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The Influence of ICT-Based Think Pair Share Type Cooperative Learning Method (Quizlet) on Student Learning Outcomes on Plant Reproductive Systems

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Abstract:
In the current era of information and technology, education must follow technological development so that students can understand better and more effectively. Plant reproductive system material is an important part of the science curriculum. So more innovative and interactive learning methods are needed to increase student understanding. The learning approach that can be adopted is cooperative Think Pair Share type. Cooperative learning methods using Information and Communication Technology based technology such as Quizlet, which is an interavtive online learning platform, can improve the quality of learning. To find out the influence of the Think Pair Share type cooperative learning method on Plant Reproductive Systems material on learning outcomesfor class IX-B students at Mts Nurul Islam, Kediri City. The type of research used is quantitative with experimental design methods. The research designs uses one group pretest posttest. Samples were taken randomly based on discussions with the teacher and the class selected was class IX-B. the data collection technique was carried out by providing pretest and posttest questions as a measuring toolfor this research. The results of the Wilcoxon Matched-Pairs text show that the significance value (p-value) for the Pretest and Posttest scores is 0,000 whre the value is <0,005, which means there is a signifanct difference between the students Pretest and Posttest scores. Student learning outcomes increased significantly after implementing the ICT-based Think Pair Share learning concept using Quizlet. The results show that there is a significant difference between the pre-test and post-test.

Keywords: *Think Pair Share, ICT, Pretest, Posttest*

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Introduction

Education is one of the most important factors in the formation of a quality and competitive society. In the current era of information and technology, education must keep up with technological developments so that students can understand better and more effectively. One area that requires innovation in teaching methods is learning biology, especially the plant reproductive system. Plant reproductive system material is an important part of the science curriculum. However, students often have difficulty understanding the concepts associated with this material.

Traditional teaching, where the teacher presents the material orally and then continues with exercises on written questions, often does not provide optimal results. The learning method is the teacher's way of carrying out, presenting, explaining, giving examples and practicing the learning content so that students can achieve learning objectives. In learning, teachers must use different methods to achieve learning objectives. The method enlivens the learning environment and guides the activities followed by the teacher and students. Teaching methods also help teachers to actually improve student learning outcomes. Each teacher uses different teaching methods because they must be adjusted to the core competencies to be achieved. Therefore, these methods vary according to the teacher's needs.

Good mastery of the material also ensures good learning outcomes. Students can master the subject matter if they are highly motivated in the learning process. The material of the human reproductive system is a material that is considered abstract which during learning students only hear explanations from the teacher without knowing what the reproductive system looks like (Widyana, 2013). Students become passive in the learning process due to monotonous learning. If students have a negative perspective towards learning, their learning experience becomes unmemorable and insignificant. They also have a negative impact on their critical thinking skills.

Given these problems, an innovative learning model is needed. One of the alternatives used is by applying the Think Pair Share (TPS) cooperative model. The cooperative model of Think Pair Share (TPS) focuses on learning through discussion and collaboration among group members, allowing all students to actively participate in the learning process. Thus, this model can stimulate students' thinking and emphasize their characters who can always ask questions, analyze and communicate arguments.

If technology is used in fun learning, students will definitely be motivated to try hard. If you are highly motivated to learn, you will get better or better learning outcomes. Learning outcomes are what students achieve after the learning process. Students receive learning outcomes in the form of numbers or grades from each subject they have studied. Learning outcomes are also shown in the form of students' understanding of questions, problems, or statements given by the teacher to test their understanding of the topics they have learned. (Ahmad Marzuki, 2014).

The combination of cooperative learning methods with the utilization of ICT (Information and Communication Technology) based technology such as Quizlet, which is an interactive online learning platform, can improve the quality of learning. The development of technology offers a great opportunity to integrate learning with technology. As an ICT-based tool, Quizlet has several features that can increase student interaction and participation in the learning process. Quizlet offers flashcards, quizzes and many other learning tools to help students understand the material in a more interesting and interactive way.

The purpose of this study is to fill the knowledge gap and contribute to the development of more effective teaching methods in the field of biology. By knowing the positive or negative effect of applying the cooperative learning method of sharing

thoughts on the material of the plant reproductive system (Quizlet) based on ICT on the learning outcomes of students in class IX-B MTS Nurul Islam Kota Kediri, this research can be expected to provide a more comprehensive understanding of effective ways to improve biology teaching. The development of more effective learning methods in this field can provide significant benefits for students, teachers, and other related parties in improving the quality of education in Indonesia.

Methods

This research was conducted at MTs Nurul Islam Kota Kediri from October 18 to 23, 2023. The research subjects were class IX-B students consisting of 30 people, with 11 female students and 19 male students. The focus of the research included two aspects: first, students' learning activities during the learning of plant reproductive system with Think Pair Share cooperative method, and second, students' learning outcomes after the application of the method.

The research design consisted of one cycle divided into three stages: action planning and implementation, observation and test, and reflection and evaluation. In the planning stage, researchers prepared lesson plans (RPP), tools, materials, and Student Worksheets (LKPD). The observation stage involved monitoring the learning process and conducting pre-test, LKPD, and post-test to measure students' understanding. In the reflection stage, researchers and teachers evaluate the learning process and results by distributing self-evaluation sheets to students.

Data was collected through observation, tests, and documentation. Observations provide information about the learning situation and activities, tests measure students' ability to absorb the material, and documentation presents a picture of the teaching and learning situation. Data analysis was conducted by comparing pre-test and post-test scores using SPSS for Windows for normality and homogeneity tests, as well as paired t-test with 95% confidence level. The research instruments included pre-test and post-test in the form of essay questions and matching answers. The success indicator of this study is the achievement of a minimum KKM score of 70 with 85% of students meeting these criteria.

Results and Discussion

This research was conducted in two stages, namely before the experiment (Pretest) and after the experiment (Postest). The Think Pair Share type cooperative learning model applied by the researcher proved to have an effect on improving the learning outcomes of ninth grade students at MTs Nurul Islam Kota Kediri in science subjects. The effect can be seen from the comparison of the results of students' Pretest and Posttest scores.

The pretest was conducted before the experiment using the Think Pair Share type cooperative learning model, while the posttest was conducted after the experiment using the Think Pair Share type cooperative learning model. The instrument used to obtain the results is in the form of esay questions that students do in groups. The pretest form in this study is an essay with 20 questions, the purpose of this pretest is to measure students concept understanding before conducting the Think Pair Share cooperative method treatment. The posttest form is matching questions and answers with details of 20 question, the purpose of the posttest is to measure students understanding of concepts after conducting the Think Pair Share cooperative method treatment.

Results Before Experiment (Pretest) and After Experiment (Postest)

Tabel 1. Student Pretest Result Data

	N	Min	Max	Mean	Std.D
Pretest	30	60	70	64,16	4.169

Source:

From the data on the Pretest results of understanding the concept of learning science taught with the Think Pair Share type cooperative learning model with 30 students, it shows that the average value of the Pretest results of students' understanding of concepts before the learning process is 64.16 with a standard deviation of 4.169, while the minimum value obtained by students is 60 and the maximum value obtained by students is 70.

Tabel 2. Student Postest Result Data

	N	Min	Max	Mean	Std.D
Postest	30	80	90	84	4.234

Source:

The Postest score results of understanding the concept of material in this study were obtained after class IX-B students were treated with an ICT-based learning strategy using the pair-sharing type cooperative learning method. The students' posttest results after the learning process were 84 with a standard deviation of 4.234, while the minimum score obtained by students was 80 and the maximum score obtained by students was 90.

Normality Test

Tabel 3. Tests of Normality

Tests of Normality

	Class	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	Df	Sig.
Student learning outcomes	*Pretest*	,275	30	,000	,778	30	,000
	Postest	,294	30	,000	,763	30	,000

This table shows that the significant value of the Pretest and Postest data is less than 0.005. Based on the above value, it can be interpreted that the Pretest and Postest data are not normally distributed.

Homogeneity Test

Tabel 4. Tests of Homogeneity of Variance

Test of Homogeneity of Variance

	Levene Statistic	df1	df2	Sig.

student learning outcomes	Based on Mean	,060	1	58	,807
	Based on Median	,079	1	58	,779
	Based on Median and with adjusted df	,079	1	57,927	,779
	Based on trimmed mean	,057	1	58	,813

Table 4 shows that the significance value in the Based on Mean table of the Pretest and Postest data is more than 0.005. Based on the above value, it can be interpreted that the Pretest and Postest data are homogeneously distributed.

Non-parametric Wilcoxon Matched Pairs Test

Table 5. Pretest and Postest Ranking Data

Ranks				
		N	Mean Rank	Sum of Ranks
Postest-Pretest	Negative Ranks	0[a]	.00	.00
	Positive Ranks	30[b]	15.50	465.00
	Ties	0[c]		
	Total	30		

a. Postest<Pretest

b. Postest>Pretest

c. Postest=Pretest

Table 5 shows that based on the Pretest and Postest data, there are no negative ranks with a value of 0, which indicates that there are no students who have decreased scores from Pretest to Postest. In addition, the table also shows that the positive difference (positive ranks) is 30, meaning that all 30 students experienced an increase in scores from Pretest to Postest. The final decision will be based on the statistical test results. The following are the results of statistical tests using Wilcoxon Matched-Pairs on Pretest and Postest data.

Tabel 6. Wilcoxon Matched-Pairs Test Result Data

Test Satatistics	
	Postest - Pretest
Z	-4.856[b]
Asymp. Sig. (2-tailed)	.000

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

Table 6 which displays the results of the Wilcoxon Matched-Pairs test shows that the significance value (p-value) for the Pretest and Postest data is 0.000. Since the value is smaller than 0.005, this indicates a significant difference between the students' Pretest and Postest scores.

According to the results shown in the table above, this discussion will concentrate on students' activities and their learning outcomes. Furthermore, these results are associated with the hypothesis that has been proposed by the researcher to find out whether there is a significant difference in students' learning outcomes after the implementation of the Think Pair Share (TPS) type cooperative learning model.

From the Pretest and Postest table, students obtained a pretest score of 64.16 and a posttest score of 84, with a difference of 19.85. This increase shows that students have achieved significant improvement in their academic achievement. By applying the TPS cooperative method, teachers can encourage students to learn better, which means their learning outcomes are better than before.

Next, the researcher tested the homogeneity and normality of the data to verify the results. The normality and homogeneity tables showed that the data was not normally distributed. The time limitation of the study may lead to sampling that is not accurate or thorough. As a result, the researcher made conclusions according to the hypothesis using non-parametric tests.

The results of the paired Wilcoxon test show a significance value of less than 0.005, which is 0.000. This indicates that the students' scores in the pretest and posttest were significantly different. The researcher found through this non-parametric statistical test that students' scores improved significantly both before and after the application of the Think Pair Share (TPS) cooperative learning method. The results of 30 students who did not experience a decrease in grades after the application of this method indicate that the application of this method can be a solution to the problem of declining student learning outcomes.

Trianto (2007) explains that Think Pair Share is a strategy that can improve students critical thinking skills through the stages of thinking alone, pairing, and sharing. With the integration of Quizlet as an ICT-based media, this method can optimize students learning experience on materials that require in-depth understanding, such as the plant reproductive system. (Trianto, 2007).

When this Think Pair Share method is combined with the use of Quizlet, which is an ICT-based media, its effectiveness can be further increased. Quizlet provides flashcards, quizzes and interactive learning games that help students understand concepts gradually and test their knowledge. At the think stage students can use Quizlet to study and review the material independently. At the pair stage, they discuss the questions or cards contained in Quizlet, discuss concepts that may be difficult to understand, and solve problems together. And at the share stage, they present the understanding that has been obtained in front of the class.

Student activity during the learning process using the cooperative learning model type think pair share is by going through three stages. The first stage is the “think” stage, where the teacher provides apperception and asks questions through pretest questions. The first meeting that was held, students did not really know the learning model used, so the seriousness of students in thinking individually “think” was still lacking. However, at the second meeting, students were already accustomed to thinking individually. This can be seen from the results of the scores when students do the pretest.

After thinking individually, students are asked to think in pairs or groups in the second stage, known as “pair”. At this point, the teacher divides the study groups and distributes the LKPD (Learner Worksheet). In the first meeting, students' cooperation with their pairs or groups has not yet shown cohesiveness because the pairs were chosen

by the teacher to help students adapt to their pairs or groups and because students usually gather in groups of four or more during discussions. So, these pairs were new to them. Students can work well together on the next or second meeting, because the teacher shows that they are seriously working on the LKPD (Learner Worksheet).

In the third stage, "share", each randomly selected pair or group presents the results of the LKPD with their partner or group to their classmates. This is a refinement of the complete procedure that has been carried out. To ensure that every student is responsible for participating, random selection is essential. Because at the first meeting the pair or group of students who presented the results of the LKPD seemed nervous and could not explain clearly, the ability of students showed significant changes. However, in the second and subsequent meetings, it was better for the pairs or groups of students who presented the results of the LKPD because students not only talked about the contents of the LKPD answers, but were also able to relate what they learned to their daily situations when answering questions from other pairs or groups of students.

Conclusion

Students of class IX-B at MTs Nurul Islam Kota Kediri have learned the material of plant reproductive system based on ICT Quizlet using Think Pair Share cooperative learning method. This method is used in accordance with the stages of implementation, namely thinking, pairing, and sharing in groups. Students are assigned to listen to the teacher and answer the teacher's questions in the first stage of cooperative learning. The first stage, Think, involves students working on tasks in pairs with their group mates, and the second stage, Pair, involves students working on tasks in groups. It consists of three groups with ten people in each group. In the third stage, sharing, each group shares answers with other groups by presenting the answers to the results of discussions with classmates in front of the class.

The observation results showed that students' learning outcomes improved significantly both before and after the application of the Think Pair Share learning concept. The statistical test results show the significance value (p-value) of the pre-test and post-test scores of 0.000 and <0.005 which indicates that there is a significant difference between the pre-test and post-test of the students. This shows that Think Pair Share collaborative learning can overcome students' learning outcomes that generally decrease or continue to increase.

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