

Implementation of the Group Investigation Cooperative Learning Model with Device Media in Indonesian Language Learning to Increase Student Activity in Class XI Science 4 State High School 1 Wajo

Ahmad Ghazali¹, Nurcaya^{2*}, Jumadi³, Muhlis⁴

^{1,2,3,4}Universitas Puangrimaggalatung, Indonesia

Email: nurcaya.aydin17@gmail.com

Abstract

This study aims to increase student activity through the application of the group investigation cooperative learning model with gadget media in class XI Science 4 State High School 1 Wajo. This research is included in classroom follow-up research which refers to the CAR model by Kemmis, McTaggart, & Nixon which includes planning, implementing, observing and reflecting activities in each cycle. Action research in the form of Group Investigation syntax starting from identifying, grouping, investigation, organizing, and evaluating. The main data in the form of observations of student activity and syntax implementation. Data collection techniques with interview and documentation methods. Validation of data by triangulation method. Qualitative descriptive data analysis consists of three stages, namely data reduction, data presentation and conclusion drawing. The results showed that there was an increase in student activity during Indonesian language learning in class XI Science 4 State High School Wajo from Cycle I (60%), Cycle II (78%). Based on the results of the study, it can be concluded that the application of group investigation cooperative learning with gadget media in Indonesian language learning can increase student activity in class XI Science 4 State High School 1 Wajo.

Keywords: *Student Activity, Group Investigation (GI), Device Media.*

A. INTRODUCTION

Education in the Republic of Indonesia Law no. 20 of 2003 is an effort to realize the teaching and learning process so that students actively have religious spiritual strength, self-control, personality, intelligence, noble character, and skills. The learning process is held interactively, inspiring, motivating students to actively participate. Trilling & Fadel (2009) said that the skills most needed are problem solving, innovation, active communication, and collaboration. The 21st century learning paradigm emphasizes the ability to access information effectively and efficiently, formulate problems, think analytically, and collaborate in solving problems critically (Wijaya, Sudjimat, Nyoto, & Malang, 2016). One of the learning principles is the use of information and communication technology to improve the efficiency and effectiveness of learning in the classroom (Adisel & Pranansa, 2020; Koesnandar, 2020).

Science in education continues to develop according to technological developments and the times. Learning materials must provide authentic designs so that students in groups can create solutions to solve problems in the context of

learning. Problem solving leads to questions and searches for answers by students which can then be searched using available information resources (Trilling & Fadel, 2009). The learning process in education units must accelerate the increase in knowledge supported by the application of digital media and technology (Ali, 2020).

State High School 1 Wajo is a secondary education unit located in the city of Wajo. Students at the school are heterogeneous in terms of ethnicity, race, religion, socioeconomic conditions, from poor families (Gakin) to children of state officials, as well as academic ability. State High School 1 Wajo uses the 2013 Curriculum. The results of observations in class XI Science 4 State High School 1 Wajo on Indonesian language learning material Studying Explanatory Texts in four meetings.

The first observation on Wednesday, March 28, 2022 resulted in data on student activity in learning as follows: 1) few students paid attention and took notes on the teacher's explanation; 2) students only look for information through textbooks/packages; 3) some students discuss with their classmates; 4) students occasionally ask for teachers and friends; 5) some students work on the questions independently; 6) students participate less in class; 7) students express opinions from the teacher; 8) some students respond to friends; 9) some participate in concluding the learning; 10) the teacher gives assignments.

The second observation on Thursday, March 30, 2022, obtained data on aspects of student activity in the classroom which can be described as follows: 1) aspects of students paying attention to and taking notes on teacher explanations 43%; 2) aspects of students asking 41%; 3) students participate in class 40%; 4) students discuss with other students as much as 39%; 5) students seek information related to the material from learning resources 38%. Follow-up observations of teaching and learning activities on Monday, May 9, 2022 and Thursday, May 12, 2022 at XI Science 4, namely: 6) students work together in completing assignments 42%, 7) students express opinions 40%, 8) students respond to opinions 42% , 9) students conclude learning 45%, 10) students work on questions from the teacher independently 45%. Other activities shown by students that are not relevant to learning are looking daydreaming, awkward discussing with friends, playing alone.

Arigiyati (2016) stated that the qualifications for the percentage of student activity in the class were divided into 5 categories, namely: 1) very low (0% - 20%); 2) low (21% - 40%); 3) moderate (41% - 60%); 4) high (61% - 80%); 5) very high (81% - 100%). Referring to these criteria, the average achievement of student activity in class XI Science 4 is 41% and is in moderate qualification with a lower limit value position (41% - 60%).

Observations showed that there was no heterogeneous group discussion; the type of media used is less attractive to students; the multimedia room can be accessed to find information through a computer connected to the internet but must be used interchangeably with other classes, learning resources only use textbooks, so other sources are needed using technology.

The concept of learning that requires students to be active and work together for various experiences of real-world situations with other students is a contextual

approach (Retnasari & Maulana, 2016). One of the appropriate learning models to be applied through a contextual approach is cooperative learning. This learning will develop communication and participation between students with appropriate methods (Akçay & Doymuş, 2014). Therefore, it is necessary to improve the learning process at State High School 1 Wajo by applying a learning method that is able to involve students as a whole.

The selection of learning methods is expected so that the source of information for students is not only from the teacher, but also increases student activity in learning Indonesian. Learning will be more meaningful when students are involved in the teaching and learning process. Teachers are able to make meaningful learning so that the benefits in learning are fulfilled, namely: (1) conveyed material being taught for students to gain knowledge; (2) students are able to learn independently; (3) train creativity as an ability to be reckoned with in today's global era. One of the learning models that encourage students to carry out activities on objects or problems is the Group Investigation (GI) (Asyari, Al Muhdhar, & Susilo, 2016; Umami, 2020).

The GI cooperative model combined with gadget media is a solution to increase responsibility for material completeness (Manumpil in (Pertiwi, 2020)). The selection of gadget media has become a primary need and can be used to advance education with learning methods that follow the times. Device media is thick with image modern and will attract students' interest. Everything high-tech such as computers, mobile phones, smartphones, laptops, and other sophisticated devices have become things that students should have. Media gadgets are not only seen from the negative side, but gadgets can be used as a source and learning media in teacher mentoring. Complete information can help understand the material and complete group assignments in GI cooperative learning. Investigative tasks when in groups are solved more quickly with the help of learning resources from the media devices they have, the results are collaborated and discussed with group members to presented in front of the class.

B. METHOD

The research subjects were students of class XI Science 4 State High School 1 Wajo with a total of 31 students consisting of 12 male students and 19 female students. Sources of data in the study include: 1) the results of active observation; 2) information on the results of teacher and student interviews; 3) cognitive test results of evaluation scores in each cycle; 4) the results of observing the implementation of the GI model syntax, and 5) the results of documenting learning activities using group investigation with gadget media. This study uses two data collection techniques, namely test and non-test techniques. The analysis technique used in this research is descriptive qualitative because the data obtained are in the form of sentences from observations, interviews and documentation. Data analysis refers to the Miles and Huberman analysis model (Sugiyono, 2011) which consists of three

activities, namely: (1) data reduction; (2) data presentation; and (3) drawing conclusions/verification.

C. RESULT AND DISCUSSION

1. Cycle Action 1

The action of cycle 1 consists of several stages which are presented in the following paragraph:

a. Action Planning Cycle I

Planning activities are preparation for learning and preparation for data collection. The preparation for Cycle I learning begins by consulting with the supervisor, collaborating with the tutor, and coordinating with the observer. The learning tools include the source learning syllabus from Permendikbud Year 2016 Number 24 with Explanatory Text material; making RPP Cycle I with GI steps using gadget media; and Explanatory Text LKS as many as six types for each group to get research instruments prepared by researchers including direct observation sheets consisting of ten indicators of activity that must be observed by observers, with qualifications always, often, sometimes, almost never, never; the observation guide contains indicators for assessing student activity in class by the observer; GI syntax implementation sheet for teachers and students which contains grouping, planning, investigation, organizing, presenting, evaluating using gadgets as a source of information during learning; teacher interview sheets asking questions about learning as usual and student responses in class after applying the GI cooperative learning model; and student interview sheets asking about fun learning with the usual model from the teacher or the cooperative model that is applied, student responses to each activity indicator observed, the use of gadget media when learning in class to find information or for other activities. Documenting the continuity of learning with the camera.

b. Action Implementation Cycle I

Cycle I was carried out in three meetings in class XI Science 4 SMA N 1 Wajo on Explanatory Text material. There were 31 students who took part in the study, namely 19 female students and 12 male students. Cycle I was carried out in four 4 x 45 minute time allocation meetings with students.

First meeting, the first meeting was held on Monday, April 4, 2022 at the 3rd hour with the topic of Explanation Text material. Researchers prepared student activity observation sheets, observation guidelines, documentation in the form of cameras, syntax implementation sheets carried out by teachers and students, as well as four observers to assist observations during the implementation of Cycle I actions. The stages of group investigation carried out were grouping, planning, investigation, and organizing.

Second Meeting, the second meeting will be held on Wednesday, April 6, 2022, 8-9 hours. The teacher opens the lesson by greeting. The teacher instructs students to prepare the results of the investigation obtained at the previous meeting. The teacher distributes worksheets for 5 groups. The presenting stage is carried out

by each group presenting the results of the investigation. Group 1 presented about the kidney organ, kidney function for Explanatory Text, the working mechanism of the kidney, and disorders of the kidney. Each member of the group expresses their opinion by presenting using a laptop and LCD.

The presentation ended with a question and answer activity. Students from other groups can ask things that are not understood to the presenter group. Device media is very useful for finding information and finding answers to questions asked. The presenting stage is continued by the next meeting because at the beginning of the meeting there are a lot of students who are noisy when the teacher starts entering the class so that the lesson hours are reduced.

Third meeting, the third meeting was held on Friday, April 11, 2022 at the 3rd hour. The teacher opens the lesson by greeting. The learning process continues in the form of presenting the results of the final group investigation. The teacher distributes worksheets. Each group member expresses opinions and responds to questions from other groups. The teacher guides the students during the question and answer activity. The teacher performs the evaluating stage, which is conveying conclusions with students about the Explanatory Text through power point. Students reflect on learning with the teacher. The teacher distributes evaluation questions to students as a cognitive test.

c. Action Observation Cycle I

The observation stage is carried out to find out all events during the learning process. Observations were carried out by researchers and assisted by five observers, each group was observed by one observer. Observations were carried out using observation sheets, student worksheets, cognitive tests, and syntax implementation sheets. The results of the observations based on the first cycle of action observations after the GI learning model was applied with device media included:

1). Process

The results of observations in the learning process in Cycle I showed good findings regarding teachers and students. The findings are used as a reference in the reflection stage. The data findings obtained from the observation of the learning process in Cycle I are presented in Table 1.

Tabel 1. Cycle I Findings

Apperception	Some students have not been able to relate learning previously with the topic of the day's learning, Students are late for learning, students are not ready receive material by the teacher
Grouping	Some students do not pay attention to the teacher's direction to group, the teacher gives the opportunity for students to gather in one group but it is too time consuming
Planning	The teacher does not provide an explanation for filling out the sheet Student Work
Investigation	Students are looking for information using mobile media, some students do not carry cellphones. Investigations are carried out

	through gadgets and some students say they cannot access because the quota runs out. Searching for materials is time-consuming because students find too many sources.
Organizing	Students prepare the results of investigations from searching various sources of information in the form of media devices and handbooks. The material collected is too much discussion so that expands and takes a long time to prepare whole
Presenting	Students look active and interested in the presentations of other groups. Students express opinions and spend time with group members to respond until time runs out Students ask each other between groups. The results of observer observations, students look for strong answers through the media devices that are brought and delivered in their entirety
Evaluating	Some students are seen working together when working on questions and asking their classmates

Based on Table 1, it is known that there are still obstacles in the implementation of learning activities in Cycle I. The stages of organizing, presenting, evaluating have not been carried out in the first meeting because of the cutting of lesson hours. All the syntax of the Group Investigation model is carried out in the second and third meetings.

2). Interview Result Data

The results of interviews with teachers in pre-cycle conditions that students during the learning process are not always enthusiastic. The teacher asks for group learning but only front and back desks, in order to speed up the learning process. Children can carry out tasks although sometimes groups are formed containing children from low and very low levels. During learning, students pay attention to the teacher even though they are not focused. Some students want to ask questions, especially students who are smart after they finish explaining. Questions from students sitting in front are usually smart kids. While sitting back and forth, smart students lead the discussion. Usually children seek information only through books. Learning is very minimal media, students rarely use laptops and have to take turns with other classes in using the multimedia room.

The results of the interview of students in the medium category said they were happy to pay attention to the teacher, wanted to ask questions, participated in groups. Students can do assignments, are able to express opinions, participate in responding to friends' opinions, are able to conclude with friends. The teacher when teaching in groups with friends in front and behind. The task of the teacher is done by looking at the work of other students. The teacher once asked to study in the multimedia room.

2. Cycle II Action

Cycle II carried out learning using the GI model accompanied by media devices in class XI Science 4 State High School 1 Wajo. Suggestions for improvement in Cycle I were followed up in Cycle II which consisted of planning, acting, observing, and reflecting. Cycle II was carried out on the Explanatory Text material. The details of the activities in Cycle II are described as follows:

1) Cycle II Action Planning

Based on the results of the reflection of Cycle I Action Planning activities are preparation for learning and preparation for data collection. Learning preparation for Cycle II begins by collaborating with the teacher based on the findings and reflections of Cycle I. The plan for the allocation of learning time for Cycle II is 3 lesson hours (3x45 minutes). Learning instruments include the source learning syllabus from Permendikbud Year 2016 Number 24 with explanatory text material; making RPP Cycle II with GI steps combined with device media; and Student Worksheet for each of each group.

The research instrument prepared includes a direct observation sheet consisting of ten indicators of activity that must be observed by the observer, with qualifications of always, often, sometimes, almost never, never; the observation guide contains indicators for observers to assess student activity in class, documenting the continuity of learning with a camera; GI syntax implementation sheet for teachers and students which contains grouping, planning, investigation, organizing, presenting, evaluating using gadgets as a source of information during learning; teacher interview sheets asking questions about learning as usual and student responses in class after applying the GI cooperative learning model; and student interview sheets asking about fun learning with the usual model from the teacher or the cooperative model that is applied, student responses to each activity indicator observed, the use of gadget media when learning in class to find information or for other activities.

The action planning for Cycle II was designed by considering the findings in Cycle I. Improvements in the action plan for Cycle II were carried out to optimize the implementation of the GI learning model combined with mobile media, so as to achieve the research target. Action Implementation Cycle II.

Cycle II was held twice in class XI Science 4 High School 1 Wajo on Explanatory Text material. There were 31 students who took part in the study, namely 19 female students and 12 male students. Cycle II is carried out in a time allocation meeting of 3 x 45 minutes with students.

First meeting, the first meeting was held on Monday, May 2, 2022 at the 3rd hour with the topic of Explanation Text material. Researchers prepared student activity observation sheets, observation guidelines, documentation in the form of cameras, syntax implementation sheets carried out by teachers and students, and as many as five observers assisted in observing during the implementation of the second cycle of actions. The stages of Group Investigation carried out are grouping, planning, investigation, and organizing. Preliminary activities are carried out by the

teacher starting with greetings and taking attendance. Learning begins with apperception and motivation as an opening topic to be studied. The teacher explores students' knowledge and relates it to the day's learning and asks students' conditions before learning begins.

Seconde Meet, The second meeting was held on Wednesday, May 4, 2022 at 8-9 hours. The researcher was asked by the teacher to open the lesson with greetings because it was at the same time as the call and the teacher followed. The researcher ordered students to go to the library to bring writing tools, and prepare the results of the LKS investigations for each group at the previous meeting. Researchers prepare explanatory text samples. The investigation stage is continued by reviewing the explanatory text with the work steps found. The results of the investigation are written in the LKS and documented. The observer observes each student who participates in the group. Groups of students document the steps of the investigation work. Students use mobile media to find the results of investigations during investigations.

2) Action Observation Cycle II

The observation stage is carried out to find out all events during the learning process. Observations were carried out using observation sheets, student worksheets, cognitive tests, and syntax implementation sheets of the Group Investigation model which included planning, grouping, investigation, organizing, presenting, evaluating. Observations were carried out by five observers.

The results of observations in the learning process in Cycle II showed good findings between teachers and students. The findings are used as a reference in the reflection stage. The implementation of learning activities in Cycle II has been going well. The syntax stages of the Group Investigation model were carried out well. Learning observations were carried out by researchers with four observers. Observations using the active observation sheet. The following is a description of the observations of each aspect of student activity according to the category of students.

The results showed that there were ten aspects and five categories of students active in Cycle I with high qualifications. All students have a curiosity to follow the learning. The material given by the teacher is in the form of comparative investigations of various explanatory texts. This is something new for students in the class causing their curiosity to have curiosity to follow the teaching and learning process. The results of interviews with teachers at the end of cycle II that students are more enthusiastic because the GI stages have been understood and students can group heterogeneously, completing assignments because each group consists of children with low abilities and smart.

The results of student interviews in the very low, low, and medium categories showed almost similar answers. The students' answers as follows: learning GI using gadgets is very fun, everyone has brought their gadgets filled with quotas. Students actively listen, ask group friends and teachers, participate in groups. However, at the time of the discussion did not participate. All participate in working on assignments together in groups, express opinions in groups, conclude with friends in class.

3) Action Reflection Cycle II

Reflection in Cycle II was conducted to find out and measure student activity through the GI learning model with gadget media that was really effective in increasing student activity. Student activity has reached the research target in Cycle II, so the cycle was stopped. The findings found in Cycle II were less than those found in Cycle I. The learning in Cycle II went well, in terms of the implementation of all stages of learning the GI model, although it was not perfect. The findings found in Cycle II are used as suggestions for other researchers who want to conduct research similar to this study.

3. Comparison of Action Results Between Cycles

Comparison of Inter-Cycle Action Results is presented as follows:

a. Increasing Student Activity based on Student Category XI Science 4

The aspect of listening to the teacher's explanation, the highest increase from Pre-Cycle to Cycle II was the low category of students by 52%. The smallest increase by smart students 32%. The most extreme aspect of asking about the problem of increasing student activity from Pre-Cycle to Cycle II is the very smart category of students with an increase of 47%. Small improvement by students is very low 31%. Aspects of participating in the group seen the most significant increase in student activity from Pre-Cycle to Cycle II were students with low abilities with an increase of 43%. Extremely low improvement in very smart students 27%. The most extreme increase in student activity in the aspect of discussing subtopics in groups from Pre-Cycle to Cycle II were students in the smart category with an increase of 32%. The category of low students is 23% at least. The most significant increase in student activity in the aspect of seeking information and materials from Pre-Cycle to Cycle II were students in the smart category with an increase of 40%. Low category students increased 26% extreme small.

The most extreme increase in student activity in the aspect of completing assignments from Pre-Cycle to Cycle II were students in the smart category with an increase of 48%. Small increase by low extreme students 34%. The most extreme increase in student activity in the aspect of expressing opinions from Pre-Cycle to Cycle II were students in the very smart category with an increase of 46%. Students in the very low category have the smallest increase of 22%. The most extreme increase in student activity in the aspect of responding to opinions from Pre-Cycle to Cycle II were students in the very smart category with an increase of 46%. Very low students experienced a 23% increase. The most extreme increase in student activity in reflecting on learning from Pre-Cycle to Cycle II were students in the smart category with an increase of 36%. Very low category of students increased by 20%. The most extreme increase in student activity in the aspect of working on questions independently from Pre-Cycle to Cycle II was the very low category of students with an increase of 68%. Very smart students already in the high category experienced a small increase of 40%.

It is clear that the increase in student activity based on student categories in five aspects, namely: listening to teacher explanations, asking questions about problems, participating in groups, discussing subtopics, looking for information and materials is shown in Figure 1:

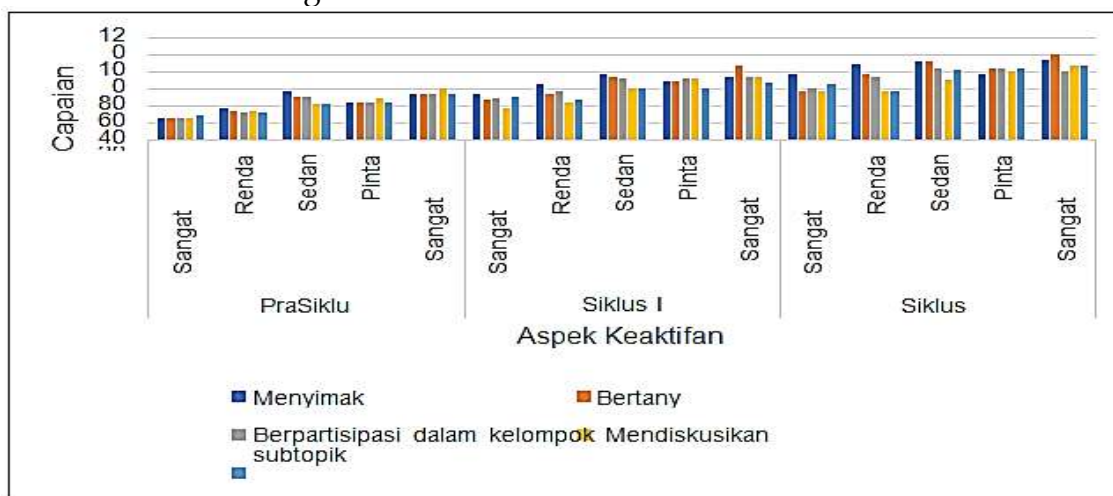


Figure 1. Increasing Student Activity based on Student Categories in Five Aspects

It is clear that the increase in student activity based on the categories of students Pre-Cycle, Cycle I, Cycle II in five aspects, namely: completing assignments, expressing opinions, responding to opinions, reflecting on learning, working on questions independently, is shown in Figure 2.

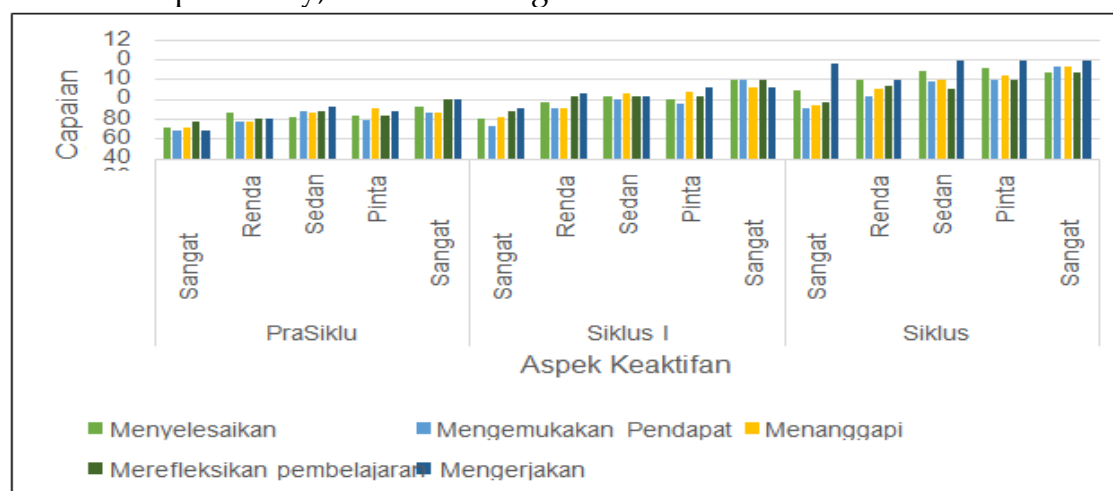


Figure 2. Increasing Student Activity based on Student Categories in Five Aspects

b. Average Increase in Student Activity in Class XI Science 4

The average results of student activity from each of the ten aspects in class XI Science 4 are presented in Figure 3.

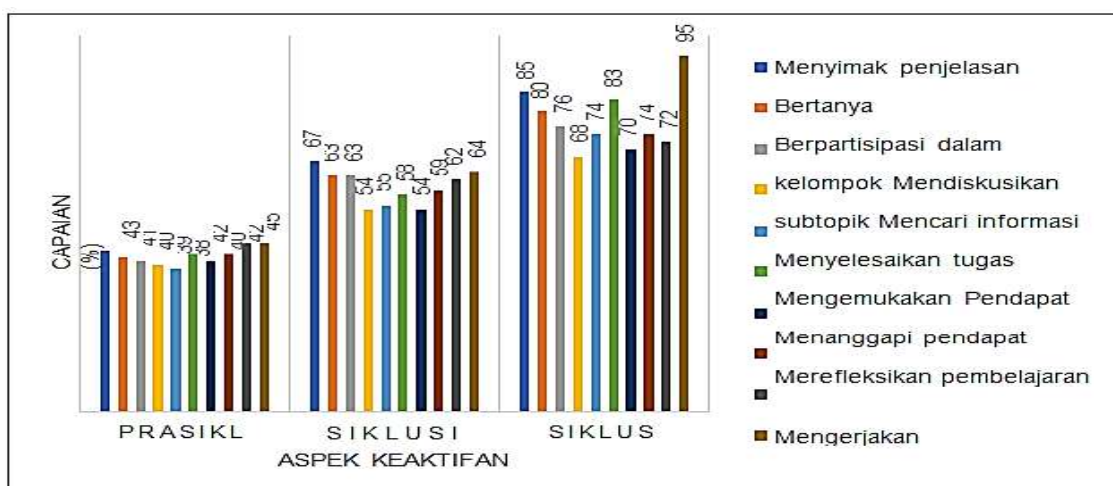


Figure 3. Improvement of Ten Aspects of Student Activity

c. Increased Average Student Activity in Class XI Science 4 State High School 1 Wajo

During the learning process, the results of the comparison of the average activity of students in class XI Science 4.

Table 2. Average Increase in Student Activity in Class XI Science 4 State High School 1 Wajo

PreCycle (%)	Cycle I (%)	Cycle II (%)	Reflection
41	60	78	Increase 37%. Has reached 75% performance indicator

The increase in the average achievement of student activity in class XI Science 4 in Pre-Cycle is 41%, Cycle I is 60%, Cycle II is 78%. Pre-Cycle to Cycle I by 19%. Cycle I to Cycle II 18%. The average activity of students in class can be seen in Figure 4.

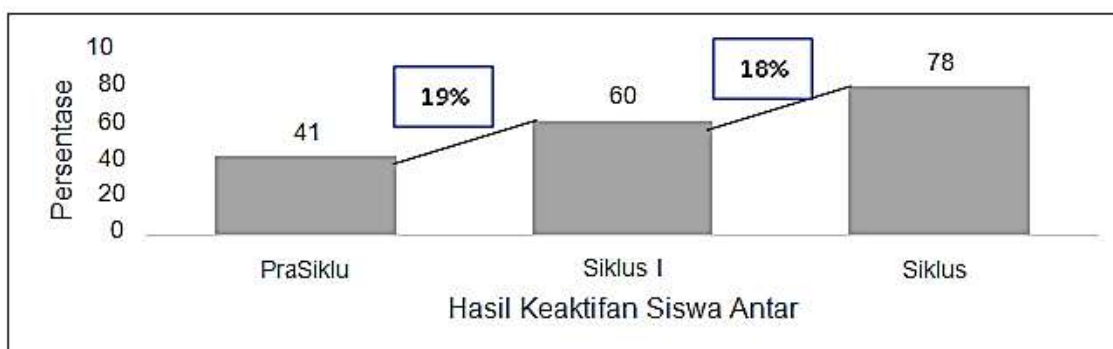


Figure 4. Comparison of the Average Achievement of Student Activity in Class

Classroom action research by applying the GI type cooperative learning model with gadget media shows that the learning activity of class XI IPA 4 State High School 1 Wajo students has increased in each cycle. The average increase in student activity from the Pre-cycle stage to Cycle I was 19%, namely from Pre-cycle with a percentage of 41% and Cycle I with a percentage of 60%. The results of the actions in the first cycle are in the medium category and have not reached the targeted performance indicators of 75% so that they are continued with Cycle II.

Cycle II begins after reflection is carried out first in Cycle I. Reflection is carried out to find out the shortcomings that occur during the application of the GI type cooperative learning model with gadget media in Cycle I. The increase that occurred in Cycle I to Cycle II with a percentage increase of 18%. The percentage increase can be seen from the percentage of Cycle I by 60% and increasing in Cycle II by 78%. The results of the actions in Cycle II are included in the high category and have reached the targeted performance indicators of 75%. So this research is said to be successful and the cycle in this research is stopped.

The results of observations that have been made during the learning process show that the implementation of the GI type cooperative learning model with gadget media can increase the learning activity of students in class XI Science 4 State High School 1 Wajo. This activity can increase due to student participation in learning activities, especially in 10 aspects of activity, namely: 1) listening to the teacher's explanation; 2) ask about problems not yet understood; 3) actively participate in groups; 4) actively discuss subtopics in groups; 5) search for information and materials; 6) complete the task; 7) actively express opinions; 8) actively respond to opinions; 9) reflect on learning; 10) do the questions independently.

The following is the achievement of increasing each aspect of student activity in five categories of students starting from Pre-cycle to the end of Cycle II. The highest increase in the active aspect of listening to teacher explanations was in the very low and low categories, namely 51% and 52%. The lowest increase occurred in smart students, namely 42%. Students who are smart because of the factor of high intelligence ability are habitually sometimes already feeling smart and even too confident so they ignore the teacher's explanation. The increase in the activeness of the questioning aspect, both asking friends and teachers, was the highest in very smart students, namely 47%.

The category of very smart students has high intelligence abilities, tools, and scientific materials have also been mastered well. Very smart students always want to ask questions to strengthen the knowledge they have mastered. There is a significant relationship between the ability to ask questions and learning achievement (Retnasari & Maulana, 2016). The results of Sardjoko's (2011) research using the GI type cooperative model can inspire enthusiasm in asking questions through group work, discussion with groups to make questions directed to other groups. The grouping stage is carried out by the teacher for the selection of heterogeneous group members, which will train students to work together without choosing friends. Group members are adjusted by the teacher based on the categorization of students in class XI Science 4. The aspect of participating in group activities shows the results of students with low abilities experiencing the highest increase, namely 43%. Because students with low learning abilities have a strong desire to interact more optimally, be involved, participate in groups, and have a strong drive and provide information to one another. With GI students' ability to be active in knowledge exploration, students become more confident in giving

comments and opinions to the group. Students optimize cooperation in groups rather than relying on individual abilities (Artini, Pasaribu, & Husain, 2015). Vygotsky's theory (Isjoni, 2014) is implemented when participating in groups at the identifying, planning, organizing stages through student interaction in learning, enabling them to work together.

Aspects of active discussion, the highest increase in activity was students with smart abilities, namely 32%. Smart students are more active in discussing because smart students have higher intellectual abilities and master knowledge. This is because smart students have the ability to speak in discussions. In addition, smart students are also more capable and can lead discussions in groups better. The improvement in the discussion process is seen in student cohesiveness, organization during group work learning, initiative to lead in groups, the opportunity to speak, free to express ideas, ideas, and can speak fluently, agree or refuse and use sentences. Smart students have the ability to think creatively so that student participation in discussions is very visible. This is supported based on Vygotsky's learning theory that interaction with other people enriches intellectual development, so that intelligent students are able to discuss every lesson (Isjoni, 2014).

Active student involvement can be seen from the first stage to the final stage of learning (Suprijono, 2010 in Syamsiah, 2021). The teacher directs students to find information using gadgets that are useful when looking for information and materials at the investigation stage, and acts as a source of learning that is able to create a social environment characterized by a democratic environment and scientific process. Device media as a means for teachers to convey messages during the learning process and are used by students to find information.

The category of students who are very smart in the aspect of responding to opinions during the organizing stage experienced the sharpest increase, reaching 46%. Students are very smart the ability to have high intelligence, logic and science. Very smart students are able to respond to opinions well and fluently because they have better speaking skills than other students and are confident in communicating. Someone who believes in their abilities or positive abilities is more confident so they have the courage to communicate (Dewanti, Yusemansyah, & Widiastuti, 2014). Vygotsky argues that language plays an important role for language skills in responding to the opinions of other students. Learning is done through interaction and using cognitive development in response to the opinions of other students (Isjoni, 2014).

Students with very low abilities experienced the most significant increase in the active aspect of working on assignments independently, namely 68%. Very low students are able to work on questions independently and show other students that they are not inferior to other students, and are able to work on questions with good learning. Smart students have high results. This is related to optimizing the work of the brain for creative thinking abilities. Good memory will have a positive impact in answering questions about learning. The evaluating stage encourages students to

remember the results of the investigations they have done and the processes during the interaction between Vygotsky students (Isjoni, 2014).

The teacher said that the student's active learning increased by the implementation of the Group Investigation (GI) type cooperative learning model with gadget media to increase the student's active learning in class XI Science 4 State High School 1 Wajo. Students said that they could be more active because they were given more opportunities to express opinions and ask questions, and could pay more attention to the learning that was taking place because they were interested and did not get bored easily with the learning activities that took place with the media.

D. CONCLUSION

Based on the description of the research results and discussion of this research, it can be concluded that there was an increase in student activity through Group Investigation learning with class XI Science 4 State High School 1 Wajo class devices for the 2017/2018 academic year, the final result was 78%.

REFERENCES

1. Adisel, A., & Pranansa, A. G. (2020). Penggunaan Teknologi Informasi dan Komunikasi dalam Sistem Manajemen Pembelajaran pada Masa Pandemi Covid 19. *Journal of Administration and Educational Management (Alignment)*, 3(1), 1–10.
2. Afianingsih, A., Maskun, M., & Ekwandari, Y. S. (2017). Hubungan Kemampuan Berpikir Kreatif dalam Model Mind Mapping dengan Kemampuan Menyimpulkan Materi Pelajaran Sejarah. *Universitas Lampung*.
3. Akçay, N. O., & Doymuş, K. (2014). The Effect of Different Methods of Cooperative Learning Model on Academic Achievement in Physics. *Journal of Turkish Science Education*, 11(4), 17–30.
4. Ali, W. (2020). Online and Remote Learning in Higher Education Institutes: A Necessity in Light of Covid-19 Pandemic. *Higher Education Studies*, 10(3), 16–25.
5. Artini, A., Pasaribu, M., & Husain, S. M. (2015). Penerapan Model Pembelajaran Kooperatif Tipe Group Investigation untuk Meningkatkan Aktivitas dan Hasil Belajar IPA pada Siswa Kelas VI SD Inpres 1 Tondo. *Mitra Sains*, 3(1), 45–52.
6. Asyari, M., Al Muhdhar, M. H. I., & Susilo, H. (2016). Improving Critical Thinking Skills through the Integration of Problem Based Learning and Group Investigation. *International Journal for Lesson and Learning Studies*.
7. Ayuwanti, I. (2017). Meningkatkan Aktivitas dan Hasil Belajar Matematika Menggunakan Model Pembelajaran Kooperatif Tipe Group Investigation di SMK Tuma'ninah Yasin Metro. *SAP (Susunan Artikel Pendidikan)*, 1(2).
8. Dewanti, A. R., Yusmansyah, Y., & Widiastuti, R. (2014). Hubungan Antara Kepercayaan Diri dalam Berkomunikasi dengan Komunikasi Interpersonal. *Alibkin (Jurnal Bimbingan Konseling)*, 3(1).
9. Hasan, R., Ngatiyo, H., & Aunurrahman, H. (2013). Penerapan Talking Stick untuk Motivasi Belajar Mata Pelajaran IPA kelas III SDN 04 Pontianak. *Jurnal*

- Pendidikan Dan Pembelajaran Khatulistiwa*, 2(1).
10. Kemmis, S., McTaggart, R., & Nixon, R. (2014). *The Action Research Planner: Doing Critical Participatory Action Research*. Springer.
 11. Koesnandar, A. (2020). Pengembangan Model Pembelajaran Inovatif Berbasis Teknologi Informasi dan Komunikasi (TIK) Sesuai Kurikulum 2013. *Kwangsan*, 295726.
 12. Pertiwi, M. (2020). *Hubungan Penggunaan Gadget dengan Visus Mata Pada Siswa/I Kelas VI SD Harapan 2 Medan Tahun 2019*.
 13. Retnasari, R., & Maulana, J. (2016). Pengaruh Pendekatan Kontekstual terhadap Kemampuan Koneksi Matematis dan Motivasi Belajar Siswa Sekolah Dasar Kelas IV pada Materi Bilangan Bulat. *Jurnal Pena Ilmiah: Vol*, 1(1).
 14. Richardo, R. (2015). Eksperimentasi Model Pembelajaran Kooperatif Tipe Investigasi Kelompok (Group Investigation) terhadap Hasil Belajar Matematika Berdasarkan Gaya Belajar Siswa. *Edu Research*, 4(1), 35–42.
 15. Sangadji, S. (2016). Implementation of Cooperative Learning with Group Investigation Model to Improve Learning Achievement of Vocational School Students in Indonesia. *International Journal of Learning and Development*, 6(1), 91–103.
 16. Sari, N. M., & Eurika, N. (2016). Penerapan Model Pembelajaran Group Investigation untuk Meningkatkan Hasil Belajar Siswa. *Jurnal Biologi Dan Pembelajaran Biologi*, 1(1), 29–41.
 17. Slavin, R. E. (2008). Perspectives on Evidence-Based Research in Education—What Works? Issues in Synthesizing Educational Program Evaluations. *Educational Researcher*, 37(1), 5–14.
 18. Sugihartini, N., & Jayanta, N. L. (2017). Pengembangan E-Modul Mata Kuliah Strategi Pembelajaran. *Jurnal Pendidikan Teknologi Dan Kejuruan*, 14(2).
 19. Sumanik, M. (2015). Penggunaan Model Pembelajaran Group Investigation untuk Mencapai Kompetensi Belajar Biologi Materi Sistem Peredaran Darah Manusia Pada Siswa Kelas Viii Smp St. Theresia Langgur “Maluku Tenggara. *BIOPENDIX: Jurnal Biologi, Pendidikan dan Terapan*, 1(2), 188–197.
 20. Syamsiah, S. (2021). Penerapan Model Pembelajaran Group Investigation pada Hasil Belajar Mata Pelajaran IPA Siswa Kelas VII SMP Negeri 10 Kota Tangerang Selatan Tahun Pelajaran 2020/2021. *Wiyatamandala*, 1(2), 248–258.
 21. Umami, F. (2020). The Application of Group Investigation (GI) Method to Improve the Students’ Interpersonal Intelligence in Social Sciences Learning. *International Journal Pedagogy of Social Studies*, 5(1), 9–16.
 22. Wijaya, E. Y., Sudjimat, D. A., Nyoto, A., & Malang, U. N. (2016). Transformasi Pendidikan Abad 21 sebagai Tuntutan Pengembangan Sumber Daya Manusia di Era Global. *Prosiding Seminar Nasional Pendidikan Matematika*, 1(26), 263–278.
 23. Wright, G. B. (2011). Student-Centered Learning in Higher Education. *International Journal of Teaching and Learning in Higher Education*, 23(1), 92–97.