DIFFERENCES OF STUDENT LEARNING OUTCOMES AND ABILITY TO DELIVER INFORMATION ON PICTURE AND PICTURE AND INSIDE OUTSIDE CIRCLE LEARNING MODEL ON VIRUSES

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ABSTRACT

This study aims to determine the differences in learning outcomes and convey information to students taught using the Picture and Picture and Inside-Outside Circle learning model on virus material in class X IPA SMA Negeri 2 Siborongborong. The sampling technique used was simple random sampling technique, with 32 students as the first experimental class (I) using the Picture and picture model, and 31 students as the second experimental class (II) using the Inside outside circle model. The data analysis technique used in this research is descriptive statistical analysis and inferential statistical analysis. The hypothesis testing results using the Independent Sample T-test showed that the student learning outcomes obtained the sig value. 0.029 <0.05, while the ability to convey student information obtained a sig value. 0.031 <0.05. The hypothesis testing results show differences in learning outcomes and students' ability to convey information using the Picture and Picture and Inside-Outside Circle learning model on virus material in class X IPA SMA Negeri 2 Siborongborong.

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INTRODUCTION

The purpose of the learning process in education, among others, is for students to be able to develop knowledge, understanding, and analysis skills of the social conditions of society in entering a vibrant social life. Under Law No. 20 of 2003 concerning the National Education System in Article 3, which states that "National education has the function of developing capabilities and shaping noble national character and civilization in the context of educating the nation's life. National education aims to develop the potential of students so that they become human beings who believe and fear God Almighty, have a noble character, are healthy, knowledgeable, capable, creative, independent, and become democratic and responsible citizens ".

Learning is a business process carried out by a person to obtain a whole new change in behavior due to his own experience in interaction with his environment (Slameto, 2010). The statement also supports this that learning is new knowledge, skills, or attitudes when a person interacts with information and the environment (Smaldino, 2011).

In the learning process, student learning outcomes are one of the benchmarks for success in education. Learning outcomes can be interpreted as results obtained because of the activities carried out and cannot be separated from the process in learning activities. The learning outcomes achieved by students have different levels. Teachers need to pay attention to appropriate learning models so that the expected learning objectives can be achieved. Something is said to be learning outcomes if students have characteristics such as students are aware that they are learning, which arises in them the motivation to have knowledge where this knowledge is obtained not spontaneously, however, gradually. The learning process also requires interaction, the importance of the communication process, where there is the delivery of messages from someone (message source) to a person or group of people (message recipient) (Lubis et al, 2015). The link between the learning process and the ability to communicate also dramatically influences learning outcomes. Nevertheless, not all students who have optimal learning outcomes have good communication skills. It is necessary to make an effort from the teacher to have good communication skills, which will impact good learning outcomes.

Learning outcomes can be interpreted as an acquisition obtained from individuals' learning process with an input-process-result cycle, between results and input can be clearly distinguished due to a change process. Likewise, after the individual learns, the individual will experience a change from before to become a better individual (Purwanto, 2011).

Biology subjects, especially virus material, present the position of viruses in the classification of living things, characteristics, virus reproduction, the role of viruses, and adolescents' participation in overcoming the spread of viruses. The virus's topic is challenging to understand, abstract in nature, and contains many terms (Rusmalina and Putra, 2015). Viral material is included in the topic of microbiology, including viruses, bacteria, and fungi. These three materials use a lot of Latin language and terms that are difficult for students to understand. Most students often confuse viruses and bacteria, including the names of the diseases they cause. The things above impact low student learning outcomes seen from the results of daily tests that do not reach the KKM in the Biology subject (Harahap, 2018).

Learning with a variety of teaching models and methods will affect the atmosphere and student learning outcomes. Teachers who teach with less attractive learning models can cause students to be less enthusiastic, lazy, passive, and not creative. So when these characteristics appear, the learning outcomes and student's ability to convey information will below. Therefore, teachers must use appropriate learning models, provide media, improve learning planning, and find appropriate learning models to use to improve learning outcomes and the ability to convey student information. Cooperative learning is a form of learning where students learn and work in small groups collaboratively whose members consist of four to six people with a heterogeneous group structure. Cooperative Learning is a structured work or group learning system. There are five group structures: positive interdependence, individual responsibility, personal interaction, teamwork skills, and group processes (Djamarah, 2010). To solve the learning process problem, the researcher used the picture and picture model and inside-outside circle.

The picture and picture learning model is a learning model that uses pictures that are paired or sorted into a logical sequence. The principle of implementing the Picture and picture learning model is a presentation of competency information, a presentation of material, students sorting pictures so that they are systematic, the teacher implements the concept according to the teaching material, inference, reflection, and evaluation (Huda, 2014). Images can overcome visual observation limitations, clarify a problem,

and are easy to use (Sukiman, 2012). Pictures also function to make it easier for students to understand material whose objects are difficult to imagine so that the learning process takes place effectively (Afidah, 2012).

Students participate actively in the learning process according to the picture and picture model, making it easier for students to understand the material, and indirectly it will improve student learning outcomes. The teacher can determine the student's ability to arrange pictures in sequence, show pictures, provide information, and explain pictures. Indirectly the teacher can also determine the student's ability to understand concepts (Pradina and Hastuti, 2017).

The inside-outside circle learning model is a learning technique developed by Spencer Kagan to provide opportunities for students to share information simultaneously. Active student involvement can be seen starting from the first stage to the last stage of learning so that it will provide opportunities for students to be more active in communicating, and the teacher will also know the possibility of how far the student's level of communication is lacking so that at the end of learning the teacher can correct these deficiencies (Purnamawanti, 2015). This model also aims to increase student motivation to participate in learning activities and develop socialization skills (Premiawan, 2014).

The Inside Outside circle model allows students to interact as much as possible with their partners. For this reason, students can increase the amount of time they spend speaking in the target language by doing pair work and group work. Besides, students can improve their ability to work together and communicate with their friends (Sudrajad, 2016).

Learning using a student-centered learning model makes students absorb the subject matter optimally rather than teacher-dominated learning. Students' social skills also improve when they discuss with their partners when they experience difficulties, teach each other if the answer is wrong, praise each other if the answer is correct, and carry out their roles diligently without disturbing other friends (Purwaningrum et al, 2017).

According to Riyono and Retnoningsih (2015), the use of the picture and picture learning model effectively improves learning outcomes of protist learning materials in class X SMA Negeri 1 Kutowinangun. The average classical completeness of all classes studied' cognitive learning outcomes reached 77.8%, with a KKM of 75. According to Darmawati et al (2012), the inside-outside circle (IOC) learning model affects students' biology learning outcomes in class VIII SMP Negeri 2 Pekanbaru. Student learning outcomes based on absorption in cycle I was 79.78% (sufficient), and in cycle II, it increased to 87.5% (good).

The picture and picture and inside-outside circle learning model are expected to affect students' learning outcomes. In this cooperative learning model, students can discuss and share information with other groups simultaneously to eliminate boredom from learning without using a learning model. The use of picture and picture learning models and inside-outside circles will lead students to be active, whether in the discussion, question, and answer, looking for answers, explaining, and listening to material explained by friends. Also, the reason for using the picture and picture learning model and the inside-outside circle is that there is a clear division of group work for each group member, and students can work together with their friends.

METHOD

This research was conducted at SMA Negeri 2 Siborongborong, which is located in North Tapanuli Regency. The research was conducted from July to September 2020, which used a quantitative approach with quasi-experimental research methods. The population in this study were all students of class X IPA at SMA Negeri 2 Siborongborong. The sample consisted of 2 obtained by simple random sampling technique. The independent variable in this study is the picture and picture learning model and inside-outside circle. Then the dependent variable is in the form of learning outcomes and the ability to convey student information. The research design used was a non-equivalent group design. This study involved two classes, namely the first experimental class and the second experimental class. The first experimental class was treated using the picture and picture learning model, while the second experimental class was treated using an inside-outside circle learning model.

The research instrument consisted of learning instruments and data collection instruments. This study's learning instruments consisted of a Learning Implementation Plan (RPP) and student worksheets (LKPD) with a picture and picture learning model and an inside-outside circle. The data collection instruments were in the form of a learning outcome test sheet and an observation sheet on students' ability to convey information. The learning outcome test sheet consists of 20 questions, and the observation sheet on the ability to convey information consists of 7 statements. Before using these two types of instruments, they

are validated first by the validator. Data collection techniques in the form of tests carried out by providing learning result test sheets (before) and at the end (after), and observing the ability to convey student information after the end of learning, which was documented with video and sound recordings on the implementation of learning activities with picture and picture and inside-outside circle learning model.

The data analysis technique used in this research is descriptive statistical analysis and inferential statistical analysis. Descriptive statistical analysis was carried out by describing the research data of each variable, including the mean (mean), standard deviation, highest (maximum), and lowest (minimum) values. Inferential analysis was carried out to test the research hypothesis, but before testing the hypothesis, a prerequisite test was carried out on the collected data, namely by using the normality test and the homogeneity test. Hypothesis testing uses the t-test (Independent Samples T-test) at the level of $\alpha = 0,05$ because it only tests two samples or compares the first experimental class and the second experimental class. Data analysis was carried out with the help of SPSS version 21 for Windows.

RESULTS AND DISCUSSION

This study's results include a description of the value of student learning outcomes in cognitive aspects and the ability to convey student information obtained before learning activities. After learning activities in class X, IPA 2 as the first experimental class was taught using the picture and picture learning model and class X IPA 1 as an experimental class. The second was taught using the inside-outside circle learning model on virus material (table 1).

Table 1. Recapitulation of the results of the calculation of the value of student learning outcomes

Statistic	Experiment I		Experiment II	
	Pre-test	Post-test	Pre-test	Post-test
Mean	48,13	80,94	51,29	85,65
Std.Dev	12,16	8,84	14,55	7,83

The results of this study indicate that there are differences in student learning outcomes taught using the Picture and picture cooperative learning model and the Inside outside circle cooperative learning model, which can be seen from the average value of student learning outcomes, where the average value of student learning outcomes is taught using the model. The

inside-outside circle is higher than the average value of student learning outcomes taught using the Picture and picture model on Virus material.

The pretest mean results of the two classes were not much different. The average pretest score in experimental class I was 48.82, and the average pretest score in experimental class II was 51.13. After knowing the pretest results that showed that the differences in students' prior knowledge were not much different, then each class was given different treatment to find out differences in student learning outcomes after being given treatment.

In practice, learning picture and picture makes students feel interested in the lesson because learning uses pictures that can be seen directly related to viral material and becomes an attraction in the learning process and makes lessons not bored. Especially when students can see the forms of viruses through the pictures presented during the classroom learning process, the virus cannot be seen directly by students with their eyes without tools. This model can also train students to think logically and systematically because, during learning, students are trained to compose pictures sequentially, including reasons in drawing up.

This study's results are in line with the opinion of Fadjarajani et al (2020), which states that the picture and picture cooperative learning model has several advantages over conventional learning. This model provides an opportunity for students to learn to acquire and understand the required knowledge directly (represented by a picture) so that what they learn is more meaningful for them. The material taught is more focused because at the beginning of the lesson, the teacher explains the competencies that must be achieved, and the material is brief first. In addition, this model can increase students' reasoning power because students are asked to analyze existing images.

However, this only applies to students who intend to learn and dare to express their opinions directly when looking at the pictures so that students who have less daring characters learn passively. When learning takes place, it also takes much time because when each image is displayed, it takes time for students to think about the interpretation of the images displayed and when expressing opinions when discussing viral material based on the images shown. This is following Riyono and Retnoningsih's (2015) statement that the Picture and picture model's weakness is that it takes much time and there are passive students.

In the implementation of Inside outside circle learning, all students are active because each

student has to report material according to their respective assignments, whether in small groups or large groups. Students will report the part of the material studied according to their classmates' part and will also receive information from friends about other viral material. This has an impact on students being enthusiastic in providing information and receiving information told by classmates. Active student involvement can be seen from the first stage to the final stage of learning to provide opportunities for students to be more active and communicative (Purnamawanti, 2015).

This results in line with Veriansyah et al (2020)'s research which states that the inside-outside circle learning model has an effect or impact on improving student learning outcomes. This model can allow students to share information through open discussions so that students' interest in being actively involved increases. So, students better understand the viral material because they all play a role in the learning process.

Based on the process and learning that has been implemented, it is clear that student learning in the Picture and Picture class and the Inside outside circle class have differences. This is also evidenced by the average learning outcomes of students taught with the Inside outside circle model. This model higher than the average student learning outcomes, namely 85, 65 for Inside outside circle and 80, 94 for the Picture and picture model.

Table 2. Recapitulation of the Calculation Results Value of the Ability to Deliver Information

Statistic	Experiment I	Experiment II
Mean	73,10	77,53
Std.Dev	8,36	7,56

Based on the table above shows the results of research in class X IPA, it is known that the results of the student observation questionnaire in experimental class 1 are lower than the average ability of students to convey information in the experiment 2 class, namely 73.10 in the picture and picture class and 77.53 in the class—inside-outside circle.

In communicating, both orally and in writing, has two roles: information provider or information receiver. Information that must be memorized must first reach a person's senses, then be given attention and transferred from the sensory recording to working memory, then processed once again to be transferred to long memory. Sensing information is stored in the central

nervous system for a short time, only in a quarter of a second (Dahar, 2011). In this study, students acted as information givers. The requirements for delivering information to be accurate are remembering the main points of information to be conveyed, delivering information coherently, correctly, and adequately, good intonation in delivering information, and clarity of speech in delivering material or information (Santrock, 2011).

The ability to convey student information that is learned using the Picture and picture model in terms of material content, students emphasize viral material based on what they remember. They receive during learning, even though the material's explanation is not coherent or jumping up and down. Students are already fluent in following the language they use every day from intonation and articulation. However, students who are taught using the picture and picture model explain information students still use inappropriate pronunciation. This has a very impact on students who are passive in the implementation of the learning process. With the pictures related to viral material for students who are active in learning, it will be easy and fun to share information, but it will be difficult to convey information for passive students.

In the Inside-outside circle class, in terms of material content, students emphasized the viral material's completeness coherently. In terms of intonation, articulation, and clarity of pronunciation, they are fluent because they have previously been trained in conveying information during learning, where students prepare well the content of the material, clarity of language, and proper pronunciation. With large groups and small groups in conveying information, students no longer use careless language, polite in speaking, and the content of the information conveyed is also under the virus' material. Purnamawanti's (2015) statement that the inside outside circle type of cooperative learning model should be applied in the teaching and learning process. Using the inside-outside circle model requires students to play an active role in the learning process. Students are required to understand each other's material. Students are also required to be responsible for sharing information with their

partners and communicating what is on their minds so that using the inside-outside circle type of cooperative learning model can explore students' abilities and improve students' communication skills. Veriansyah's (2020) opinion states that the inside-outside circle learning model makes students directly involved in the learning process. Students are required to share

information with other students in turn. This makes students more motivated to allow them to interact with others and find as much information as possible to share with other students optimally. Conversely, students will be embarrassed if they do not play an active role because all students will have a turn in sharing information.

Table 3. Hypothesis Test Results on Learning Outcomes and the Ability to Deliver Information

Class	Data	N	Mean	*Sig*	α	Interpretation
Picture and picture	Learning outcome	32	80,94	0,029	0,05	H_0 is rejected and H_a is accepted, "there are differences in student learning outcomes taught using the PP model and the IOC model"
Inside Outside Circle		31	86,65			
Picture and picture	Ability to convey information	32	73,10	0,031	0,05	H_0 is rejected and Ha is accepted, "there is a difference in the ability to convey information to students who are taught using the PP model and the IOC model"
Inside Outside Circle		31	77,53			

Based on the research results and discussion above, after the t-test was carried out, the sig was found. (2-tailed) value <0.05 was the sig value. 0.029 <0.05, it can be concluded that there are differences in student learning outcomes taught using the Picture and picture learning model and Inside outside circle on virus material in class X IPA where H0 is rejected, and Ha is accepted.

Like the ability to convey information, after the t-test was carried out, the sig was found. (2-tailed) value <0.05 was the sig value. 0.031 <0.05 so that H0 is rejected, it can be concluded that there is a significant difference in conveying student information between students who are taught using the Picture and picture learning model and the Inside outside circle learning model.

CONCLUSION

The results and analysis of research data show that the average value of student learning outcomes and the ability to convey information taught using pictures and picture is lower than the class taught inside-outside circle. It can be concluded that there are differences in student learning outcomes and the ability to convey information taught using picture and picture with an inside-outside circle on Virus material. This research suggests for biology subject teachers to choose the learning model that best suits the virus's subject to become active and the learning atmosphere becomes fun.

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