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The Use of Live Worksheets in Biology Learning During the Covid-19 Pandemic to Improve Student Learning Outcomes at SMPN 14 PALU

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Abstract

The use of student worksheets in learning has been carried out at SMPN 14 Palu. However, learning by using live worksheets has not yet been carried out at the school. Therefore, learning to use live worksheets is needed to improve student learning outcomes. This research is a type of classroom action research (CAR) which is carried out with 2 cycles consisting of planning, implementing actions, observing and reflecting. The data taken is quantitative data, being observational data obtained from observations of student and teacher activities in learning and also learning outcomes data obtained from student test results. The results showed that student activity from cycles I to II increased by 47.66%, teacher activity from cycles I to II increased by 45%, student learning outcomes in the form of classical absorption increased from cycles I to II by 10.16% and for classical learning completeness, an increase of 11.98% was obtained from cycle I to II. Thus, it can be concluded that the use of live worksheets can increase student activity and student learning outcomes for class VIII SMPN 14 Palu.

Keywords: Live Worksheets, Student Activities, Learning Outcomes

1. Introduction

SMP Negeri 14 Palu is one of the junior high schools in Palu City, which is located in the middle of Palu City, on Jalan Suprapto. This school has been carrying out face-to-face learning half the time due to the current pandemic period which is still ongoing. During pandemic-19, it demands creativity, intelligence and policy as well as adjustments to the dynamics and developments caused by the risk of Covid-19 transmission. In addition, the progress of science and technology that is growing rapidly requires educators to adjust the conditions in learning both face-to-face and virtual (Adedoyin and Soykan, 2020; Almaiah *et al.*, 2020; Chick *et al.*, 2020; Daniel, 2020; Herliandry *et al.*, 2020) ^[1, 2, 5, 6, 10]. Entering the 4.0 revolution century, the use of information and communication technology can be said to be a primary need (Aziz Hussin, 2018; Lase, 2019; Shahroom and Hussin, 2018) ^[4, 13, 18]. The educational community, including teachers and students, currently use laptop and cell phone technology tools every day. The impact of this technological movement affects the style and mindset of educators and students in their learning. Therefore, the current learning system should adapt to advances in communication and information technology such as computer technology, mobile phones. Audiovisual (Daniel, 2020; Herliandry *et al.*, 2020; Shahroom and Hussin, 2018) ^[6, 10, 18].

The development of computer or laptop technology has brought major changes in the world of education, especially in the teaching and learning process. The use of tools from the results of the technology, if carried out correctly and optimally, will bring significant progress in learning (Aziz Hussin, 2018; Chick *et al.*, 2020; Lase, 2019)^[4, 5, 13]. Therefore, this condition provides a great opportunity for educators to develop interesting and interactive learning techniques in the implementation of the learning process in the classroom in order to provide maximal motivation and learning outcomes to students. From the results of many reports and research results, it is illustrated that the use of computer-based devices provides maximal motivation and learning outcomes compared to sources of information that are solely focused on text from books (Lase, 2019; Moos and Azevedo, 2009; Rienties *et al.*, 2009)^[13, 16, 17]. Therefore, the use of this device by educators plays a very important role in determining the success of education, especially in the success of learning.

The use of computer equipment from other studies has been felt to be useful because it can present a display in the form of non-sequential, nonlinear, and multidimensional text with branching links and nodes interactively (Aziz Hussin, 2018; Jones and Issroff, 2005; Mazer *et al.*, 2007; Shahroom and Hussin, 2018)^[4, 12, 15, 18]. Educators if they are able to optimize their use will be freer to choose, synthesize, and elaborate various kinds of applications that can be used in interesting and interactive learning (Gomez *et al.*, 2010; Is Eka Herawati, 2015; Wardany *et al.*, 2017)^[9, 11, 23]. The impression of an interesting,

interactive, and innovative presentation can give students a sense of awe and provide a strong impetus or motivation for their involvement both physically and non-physically in the learning process in the classroom (Jones and Issroff, 2005; Mazer *et al.*, 2007; Rienties). *et al.*, 2009) ^[12, 15, 17]. The use of multimedia also facilitates the success of the process and learning outcomes of students (Lase, 2019; Moos and Azevedo, 2009)^[13, 19].

Observations at SMP N 14 Palu, currently multimedia tools are still not optimally used. From the observations obtained, multimedia that is often used in learning includes using computers/laptops and LCDs. The use of multimedia is used to display the subject. Its use is used to assist teachers in learning. Usage is used to orient students to problems that will be solved by students in groups through the worksheet distributed by the teacher. Unfortunately, at the moment, teachers still use worksheets in text form. This form of worksheet is perceived by students as less attractive, less practical, less innovative, less interactive. Therefore, teachers should need to innovate by using worksheets that are able to fulfill innovative, interesting, interactive, fun, and easy aspects with nuances of learning in the 4.0 revolution era.

The use of virtual technology-based worksheets is an alternative solution to the application of live worksheets by teachers at SMPN 14 Palu in order to produce increased success in the process and student learning outcomes by providing comfort and youth learning. From the results of studies, it has been reported that the use of ICT-based worksheets is able to facilitate student learning, improve learning outcomes, the learning process, create a conducive learning atmosphere, and improve students' scientific thinking skills (Amthari *et al.*, 2021; Fitri and Pahlevi, 2021; Lathifah *et al.*, 2021; Suryaningsih and Nurlita, 2021)^[3, 8, 14, 21].

The results of the studies that have been carried out as mentioned above do not seem to have reported that learning using worksheets by utilizing live worksheets' application programs in biology learning in junior high schools. Therefore, the application of learning by using live worksheets is needed to improve activities and learning outcomes at SMPN 14 Palu.

2. Method

The type of research carried out is classroom action research. The procedure and implementation in this classroom action research is carried out in a cyclical manner as proposed by Kemmis and Taggart which consists of stages (1) planning, (2) implementing action, (3) observation, and (4) reflection. The research was conducted at SMP Negeri 14 Palu, Central Sulawesi in the academic year 2022/2023 from July to August 2022. The subjects of the research were all 17 students of SMP Negeri 14 Palu in class VIII A, consisting of 12 female students and 5 male students.

This study obtained qualitative data and quantitative data. Qualitative data was obtained by observing the teaching and learning process during the implementation of actions in the form of giving live worksheets using student activity observation sheets, and teacher activity observation sheets. Quantitative data obtained from the results of the tests given at the end of each class action in the form of giving live worksheets which aims to determine student learning outcomes in each cycle.

The research begins with the action planning stage, which includes preparation of learning implementation plans, preparation of student worksheets based on learning materials, preparation of the necessary learning media. Next is the action implementation stage, which consists of carrying out learning by using learning tools according to the learning scenario in the lesson plan, carry out an assessment or test cycle I. The final activity is drawing conclusions, giving assignments, and further learning material information.

In the observation phase, researchers and teachers in the field of biology study systematically observe student and teacher activities during the learning process. After that, the reflection stage evaluates the learning process to see the advantages and disadvantages that occur when learning is applied by providing live worksheets. The results obtained are used as a reference to carry out the next cycle.

In the second cycle is a development of the first cycle with the same stages as used in the first cycle. If the indicators of student learning outcomes in the second cycle have been achieved, namely with a minimum completeness rate of 85% (Depdiknas, 2001)^[7]. Qualitative data and quantitative data obtained from each cycle, then analyzed using the following formula (Suprihatiningrum, 2012)^[20]:

• Activity of student or teacher:

Percentage Average (NR) = total score / maximum score x 100%

Classical accepted knowledge (DSK):

DSK= $(\sum S \text{ (total score)})/(\sum Si \text{ (ideal score) } X 100\%)$

Classical Learning Completeness (KBK):

KBK=($\sum n$ (number of students who completed))/($\sum N$ (number of students)) X 100%

3. Results

From the results of the first and second cycles of science learning with the material on the structure and function of plant organs, the test results from each lesson are presented in Fig 1.



Fig 1: Learning test results in cycle I (S1) and cycle II (S2) from all students in Class VIII A

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In cycle I the highest score was 90, the lowest score was 20. The number of students who completed was 11 and did not complete 6 person. The percentage of classical absorption (DSK) obtained is 65.29% and the percentage of classical learning completeness (KBK) is 64.71%. This result states that it has not reached the success indicator that has been set, namely KKM 80%, so it is necessary to increase the results to the next cycle, namely cycle II. obtained the highest score of 95.45 and the lowest score of 40.91. The number of students who completed as many as 13 people and who did not complete as many as 4 people. The percentage of classical absorption (DSK) is 74.87% so that the percentage of classical learning completeness (KBK) is 76.67%.

During the action in cycles I and II, observations were made on student activities and teacher activities. The results of observations of student activities can be depicted in Fig 2.

The results of the final test analysis in the second cycle



Fig 2: Student activities during learning in cycles I (P1) and II (P2) students 1 (ind 1) to student 12 (ind 12)

The results of observing student activities in cycle 1 obtained an average value of 44.64%. These results indicate that the student's activity is quite sufficient. The results of observing student activities in cycle 1I obtained 92.30%. Based on the results of the criteria for the level of success of

the action, it can be seen that the student activities are classified as very good. The gains in cycles I and II are summarized in Table 1.

Table 1. The results of observing student activities during learning in cycles I and II.

Dhasa	Asmosts	Number of student activities in	
Fliase	Aspects	cycle I	cycle II
Introduction	1. Answering greetings	2	4
	2. Answering teacher attendance	1	3
	3. Paying attention to information	2	3
	4. Answering questions	2	3
	5. Following up on information	1	4
	6. Forming groups	2	4
Core	7. Giving examples	3	4
	8. Reading the material provided read	2	2
	9. Provide stationery	1	4
	10. Answering questions	2	3
	11. Doing worksheets	2	4
	12. Conducting discussion activities	2	4
	13. Presenting the results	2	2
Closing	14. Conclusion	1	4
Total Score		25	48
Maximum Score		56	52
Average score percentage		44,64%	92,30%
Rating Category		Fairly	Very good

Observation results from teacher activities in cycles I and II are depicted in Fig 3.



Fig 3: Teacher activities during learning in cycles I and II (P1) and II (P2) students 1 (ind 1) to students 14 (ind 14)

The results of observing teacher activities in cycle II obtained a score of 57 from a maximum score of 60. The result was that the average value (NR) was 95%. This shows

that the teacher's mastery in managing learning by using LKPD with live worksheets is classified as very good category. These results are summarized in full in Table 2.

Table 2: Observation results of	of teacher	activity in	cycle I and cycle II
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Phase	Aspect	Number of teacher activities in	
		cycle I	cycle II
Introduction	1. Opening lesson	1	4
	2. Attending student attendance	1	4
	3. Performing apperception	1	3
	4. Asking questions	3	4
	5. Presenting learning objectives	1	4
	6. Guiding students in forming study groups	3	4
Core	7. Distributing worksheets	5	4
	8. Directing students to read the material	3	4
	9. Directing students to provide writing utensils	3	4
	10. Asking questions about the material	3	3
	11. Guiding students working on the worksheets	2	4
	12. Directing students to discuss	2	3
	13. Guiding students to present the results	2	4
Conclusion	14. Concluding learning outcomes	2	4
Total Score		28	57
Maximum score		56	60
Average score percentage		50 %	95%
Rating Category		Fairly	Very Good

4. Discussion

Based on the results of research that has been done shows that student learning outcomes and student activities on the subject of structure and function plant organs using the application of live worksheets has increased (Fig 1 and 2). Student learning outcomes have increased because it is influenced by the use of live worksheets. In fact, almost all of the students experienced an increase in learning outcomes (Fig 1). The use of live worksheets also has an impact on student activities (Fig 2). It seems that student activities when participating in classroom learning can be influenced by teacher learning activities using live worksheets (Fig 3). In the first cycle, the results of the observation of student activities amounted to 44.64%, an increase in the second cycle by 92.30% (Table 1). This increase seems very significant. Increasing learning activities aimed at increasing student and teacher activities significantly strengthens student learning outcomes. This can be seen from the increase in student learning outcomes from cycle I to cycle II both individually (Fig 1) and in classical learning completeness.

Learning outcomes using live worksheets get low student learning outcomes in cycle I. The cause of low learning outcomes in cycle I is because students and teachers have not fully understood and adapted to learning by using live worksheets. The involvement of students and teachers in delivering apperception and exploring knowledge is still lacking and the teacher's ability to guide students is considered not optimal. This is illustrated by the teacher's activity which was still low in the first cycle and then increased in the second cycle (Fig 2 and Table 2). Thus, the learning outcomes obtained in the first cycle have not achieved the expected results, so learning reflection must be carried out by making improvements in the second cycle, in order to obtain the expected results.

The increase in student learning outcomes occurs because student activities during the learning process are good and teachers increase their activities in learning which have an impact on increasing student learning activities so that in the end it has a positive impact on improving student learning outcomes. These results are in line with the study conducted by Shoimin (2014)^[19], which suggests that the success of the teaching and learning process affects student learning outcomes. The greater the activity of students and teachers, the more successful students are in achieving their learning outcomes. The increase in student learning outcomes in class VIII A SMPN 14 Palu was caused by the implementation of live worksheets that were applied by the teacher. These results are also in line with the results of previous studies, Thobroni and Mustofa (2011)^[22] showing that learning using worksheets is better than conventional learning. Other studies have also reported that the use of technology information communication (ICT)-based worksheets can make it easier for students to learn, improve learning outcomes and improve students' scientific thinking skills (Amthari et al., 2021; Fitri and Pahlevi, 2021; Lathifah et al., 2021; Suryaningsih and Nurlita, 2021)^{[3, 8, 14,} 21]

From the results of this research, it can be stated that learning with live worksheets encourages teachers to actively carry out learning activities that have an impact on increasing student learning activities and learning outcomes.

5. Conclusion

The application of live worksheets can improve student activity and learning outcomes for class VIII students of SMP Negeri 14 Palu on biology material. Learning with the use of ICT-based worksheets in addition to live worksheets can be done as an alternative and a comparison of its effectiveness for teachers to increase motivation, activity and student learning outcomes.

6. Suggestion

The researchers suggest that the teacher particularly Biology teacher applies a learning with the live worksheets as an alternative to improve student' learning activities and outcomes.

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