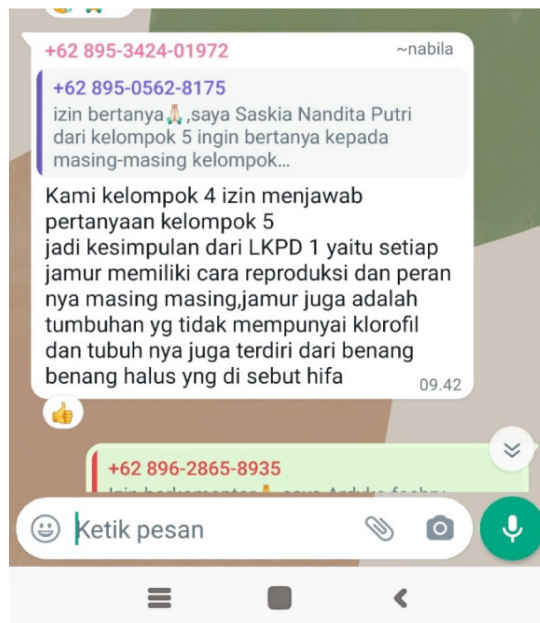


Fig. 2. Concluding Skills Class Control

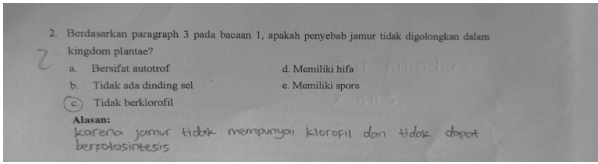


Fig. 3. Problem Indicators Finding Information

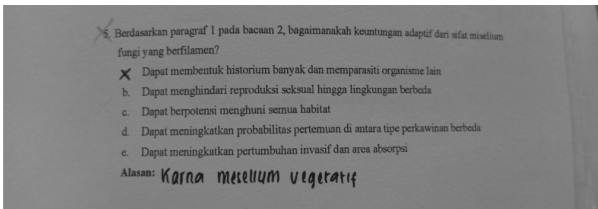


Fig. 4. Evaluating and Reflecting Indicator Questions

The N-gain category is the same between the experimental and control classes, which is moderate, but the results of the *independent t-test* show a significant difference between the experimental and control classes. The test results show that there is a significant effect of the *blended learning* model with the help of *zoom meeting* on the reading literacy of class X students on mushrooms.

Data on the scientific communication ability of students obtained in the experimental class is 80.99 which is included in the good category while in the control class is 66.78 which is included in the good category (Table 3).

In the LKPD, each group in the experimental and control classes showed the achievement of indicators of scientific communication ability, namely: 1) skills in obtaining information sources; 2) skills in collecting and compiling information; 3) the ability to

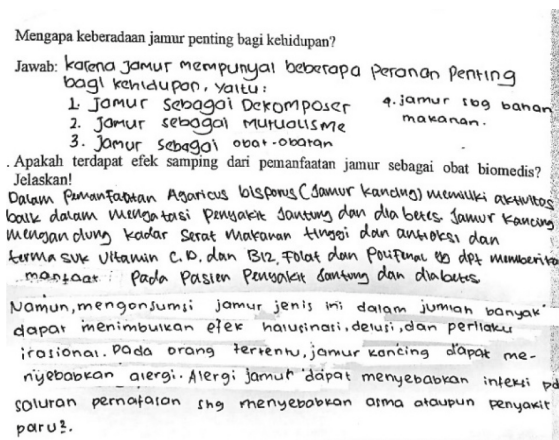


Fig. 5. The Ability to Associate Material With Daily Life at LKPD

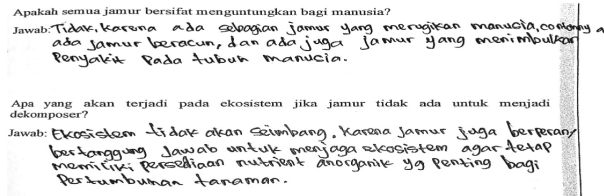


Fig. 6. Ability to Express Opinions to LKPD

relate the material to everyday life (Fig. 5). In the learning process, the experimental and control classes showed the achievement indicators of scientific communication skills, namely: 1) the ability to respond and express opinions; 2) the ability to discuss in solving problems; 3) discussion result presentation skills; 4) concluding skills (Fig. 2).

First meeting was conducted *offline* in the classroom. Students look enthusiastic and interested during the learning process. Students respond well when asked questions. Students also pay close attention to the explanation given. Discussion activities were carried out in groups, where each member gave an opinion and discussed how to complete the LKPD (Fig. 6). Students also sometimes ask questions about parts that are not clear in order to maximize the results of their group work.

LKPD students look active and enthusiastic when relating the material to their experiences such as the use of mushrooms for consumption, cases of mushroom poisoning, to the presence of various mushrooms in the surrounding environment (Fig. 7). Students exchange information with each other during learning activities. Learning activities that foster students' scientific communication skills can be seen from the existence of activities consisting of several activities such as asking questions, giving suggestions, expressing opinions, presenting, and concluding. The existence of these various activities is defined that students experience a good thinking process. Learning through *zoom*

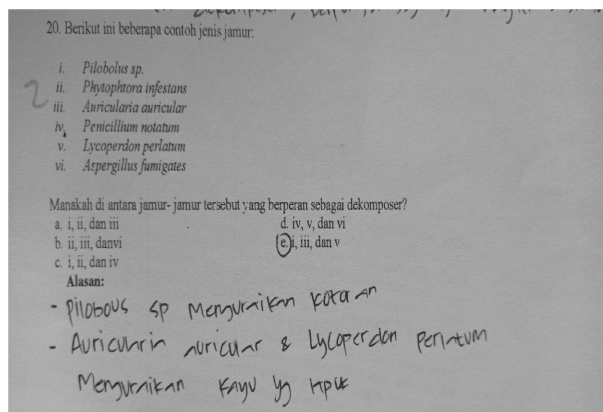


Fig. 7. The Ability to Associate Material With Daily Life On Problem

meetings will be observed to determine students' scientific communication skills. Students are quite active in discussions during learning. Educators and researchers can calculate the percentage of each individual's scientific communication skills.

5 Conclusion

Based on the results of research on the effect of the *zoom meeting* -assisted *blended learning model* on scientific communication skills and reading literacy, it can be concluded that: 1) There is an effect of the *zoom meeting* -assisted *blended learning model* on the reading literacy of class X students; 2) There are the effect of the *zoom meeting* -assisted *blended learning model* on the scientific communication skills of class X students.

References

1. U. Kulsum and Nugroho, "Penerapan Model Pembelajaran Cooperative Problem Solving Untuk Meningkatkan Kemampuan Pemahaman Konsep dan Komunikasi Ilmiah Siswa Pada Mata Pelajaran Fisika," *Unnes Phys. Educ. J.*, vol. 3, no. 2, pp. 74–78.
2. B. Saputro, *Pengembangan Model Problem Based Learning Dalam Meningkatkan Keterampilan Komunikasi Ilmiah Calon Guru IPA Era Revolusi Industri 4.0*. Yogyakarta: Aswaja Pressindo.
3. A. Ramdani, A. Jufri, and Jamaluddin, "Pengembangan Media Pembelajaran Berbasis Android Pada Masa Pandemi Covid-19 untuk Meningkatkan Literasi Sains Peserta Didik," *J. Kependidikan J. Has. Penelit. dan Kaji. Kepustakaan di Bid. Pendidikan, Pengajaran, dan Pembelajaran*, vol. 6, no. 3, pp. 433–440.
4. A. Wijaya and D. F. A. K. Minimum, "No Title," *Kementeri. Pendidik. dan Kebud.*
5. M. Teguh, "Aktualisasi Kurikulum 2013 di Sekolah Dasar Melalui Gerakan Literasi Sekolah Untuk Menyiapkan Generasi Unggul dan Berbudi Pekerti," in *Prosiding Seminar Nasional 15 MARET 2017*,
6. A. Alfitri, "Kemampuan Komunikasi Matematis Siswa Melalui Blended Learning Berbasis Pemecahan Masalah," *Pros. Semin. Nas. Mat.*, vol. 1, no. 1, pp. 191–202.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

