Increasing the Activeness and Learning Achievement of Fourth Grade Students in Science Subjects Through Cooperative Learning Model at SDN Brebeg 01

1[2] Ruswanto[1], 2[2] Ana Andriani[2]
{ruswanto.tembelang@gmail.com[1], Ana.Andriani@gmail.com[2]}

SDN Brebeg 01[1], Universitas Muhammadiyah Purwokerto[2]

Abstract. Low student activity and learning achievement are the background of the problem. The goal is to improve student's learning activities and achievements. This research used the Classroom Action Research method. The research subjects were fourth-grade students totaling 34, consisting of 17 male and 17 female students. The data collection techniques used were observation, documentation, and tests. This research consists of two cycles, each of which consists of two meetings and four stages: planning, action, observation, and reflection. The research was conducted in September 2021. Compared to the lecture and question-and-answer technique, adopting the Think Pair Share kind of cooperative learning model boosts activity and accomplishment in science learning. The data shows that in the pre-cycle, student activity was only 10 students, students who completed learning were 8 students, and the class average was 58.2. Cycle 1 increased to 24 active students, 22 students who completed learning, and a class average of 72.1. In Cycle 2, 34 students were active, 32 students completed the learning process, and the class average was 82.9. According to the study's findings, the Think Pair Share Model can increase student activeness and learning performance in scientific classes.

Keywords: Activeness, Learning Achievement, Think Pair Share.

1 Introduction

Education is one of the basic transactional communication processes that is reciprocal between students and teachers and between students and other students to achieve predetermined goals. Education has the aim of developing students to become human beings who are faithful and devoted to God Almighty, have a noble character, are healthy, knowledgeable, capable, independent, creative, and become democratic and responsible citizens [1]. In order to achieve this goal, teachers or educators carry out guidance, teaching, and training activities. Educators' role is dominant in providing more meaningful education in all learning at school. One of them is learning Natural Science subjects.

Natural Science is simply defined as the study of the phenomena of the universe [2]. This science is important for humans to learn to fulfill their needs. Einstein stated, "Science is the attempt to make the chaotic diversity of our sense experience correspond to a logically uniform system of thought" [3]. Natural Science or Science is one form of effort that makes various experiences into a certain logical system of thinking patterns, known by the popular term scientific thinking patterns.

ICONESS 2023, July 22-23, Purwokerto, Indonesia
Copyright © 2023 EAI
DOI 10.4108/eai.22-7-2023.2335324

Natural Science is taught with methods that do not attract students' attention so that understanding of the material is not maximized. In the researcher's class, namely class IV SDN Brebeg 01 in the Natural Sciences subject in the 2021 / 2022 academic year with material on the human body skeleton and its functions. The results of observations and formative tests in the initial study of 34 students were only 10 active in learning and 8 students completed the learning, so there were still 26 or 76% of students who had not reached the minimum class completion criteria of 70.

Based on the results of the formative test of the preliminary study, some information about the students' learning deficiencies can be obtained through observation, reflection, and interviews. The students' shortcomings in learning included lack of attention when learning took place, lack of interest and boredom in learning, talking to themselves during lessons, not paying attention when the teacher explained the lesson, and a lack of understanding of the subjects being taught.

The researcher tried to analyze the problem by conducting discussions and exchanging information with the supervisor, principal, and peers, as well as by surveying students about the learning process. Based on a series of exercises, it is finally suspected that the following factors are to blame for the aforementioned issues: the teacher covers the material at a pace that is too rapid for the students to keep up with; the teacher uses language that is difficult for the students to understand; the teacher does not actively engage the students in the learning process; the teacher has not used teaching tools that can draw the attention of the students; and the learning model used is inappropriate for encouraging the student's active participation in learning.

For fourth-graders in the SDN Brebeg 01 Jeruklegi District, one solution to the aforementioned issues is classroom action research, which entails four steps: planning, action, observation, and reflection, using a cooperative learning model of the type Think Pair Share. This method increases student activity and academic achievement in science learning.

The Think Pair Share Cooperative Learning Model is one type of cooperative learning that aims to influence interactions between students [4]. Fran Lyman, who initially created the Think Pair Share learning model, said that it is a successful learning approach for generating a range of engaging class conversations. Allowing students to think more critically, interact, and support one another may make learning more dynamic.

The Think Pair Share model consists of three phases: think, pair, and share [5]. In the thinking phase, the teacher gives independent thinking tasks to students for about three minutes. In the pairing phase, students have the opportunity to exchange ideas and discuss with their partners to find the correct answer. In the last stage of sharing, students share the results of the discussion in pairs with other pairs. Students then share their answers with the whole class. The activity ends with the conclusion of the most appropriate answer to the given problem.

The steps of the Think Pair Share Learning Model make students more active. Students are accustomed to thinking, exchanging opinions with partners, and sharing ideas in front of the class. The use of this learning model matches the characteristics of students, namely forming treatment as a result of the learning environment [6]. Designing learning by using the right learning model can provide opportunities for students to do activities actively.

The advantages of the Cooperative Learning Model type think pair share include: 1) Students are required to think and answer problems so that it will arouse student participation, 2) this model is suitable for solving simple problems, 3) Students as members have the opportunity to contribute to their group, 4) Interaction is easier between pairs [7].

The advantages of this Think Pair Share (TPS) learning model make students more active in learning because they can discover their own knowledge based on their own ideas, train to think creatively and critically when solving problems, cooperate with their partner friends, and

share the best ideas in front of the class. Learning activities become more interesting, and there is more interaction between students since almost every step of problem-solving is discussed in pairs and groups.

The application of the think pair share (TPS) learning model is expected to improve student achievement and increase student activeness in the learning process. By familiarizing students to solve problems independently and cooperatively, it is expected to help students overcome various learning difficulties related to natural science learning.

An active state is a state in which students are continuously involved mentally and physically [8]. Active learning, on the other hand, attempts to maximize each student's potential based on their unique features in order to help them attain desirable learning results [9]. This means that in a learning process, students are the center of learning and play an active role in understanding learning both physically and mentally by using their existing potential optimally. The teacher's task is how to ensure that students are active according to the context and understand the learning material.

Teachers can measure student activeness through activeness indicators. The characteristics of active learning are when students are excited, active, alive, sustainable, strong, and effective learning [10]. Through these indicators, teachers can measure student activeness in the classroom during learning. Not only that, but teachers can also see the significance of the impact of activeness in learning, namely the understanding of the material and the achievement of learning objectives. learning objectives. This understanding can be shown through student learning outcomes in the formative tests carried out.

Learning is a process of acquiring competence in knowledge, skills, and attitudes [11]. Through learning, students can gain new experiences and knowledge. Learning is essential for students in order to achieve satisfactory learning outcomes.

Learning achievement is a result that a person achieves after doing learning activities. Winkel states that learning achievement is evidence of learning success or one's ability to carry out learning which refers to the weight achieved [12]. Students will improve their learning achievement when they can apply learning in everyday life.

2 Research Methods

PTK, or classroom action research, was the methodology used for this study. Classroom action research is action research conducted by a teacher who does research in their own classroom or collaborates with others by planning, observing, implementing, and reflecting on actions collaboratively and participative with the aim of improving or enhancing the quality of the learning process in their classroom through a certain action (treatment) in a cycle [13].

The subjects of this study were fourth-grade students of SDN Brebeg 01, totaling 34 students. As seen in this study, the researcher acted as a teacher in the classroom. Observer I is the fifth-grade teacher of SDN Brebeg 01 and a peer as observer II. Each cycle was held 2 times a meeting. The implementation of each cycle should go through the stages of planning, action, observation, and reflection.

The data collection techniques used in this study are direct observation techniques and measurement techniques. The observation carried out in the study is participant observation, namely, the researcher conducts research by directly engaging in interaction with the object of his research. Observation is carried out to obtain data on the activeness of students which consists of several indicators that exist during learning. This observation was carried out by two

observers using the observation sheet that had been prepared. Measurement techniques in the form of tests carried out at the end of each cycle (formative tests). This is intended to measure the results obtained by students after giving action. The test given to students is in the form of multiple choice. This is intended so that students can develop logic and improve their memory in answering.

Research instruments are tools or devices used by researchers in data collection to facilitate work and improve results in the sense that they are more accurate, complete, and systematic so that they are easier to process. The instruments used are observation sheets and question sheets. The observation sheet used by researchers contains an outline of the extent of the activeness and positive attitude of students in participating in science learning. The observation sheet is used to obtain data from both teachers and students. Problem sheets are used to obtain data on students' understanding and learning achievement.

This study's data analysis method combines qualitative and quantitative information. Quantitative and qualitative description analysis are used in data analysis. Data analysis techniques are used to analyze the activeness and improvement of students' learning achievement. To analyze the activeness of students, observation sheets were used and to measure students' learning achievement, formulas were used:

$$\bar{X} = \frac{X}{\sum n}$$

Description:
$\bar{X}$ = Average
n = Total score
$\sum n$ = Number of students [14]

The learning outcomes obtained by each student can be calculated using the formula:

$$\text{Learner learning outcomes} = \frac{Total\ score\ of\ values\ obtained}{Maximum\ Score}\ x\ 100$$

Students are said to be complete if their scores are equal to KKM or higher. The criteria for class completeness in Natural Science subjects is 70. Determining classical completeness the formula used is:

$$\text{Classical Completeness} = \frac{Number\ of\ students\ who\ completed}{Total\ number\ of\ students}\ x\ 100$$

The success of this research is if the classical completeness of students has reached 85% of all students, and classical student activeness has reached 85% of all students. The criteria for the learning process of Natural Science in increasing activeness and learning achievement can be seen in Table 1.

Table 1. Classical Completion Interval

Value Interval	Category
90 – 100%	Very Good
80 – 89%	Good
70 – 79%	Good enough
60 – 69%	Less good
<59%	Very Less [15]

3 Results and Discussion

Researchers analyzed data on student activity and learning achievement in the pre-cycle which was carried out on September 6, 2021, with the aim of determining the increase in student activity and learning achievement in learning Natural Sciences on the material of the Human Skeleton and its functions. The pre-cycle results were used as a comparison of student activity and learning achievement after using the Think-Pair-Share cooperative learning model in the Natural Sciences subject of Human Skeleton and its functions in Class IV of SDN Brebeg 01.

Based on the data of students' scores before the action of 34 students, only 8 (23.53%) students have reached the KKM, and 26 (76.47%) students have not reached the KKM score. Student activeness in pre-action out of 34 students only 10 (29.41%) students were active in participating in learning.

The Think Pair Share cooperative approach was used in Cycle I to test student understanding of the human skeleton's components and functions. With an average score of 72, the results were nevertheless deemed satisfactory. Prior to the action, the average student evaluation results in Cycle I increased, moving from 58 in the very bad category to 72 in the adequate category. In Cycle I, 22 students, or 64.71%, reached individual completeness. Students who have not completed individually amounted to 12 students, with a percentage of 35.29%. Student activeness in Cycle I was 24 students or 70.59%.

The Think Pair Share cooperative approach was used in Cycle II, and the students' learning accomplishment on the subject of the human skeleton and its functions was classified as good with an average of 83. In Cycle II, there were 32 students, or 94.12%, who reached individual completeness. Students who were not individually complete amounted to 2 students, with a percentage of 5.88%. Student activeness in Cycle II reached 34 students or 100%.

To know clearly the improvement of each cycle can be seen in the graph below:

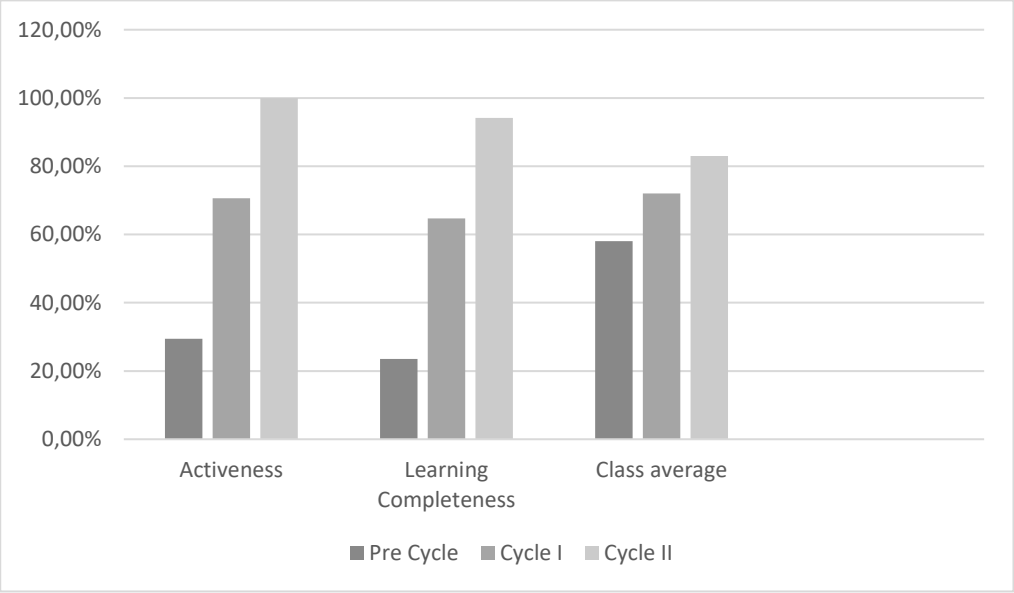

Figure 1 (Comparison Chart of Student Grades in Pre-action, Cycle I, and Cycle II)

Based on Figure 1, it is clear that the Think Pair Share cooperative learning paradigm enhanced pupils at SDN Brebeg 01 Jeruklegi's engagement in learning about the components of the human skeleton and their functions. Students enthusiastically engaged in the learning process in Cycle II, and the instructor effectively adapted and implemented the concept.

Based on the findings of research that was conducted over the course of two cycles in science lessons on human skeletal material and its functions using the Think Pair Share cooperative model, it can be deduced that there are several things related to this research, including the following:

Planning to Use the Think Pair Share Model to Increase Activeness and Learning Achievement

When preparing cycle I and cycle II of science lessons, material about the human skeleton and its functions for fourth-grade students of SDN Brebeg 01, prior to beginning their work, researchers prepared preparations, including creating learning scenarios, identifying success indicators, and creating study instruments. Researchers have planned to create a syllabus, lesson plans based on the stages of the Think Pair Share cooperative model, observation sheets of instructor activity, sheets of student activity, student worksheets, learning media in the form of pictures and videos about the human skeleton and its functions, evaluation questions, scoring guidelines.

In cycle II, the planning that has been done is suitable between indicators and learning outcomes, then the selection of teaching materials is suitable between the selection of teaching materials and the time allocation, the selection of teaching materials is suitable between the selection of teaching materials and the characteristics of students, and group management has been suitable between the selection of teaching materials and the time allocation. The learning scenario is in line with the procedures and instructional strategies employed, namely the cooperative Think Pair Share paradigm. This evaluation leads to the conclusion that cycle II research planning was significantly more effective than cycle I.

Implementation of Science Learning actions on Human Skeleton Material and its functions with the Think Pair Share model

According to cycle, I's implementation outcomes, the learning process is still not ideal. When assigned group work, students are expected to cooperate and take responsibility in greater amounts. This is because teachers seldom provide aid to students while they are working on group tasks, and as a result, some students still fail to contribute to finishing their group assignments. Another factor is the continued passivity of pupils during instruction. They continue to be afraid to speak up when the teacher quizzes them on their study content. Students' engagement in learning and academic success is still not being fully realized. There are still those pupils who are apathetic and refuse to discuss views with their peers.

This has worked out better in cycle II than it did in cycle I. This is seen by the fact that students pay closer attention when the instructor explains a concept. Students have also become more engaged in the learning process and aren't afraid to voice their ideas or respond to the teacher's queries.

Students' group collaboration skills and academic accomplishment in science courses on the subject of the human skeleton and its functions have both improved throughout this cycle II. Additionally, students' confidence has grown significantly.

In class IV pupils at SDN Brebeg 01, the activeness and learning accomplishment of students in studying science on the subject of the human skeleton and its functions using the Think Pair Share cooperative model has grown as a result of the adoption in cycle I to cycle II.

Increasing Students' Activeness and Learning Achievement with the Think Pair Share Model

Using the information collected before the Think Pair Share cooperative model's deployment, it is known that the pre-action students' learning achievement in science subjects on the material of the human skeleton and its functions is still lacking, namely with an average of 58, with classical student activeness of 29.41% and classical completeness of 23.53%. Learning activeness and student learning achievement in cycle I increased from the previous one, namely from 58 to 72 with classical learning activeness of 70.59% and classical completeness of 64.71%. With 100% classical learning activeness and 94.12% classical completeness on average, cycle II student learning outcomes were 83. 32 out of 34 individuals have attained individual completion, while classical student completion rates have reached 94.12%, with just 2 students falling short (5.88%). Student engagement and learning outcomes in the sciences have also met specified standards.

Based on these findings, it can be said that using the Think Pair Share cooperative approach to teach IPA information about the human skeleton and its functions to fourth-graders at SDN Brebeg 01 can improve their activeness in class and their learning achievement. The success of the learning improvements mentioned above is inseparable from the theories and opinions of educational experts that researchers have used as reference materials. Lie states that the Think Pair Share learning model is the optimal way to increase student participation [16]. This Think Pair Share methodology offers at least eight times more possibilities for each student to be acknowledged and exhibit their participation in front of others than a traditional technique, which only permits one student to come forward and present the results to the entire class.

4 Conclusion

According to data collected before the implementation of the Think Pair Share cooperative model, student learning outcomes for the Natural Sciences course's material on the human skeleton and its functions were still deficient, with an average score of 58, student learning activeness of 29.41%, and classical completeness of 23.53%. Student activeness and learning achievement in cycle I experienced an increase from before, namely from an average of 58 to a class average of 72, student learning activeness of 70.59%, and classical completeness of 64.71%. The average student learning outcome for cycle II was 83, with 100% student participation and 94.12% classical completeness. Out of 34 people, 32 had reached individual completeness, while student learning activeness was 100% and classical student completeness had reached 94.12%, and only 2 students were not complete (5.88%). Student activeness and learning achievement had reached the predetermined criteria.

Since this learning approach has several benefits, including fostering more closeness and collaboration among students during the learning process, it can enhance both the quality of learning and student engagement in the classroom. Additionally, by allowing students to share ideas, this teaching method fosters openness in the classroom. Applying several learning models in each session will boost student engagement and learning outcomes for teachers. To encourage the engagement, creativity, and efficiency of student learning, teachers must provide students with assignments that include them in the learning process.

Teachers are supposed to support students' learning by planning comprehensive media and learning options for them [17]. Innovative teaching practices are required from teachers,

including picking instructional strategies that are pertinent to the course material [18]. In order to fill in the gaps left by the class action research, researchers who wish to look into the same topics should have more references or supporting theories, more creative theories to back up their work, and creative media to completely involve students in the learning process.

References

[1] Undang-undang Nomer 20 Tahun 2003 Tentang *Sistem Pendidikan Nasional*.

[2] Rustaman, N. (2008). *Mengenal pembelajaran IPA di SD. Hand out perkuliahan S_1 PGSD mahasiswa prajabatan Universitas Pendidikan Indonesia*. Bandung: UPI.

[3] Ristasa, R.A. (2012). *Model tutorial berbasis keterampilan proses sains dengan menggunakan lingkungan riil dan virtuil ditinjau dari gaya belajar dan gaya berpikir mahasiswa*. Surakarta: Pascasaarjana UNS.

[4] al-Tabany, T. I. (2015). *Mendesain Model Pembelajaran Kontekstual.* Jakarta: Kencana.

[5] al-Tabany, T. I. (2015). *Mendesain Model Pembelajaran Kontekstual.* Jakarta: Kencana.

[6] Huda, M. (2013). *Cooperative Learning Metode, Teknik, Struktur Dan Model Penerapan.* Yogyakarta: Pustaka Belajar.

[7] Sani, R, A. (2019). *Strategi Belajar Mengajar*. Depok: Raja Grafindo Persada

[8] Hollingsworth, P., & Lewis, G. (2006). Pembelajaran Aktif: Meningkatkan Keasyikan Kegiatan di Kelas. Norwalk: Crown House Publishing Company LLC.

[9] Helmiati. (2016). Model Pembelajaran. Yogyakarta: Aswaja Pressindo.

[10] Hollingsworth, P., & Lewis, G. (2006). Pembelajaran Aktif: Meningkatkan Keasyikan Kegiatan di Kelas. Norwalk: Crown House Publishing Company LLC.

[11] Susanti, L. (2019). *Prestasi Belajar Akademik & Non Akademik Teori dan Implementasinya*. Malang: CV Literasi Nusantara Abadi.

[12] Arikunto, S. (2015). *Penelitian Tindakan Kelas edisi*. Jakarta: Bumi Aksara.

[13] Andriani, A. (2021). Islam dan Ilmu Pengetahuan Dalam Pendidikan. Banyumas: CV. Pena Persada.

[14] Sugiyono. (2010). *Statistik Untuk Penelitian*.Bandung: Alfabeta.

[15] Riduan dan Sunarto. (2012). *Pengantar Statistika untu penelitian pendidikan, sosial, ekonomi, komunikasi, dan bisnis.* Bandung: Alfabeta.

[16] Thobroni, M. & Mustofa, A. (2011). *Belajar & pembelajaran: Pengembangan wacana dan praktik pembelajaran dalam pembangunan nasional*. Jogjakarta: Ar-Ruzz Media.

[17] Anggoro S, Widodo A, Suhandi A, Treagust DF. (2019) Menggunakan Peristiwa yang Tidak Sesuai untuk Memfasilitasi Perubahan Konseptual Guru Sekolah Dasar Prajabatan tentang Gaya dan Gerak. EURASIA J Math Sci Tech Ed. 2019;15(8): em1737.

[18] Hermita N. Ningsih HS, Alim JA, Alpusari M. Putra ZH. Wijaya TT. (2020). Pengembangan Komik Sains untuk Siswa Sekolah Dasar tentang Keanekaragaman Hewan. Teknol. solid state. 2020 Oct 16;63(1s).