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# Take and Give Strategy Assisted by Card Sort as an Effort to Improve Understanding of Science Concepts in Elementary Schools

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**Abstract**

Problems in learning science in elementary schools are often low student involvement and difficulty in understanding concepts in depth. Learning strategies that are less interactive make students passive, so an approach is needed that can increase active participation and effective understanding of concepts, such as the Take and Give model assisted by Card Sort media. This study used a quantitative approach with a One Group Pretest-Posttest quasi-experimental design on 27 fourth-grade students of SD Negeri 5 Mendo Barat. Data were collected through a 10-question essay test that had been tested for validity and reliability. The analysis included the Kolmogorov-Smirnov normality test and the t-test hypothesis test to measure the effect of the Take and Give model assisted by Card Sort media on student understanding significantly. The application of the Take and Give strategy with Card Sort media effectively improved the understanding of science concepts of fourth-grade students of SD Negeri 5 Mendo Barat. This strategy encourages active involvement, motivation, and learning outcomes, while developing social and cognitive skills. Card Sort media helps to understand the material in a concrete and structured way, making this model an effective and enjoyable learning alternative. This study contributes by proving the effectiveness of the Take and Give strategy assisted by Card Sort media in improving the understanding of science concepts and active involvement of students. These findings enrich the literature on interactive learning in elementary schools and offer alternative learning methods that can develop students' social and cognitive skills simultaneously.



## INTRODUCTION

Understanding concepts in science learning is often an obstacle faced by students, especially because the learning approach is still centered on the teacher. In fact, according to Ana Theriana (2019), the teaching and learning process is the core of education, where each process must be able to adapt to changes in the times. Education is a conscious effort to pass on culture from one generation to the next (Rahman, et al., 2022). In this case, teachers have a strategic role in designing learning that is in accordance with student characteristics so that competencies are achieved optimally (Shilpy, 2020). Well-designed education will produce a generation that is intelligent, has character, and is skilled (Azzahra & Irawan, 2023; Suryadin, et al., 2020). Teachers are not only as conveyors of information, but as facilitators who are able to create active and enjoyable learning (Djamarah, 2014). One strategy that can be used is Take and Give assisted by Card Sort. This

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strategy provides space for active student participation in understanding science concepts visually and collaboratively, so that the learning process becomes more meaningful, interesting, and significantly improves student understanding.

Science learning essentially includes three important aspects, namely as a product, process, and scientific attitude. These three aspects are interrelated and must be integrated in the learning process (Sulthon, 2016). Students are not enough to just memorize concepts, but must be actively involved in the process of discovering these concepts (Kleruk, et al., 2021). Therefore, science learning needs to be implemented meaningfully from elementary to higher education (Muttaqin, et al., 2022). According to Ubabuddin (2019:18), effective learning must be carried out actively, creatively, enjoyably, and innovatively in order to provide a memorable and unforgettable learning experience. Teachers play an important role in linking material to real life so that learning becomes more relevant and contextual. Fathurrohman (2015) emphasizes that experience is an effective learning medium because it includes objectives, observation, reflection, and action planning. One relevant strategy is the Take and Give model assisted by Card Sort media, which allows students to share information actively and enjoyably (Zaidunin, 2021; Hartami, et al., 2014). Initial observations at SDN 5 Mendo Barat showed the need for this model because learning was still dominated by teachers, the media was less flexible, and students tended to be passive.

This research is motivated by the problem of science learning in SD Negeri 5 Mendo Barat which is still dominated by conventional methods and lack of active student involvement. Therefore, the purpose of this study is to determine the effect of the Take and Give learning model assisted by Card Sort media on the understanding of fourth grade students in science subjects. The Take and Give model was chosen because it can encourage students to exchange information actively and repeatedly, thereby increasing their participation and involvement in the learning process. Card Sort media is used as a tool to facilitate students in understanding concepts visually and interactively. By implementing this model, it is expected that the learning process will be more interesting and effective, so that students' understanding of science material can increase. This study is also expected to provide practical benefits for teachers in developing varied and enjoyable learning strategies, in order to motivate students to be more active and easily understand the material being taught.

Based on the background and objectives of the study on the influence of the Take and Give learning model assisted by Card Sort media on students' understanding of science subjects in grade IV at SD Negeri 5 Mendo Barat, the hypothesis of this study is that the application of the Take and Give learning model assisted by Card Sort media has a positive and significant influence on improving students' understanding of science concepts. This learning model is believed to be able to increase students' active involvement in the learning process, making it easier for them to understand the material taught in more depth and repeatedly. Thus, students not only receive information passively, but also play an active role in sharing and processing material with their friends. Therefore, the use of the Take and Give model assisted by Card Sort media is predicted to be an effective strategy that can improve the quality of science learning and significantly improve student learning outcomes compared to conventional learning methods.

## METHOD

This study uses a quantitative approach that aims to answer research questions systematically with data in the form of numbers (Sunaengsih, 2016). Quantitative research produces new findings through statistical procedures or certain measurement methods (Ali, et al., 2022). According to Andi Fitriani (2014), this method emphasizes the collection of data in the form of numbers in the field. Usually, the number of samples is determined based on the existing population (Sidik, 2021). Ningsih et al., (2021) explains that the quantitative method is based on the philosophy of positivism, and according to Sugiyono (2022), data is analyzed using statistical procedures. This study uses a quasi-experimental design, specifically the One Group Pretest-Posttest Design, which involves one group of participants. This design measures the initial conditions before treatment and the

conditions after treatment to assess the effect of the intervention directly. Thus, this method allows researchers to observe the changes that occur due to the application of the learning model in one group of students.

The subjects of this study were 27 fourth grade students of SD Negeri 5 Melndo Barat. The data collection technique used was the test technique. According to Faiz et al., (2022) a test is essentially a tool that contains a series of tasks or questions that must be done or answered by students to measure certain behavioral aspects. Tests are also important procedures in measurement and assessment in the field of education (Mayasari, 2023). In addition, Slamet Susanto stated that tests are used to collect information on the characteristics of an object and measure the success of the learning process. Muluki (2023) added that tests are a tool to measure the success of the learning process. Nasution (2016) explained that tests are also in the form of exercises or questions to measure the knowledge, abilities, and skills of individuals or groups. In this study, the test instrument was in the form of 10 written essay questions which were used to measure students' understanding of the material being taught.

The instruments that have been prepared for research must first be tested through expert validation and validity testing. Validity is a method to determine the level of conformity between what is measured and what is to be measured (Fadli et al., 2023). This process aims to ensure that the instruments used are practical and reliable. After the instrument is declared valid, the next step is to calculate reliability. According to Eka and Yudhanelgara (2017), the reliability of an instrument is the consistency of the instrument when given to the same subject, even though the person, time, and place are different, so that it produces the same results. Fadli et al., (2023) also explains that the reliability of a measuring instrument is the level of consistency that measures whatever it measures. Thus, the validity and reliability of the instrument are very important to ensure the accuracy and reliability of the research results.

To determine the effect of the Take and Give model assisted by Card Sort media on student understanding, the pretest and posttest data were analyzed using normality tests and hypothesis tests. The normality test aims to test whether the regression model, confounding variables, or residuals have a normal distribution or not (Zakia, et al., 2022). According to Riadi EL (2016), the normality test is used to determine whether the research data is normally distributed. In this study, the normality test was carried out using the Kolmogorov-Smirnov test. After the data was declared normal, the analysis was continued with a hypothesis test using the paired sample t-test or t-test. According to Elnos Lolang (2015), a hypothesis test is a statement that contains an assumption regarding the truth of something that is tested through research data. With this method, it can be seen whether the learning model used has a significant effect on student understanding or not.

## RESULTS AND DISCUSSION

### Results

### Pretest and Posttest Data

This study has two variables, namely the independent variable and the dependent variable. The independent variable in this study is the Takel and Givel model assisted by Meldia Card Sort and the dependent variable in this study is student understanding. This study was conducted with the aim of finding out whether or not there is an influence of the Takel and Givel model assisted by Meldia Card Sort on student understanding of the material on the function of plant parts of grade IV SD Nelgelri 5 Melndo Barat.

Testing students' understanding of the material on the function of plant parts in this study is from the results of the pretest and posttest. The pretest was given to find out the students' initial abilities before being given treatment, while the posttest was carried out to find out whether or not there was an influence after being given treatment. The following data from the results of the pretest and posttest of students can be seen in Table 1.

**Table 1. Preltelst and Posttelst Data for Class IV Students**

| Test Type | Minimum Value | Maximum Value | Average |
|---|---|---|---|

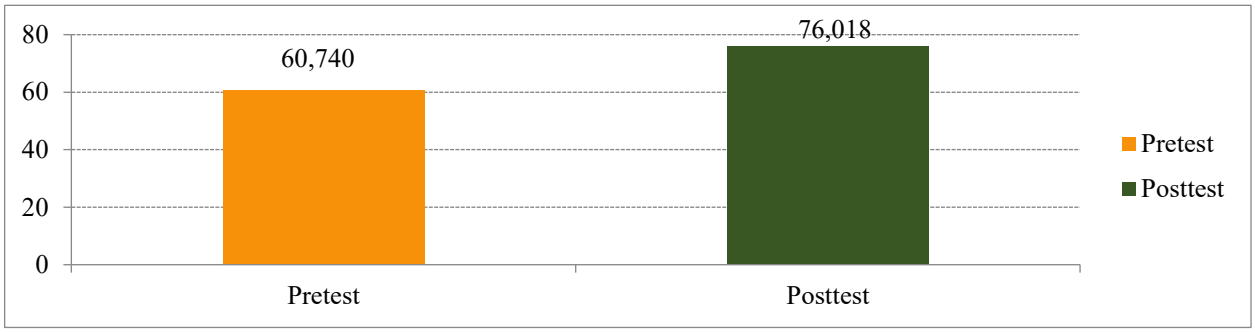
| | | | |
|---|---|---|---|
| Pretest | 17,5 | 85 | 60,740 |
| Posttest | 32,5 | 95 | 76,018 |

Based on Table 1, the pretest data for class IV shows the lowest score of 17.5 and the highest score of 85, with an average score of 60.74. While in the posttest, the lowest score obtained was 32.5 and the highest score reached 95, with an average score of 76.02. The increase in the average score from pretest to posttest shows that after being given treatment using the Take and Give learning model assisted by Card Sort media, students' understanding increased significantly. This indicates that the learning model is effective in improving students' understanding of science subjects compared to before the treatment was applied. Thus, the use of the Take and Give model with Card Sort media can have a positive impact on student learning outcomes in class IV of SD Negeri 5 Mendo Barat.

**Comparison of Pretest and Posttest Data**

Figure 2 presents a comparison of the pretest and posttest scores of fourth grade students of SD Negeri 5 Mendo Barat. This data serves as an initial description of changes in student learning outcomes before and after the implementation of the Take and Give learning model supported by Card Sort media. This comparison shows an increase in students' understanding of science material after they participated in learning with the approach and media used in this study.

**Figure 1. Bar Chart of Average Pretest and Posttest Values**




Then in the data analysis technique, a prerequisite test is carried out, namely the normality test and continued with the hypothesis test. The normality test in this test uses Kolmogorov Smirnov to find out whether the data is normally distributed or not. The normality test can be seen according to the Kolmogorov Smirnov test conclusion drawing criteria, namely if Dhitung < Dtabel then the data is normally distributed, while if Dhitung ≥ Dtabel then the data is not normally distributed. The results of the pretest and posttest normality test calculations can be seen in Table 2 below:

**Table 2. Pretest and Posttest Data Normality Test**

| Results | $D_{hitung}$ | $D_{tabel}$ | Description |
|---|---|---|---|
| Preliminary | 0,099 | 0,254 | Normally distributed |
| Posttest | 0,119 | 0,254 | Normally distributed |

Based on Table 2, the results of the pretest normality test calculation can be obtained that the Dcount value is 0.099 and the Dtable value is 0.254, so it can be concluded that the data is normally distributed because Dcount < Dtable. While the posttest Dcount value is 0.119 and the Dtable value is 0.254, it can be concluded that the data is normally distributed.

The data analysis used in this hypothesis test is the paired sample t-test. The calculation of the hypothesis test of student understanding using the Takel and Givel model with the help of Card Sort can be seen in Table 3 below.

**Table 3. Hypothesis Test**

| Paired Sample t-test | | |
|---|---|---|
| $t_{hitung}$ | $t_{tabel}$ | Prohibition |

| | | |
|---|---|---|
| 9,563 | 2,055 | 9,563 > 2,055 ($H_o$ ditolak $H_a$ diterima) |

Based on Table 3, it is obtained that t count = 9.563 > t count = 2.055, so it can be decided that Ha is accepted and Ho is rejected, meaning that there is an influence of the Takel and Givel model with the help of Meldia Card Sort on students' understanding of the material on the function of plant parts of grade IV SD Nelgelri 5 Melndo Barat.

**Improving Student Understanding**

Based on the results of the pretest and posttest data analysis presented in Table 1 and Figure 2, there is an increase in students' understanding after the implementation of the Take and Give learning model assisted by Card Sort media. The average score of students in the pretest was 60.74, which then increased to 76.02 in the posttest. This increase shows that after participating in learning using the Take and Give model and Card Sort media, students experienced significant development in their understanding of the subject matter. This indicates that the learning strategy is effective in helping students understand concepts better. This model facilitates students to actively participate, exchange information, and construct knowledge collaboratively. Thus, these results strengthen that the use of interactive methods and visual learning media can improve the quality of learning and student learning outcomes in a real and meaningful way.

The increase in the average value of students shows that the Take and Give learning model has succeeded in encouraging active involvement of students in the learning process. The support of interactive and fun Card Sort media makes students more interested and motivated to take the learning seriously. This media makes it easier for students to understand science concepts more concretely and visually, so that the material becomes easier to digest. With an approach that prioritizes interaction and collaboration between students, the learning process becomes more dynamic and effective. Therefore, the Take and Give learning model assisted by Card Sort media has proven effective in improving students' understanding of science material. This conclusion confirms that the application of innovative and appropriate learning methods can have a significant positive impact on student learning outcomes, especially in grade IV of SD Negeri 5 Mendo Barat, as well as creating a fun and participatory learning atmosphere.

**Discussion**

**Implementation of Take and Give Model Assisted by Card Sort Media in Science Learning**

The implementation of the Take and Give model supported by Card Sort media in science learning at SD Negeri 5 Mendo Barat demonstrates a significantly positive impact on student participation during learning activities. This model positions students as the center of the learning process, shifting their role from passive recipients of information to active participants who contribute to managing the learning experience. According to Sukackė et al. (2022), this approach encourages students to engage more deeply in learning by involving them not only in listening to the teacher's explanation but also in exchanging and conveying material to their peers. Afdaliah (2022) also asserts that through the give-and-take process, students are invited to contribute directly to the learning process, which fosters a more dynamic and interactive classroom atmosphere. Furthermore, Chuang (2014) explains that this strategy enhances student engagement, increases their focus and motivation to understand the material, and strengthens conceptual understanding through active collaboration within study groups. Therefore, this model is considered effective in creating an enjoyable, interactive, and participatory learning environment.

Card Sort media plays a crucial supporting role in the implementation of the Take and Give model in science learning at SD Negeri 5 Mendo Barat. Through this media, students are able to understand scientific concepts in a more concrete and visual manner by engaging in activities such as grouping and arranging cards that contain information or questions related to the subject matter. Chigbu et al. (2023) emphasize that this method enables students to learn actively and interactively, making the learning process more engaging and enjoyable. Moreover, Card Sort media assists

students in breaking down complex material into simpler, more organized components—particularly in topics such as the functions of plant parts. This approach not only enhances memorization but also deepens students' conceptual understanding by helping them recognize the relationships between ideas. According to Abbas et al. (2024), Card Sort media also fosters critical thinking and collaboration, as students are encouraged to discuss and exchange ideas within their groups. Thus, the use of Card Sort media has been proven to enhance the quality of science learning effectively.

The learning process using the Take and Give model supported by Card Sort media not only enhances students' understanding of science concepts but also develops various social and cognitive skills. According to Savery (2006), this type of collaborative learning approach encourages students to actively engage in group discussions and exchange information, thereby fostering teamwork and promoting respect for others' opinions. This model also contributes to building students' self-confidence by giving them the opportunity to express their ideas and experiences openly in front of their peers. In addition, it helps improve communication skills, as students are required to clearly and effectively convey their thoughts and information. Patrick et al. (2000) point out that such an interactive and dynamic learning environment significantly increases student motivation and enthusiasm. As a result, students become more engaged and active participants in science learning, which positively influences their overall academic performance.

The results of the implementation of the Take and Give model assisted by Card Sort media showed a significant increase in the average score of students' posttest compared to the pretest. This indicates that the learning strategy is effective in improving students' understanding of science concepts. In addition to the value data, observations during the learning process also showed a real increase in student activity. Students became more involved and enthusiastic in following the lesson because this model encouraged them to actively participate through interaction and group discussion. In this way, students not only receive material passively, but also actively share and construct understanding with their classmates. Therefore, the Take and Give model assisted by Card Sort media can be used as an effective learning strategy at the elementary school level, because it is able to create a participatory, enjoyable learning atmosphere and provide students with a deeper understanding.

**Improving Understanding of Science Concepts through Take and Give Strategy and Card Sort Media**

The implementation of the Take and Give strategy supported by Card Sort media has significantly enhanced students' understanding of science concepts compared to before its application. Rahman et al. (2019) highlight that this method allows students to act not only as recipients of information but also as conveyors of knowledge, which helps reinforce their comprehension of the subject matter. This dual role deepens their engagement and promotes meaningful learning. Furthermore, Anggraini et al. (2022) emphasize that the Take and Give model is effective in improving learning outcomes because it requires students to participate actively throughout the learning process. Through this active involvement, students become more focused, attentive, and able to understand the material at a deeper level. As a result, the learning environment becomes more student-centered, collaborative, and impactful, fostering both cognitive and interpersonal development.

The improvement in student learning outcomes is evident from the pretest and posttest data. Prior to the intervention, student scores ranged from 32 to 76. After the application of the Take and Give strategy supported by Card Sort media, the lowest score increased to 60 and the highest reached 100. According to Andika (2019), this indicates a significant improvement in students' academic performance. Fitria (2024) observes that the use of Card Sort media also enhanced students' enthusiasm for learning, particularly on the topic of plant part functions, as students actively participated in group discussions, motivated each other, and shared opinions and learning experiences. Similarly, Wahyudi (2020) asserts that the Take and Give strategy encourages both

individual and group engagement, as students directly exchange knowledge with their peers. Supporting this, Tarigan et al. (2023) affirm that this strategy, when integrated with Card Sort media, effectively improves the understanding of science concepts among fourth-grade students.

Based on the study above, it can be critically concluded that the application of the Take and Give strategy assisted by Card Sort media has proven to be effective in improving the understanding of science concepts in grade IV students. This strategy not only improves learning outcomes quantitatively, but also encourages active student involvement in the learning process, which contributes to a deeper understanding of the material. This finding reinforces that learning success is not solely determined by the delivery of material by the teacher, but also by the active involvement of students through interactive and meaningful methods. Thus, the Take and Give model with visual media such as Card Sort can be a strategic alternative in improving the quality of learning in elementary schools, especially in science subjects.

## CONCLUSION

Based on the discussion above, it can be concluded that the implementation of the Take and Give strategy supported by Card Sort media has proven effective in improving the understanding of science concepts in grade IV students of SD Negeri 5 Mendo Barat. This strategy has succeeded in encouraging active student involvement in the learning process through interactive information exchange activities, thereby significantly increasing student motivation, activity, and learning outcomes. Card Sort media as a learning support helps students understand the material in a concrete and structured way, while developing social and cognitive skills such as cooperation, communication, and critical thinking. Thus, the Take and Give model assisted by Card Sort media can be used as an alternative effective and enjoyable learning strategy to improve the quality of science learning in elementary schools.

The implementation of the Take and Give strategy with Card Sort media strengthens the constructivist learning theory that emphasizes the active role of students in building knowledge through social interaction and concrete experiences. This model supports the concept of cooperative learning that emphasizes the importance of collaboration and discussion as a means of increasing in-depth understanding of concepts. This finding also adds empirical evidence that visual and interactive learning media can strengthen students' cognitive processes. The Take and Give strategy assisted by Card Sort media can be used as an alternative for effective learning in elementary schools, especially for science subjects. Teachers are advised to integrate this model into the teaching and learning process to increase student participation, motivation, and learning outcomes. In addition, the use of Card Sort media helps present complex materials to be simpler and more interesting, making it easier for students to understand and develop social skills such as communication and cooperation.

Further research is suggested to examine the implementation of the Take and Give model assisted by Card Sort media in other subjects or different grade levels to see its effectiveness more broadly. In addition, research can deepen the aspects of the development of social and emotional skills of students involved in this model. The use of other varied learning media can also be studied to compare their impact on student learning outcomes and motivation. This study was limited to one school and one subject, so the results cannot be generalized widely. In addition, the measurement of success was only based on pretest and posttest scores and brief observations, without involving long-term assessments of student understanding and skills. External factors such as classroom conditions and individual student motivation are also less tightly controlled, so they can affect the results of the study.

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## AUTHOR'S CONTRIBUTION STATEMENT

DA is responsible for conducting research in the school, data analysis, collecting data and interpreting the research results. AS and ELFW are responsible for guiding, directing and evaluating the article-making process.

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