

# ENHANCEMENT OF SCIENCE KNOWLEDGE IN KINDERGARTEN STUDENTS: THE EFFECT OF THE ELEPHANT TRUNK GAME ACTIVE LEARNING MODEL

**Nur Muftiaturrahmah<sup>1</sup>, Besse Marjani Alwi<sup>2</sup>, Jamilah<sup>3</sup>, Syahrani<sup>4</sup>**

<sup>1,2,3,4</sup> Fakultas Tarbiyah dan Keguruan, UIN Alauddin Makassar

Author Correspondence Email: [nurmuftiaturrahma@gmail.com](mailto:nurmuftiaturrahma@gmail.com)

## ABSTRACT

Early childhood education is crucial for physical and spiritual growth, preparing children for further education. Science learning can foster curiosity through exploration activities. This study aimed to determine the level of science knowledge before and after the elephant trunk game-type active learning model for class B at TK Negeri 16 Dharma Wanita Mandai, Maros Regency. The study used a quantitative approach with a pre-experimental research type and a one-group pre-test post-test design. The objectives of this study: (1) to determine the level of science knowledge before and after the application of the elephant trunk game type active learning model for class B at TK Negeri 16 Dharma Wanita Mandai, Maros Regency, (2) to determine the effect of the active learning model in improving science knowledge for class B at TK Negeri 16 Dharma Wanita Mandai, Maros Regency. This study is a quantitative study with a pre-experimental research type using a one-group pretest posttest design. The population was 59 students of class B of TK Negeri 16 Dharma Wanita Mandai. The sample used was 20 students, selected with a purposive sampling technique. The instrument used was an observation sheet. The analysis technique used was descriptive and inferential analysis. The results showed that the science knowledge of class B students before the active learning model was applied obtained an average value of 10.67, and after employment, the average value was 20.41. When compared with the values before and after the active learning model was applied, there was a positive influence on the results of students' science knowledge.

**Keywords:** Active Learning Model, Elephant Trunk Game, Science Knowledge

## 1). INTRODUCTION

Early childhood education is highly essential to help physical and spiritual growth and development so that children are ready to enter further education. Early childhood education promotes the growth and development of children as well as emphasizes the development of all aspects of personality (Yanuarsari, 2022).

Paper presented at The 1<sup>st</sup> ICONETT on August 21<sup>st</sup>-22<sup>nd</sup>, 2024

Faculty of Teacher Training and Education  
Universitas Islam Negeri Alauddin Makassar  
South Sulawesi-Indonesia

Learning is an interaction between students and the environment that can turn behavior properly (Yanuarsari, 2022). Learning is an effort made deliberately by educators to provide knowledge, organize, and produce a learning environment system using various methods so that students can carry out learning activities effectively, efficiently, and with optimal results (Festiawan, 2020). Early childhood learning is designed to be fun, warm, and natural (Sholeha, 2021).

It is required of the educational process in the classroom to assist the pupils and inspire and motivate them to participate actively on their own. As a result, for learning to be effective, a suitable learning model must be used during the process. A learning model is a purposefully planned or constructed learning activity that aims to make teaching and learning activities easy for students to pass and accept (Ahyar, 2021). The term "learning model" describes the method of instruction that will be employed, which includes the learning environment, learning objectives, learning activity phases, and classroom management (Octavia, 2020). Using a learning model will support the learning process of students directly. The learning process, as a form of treatment given to students, must pay attention to the characteristics of each stage of child development. One of the child's developmental needs is cognitive ability. One of the cognitive abilities of students that must be developed is science.

Science is the activity of conducting experiments and activities that discover something through observation (Indri Setyowati, 2022). Children learn science through direct activities such as observation and experimentation. When introducing science activities, early childhood education must be the focus. Children who are intimately connected with the objects they are studying will learn more effectively because they will feel and witness their learning experiences first hand (Nurhafizah, 2023).

Science involves activities such as experimentation and discovery through observation (Indri Setyowati, 2022). Early science education should place more emphasis on the process of science rather than the final product since it teaches youngsters to use their senses. Scientific activities should be carried out simply while children are playing (Nurhafizah, 2023).

Based on observations and interviews, researchers found that the assessment results of science knowledge for Class B students at TK Negeri 16 Dharma Wanita Mandai in Maros Regency had not met expectations. Students had yet to engage in exploratory or investigative activities, recognize cause and effect, or solve simple everyday problems. Additionally, the learning process remained teacher-centered; students were not given opportunities to engage directly in observations or conduct their own experiments, limiting the development of their process skills. As a result, students struggled to

Paper presented at The 1<sup>st</sup> ICONETT on August 21<sup>st</sup>-22<sup>nd</sup>, 2024  
Faculty of Teacher Training and Education  
Universitas Islam Negeri Alauddin Makassar  
South Sulawesi-Indonesia

understand the teacher's explanations of scientific concepts. This outcome is attributed to the learning model used, which failed to capture students' interest and encourage active participation in science learning.

This problem arises because the concept of cause and effect has not yet developed in students, the lack of exploratory and investigative activities, the student's ability to solve problems and think, and so on (Rakhmawati, 2023). Therefore, teachers must be able to be facilitators in developing aspects of student development. Creating an active learning atmosphere surely requires a learning model. The solution to overcome this problem is to apply a model that suits the characteristics of the students. One of them is employing an active learning model.

The active learning model is a model that emphasizes the activeness of students during the learning process, while the teacher only acts as a facilitator, which means that the teacher's role is not very influential in mastering the learning process. The active learning model of the elephant trunk game type provides opportunities for students to be actively involved while playing the elephant trunk experiment. It is hoped that by implementing the active learning model of the elephant trunk game type, students' scientific knowledge can be improved. The elephant trunk game that produces bubbles is one of the games that is very popular with children. In addition, the materials used in making the elephant trunk science experiment are very easy to find; even this game can train various motor, cognitive, and social skills in students. Based on the description above, the researcher aimed to determine the effect of the elephant trunk game-type active learning model on improving science knowledge in class B at TK Negeri 16 Dharma Wanita Mandai, Maros Regency.

## **2). METHODS**

The type of research used is quantitative research using the pre-experimental method (Mania, 2020). The research design used is a one-group pre-test and posttest. The population in this study was class B of TK Negeri 16 Dharma Wanita Mandai, Maros Regency, totaling 59 students. The sample used was class B2 of TK Negeri 16 Dharma Wanita Mandai, Maros Regency, totaling 20 students. The sampling technique used was the purposive sampling technique. The data collection instrument in this study used an observation sheet. The analysis techniques used were descriptive analysis and inferential analysis.

### 3). RESULTS AND DISCUSSION

Based on the results, it was found that the pretest score before the active learning model was applied showed the highest score of 13 and the lowest score of seven, with an average value of 10.67. Five students obtained the highest score in the pretest. The lowest score in the undeveloped category was only one student.

The posttest results after being given treatment as an active learning model obtained the highest score of 28 and the lowest score of 7, with an average value of 20.41. The category of developing very well was four students, while the category of developing according to expectations was nine students. There were three students in the category of "starting to develop" and one student was in the category of "not yet developing".

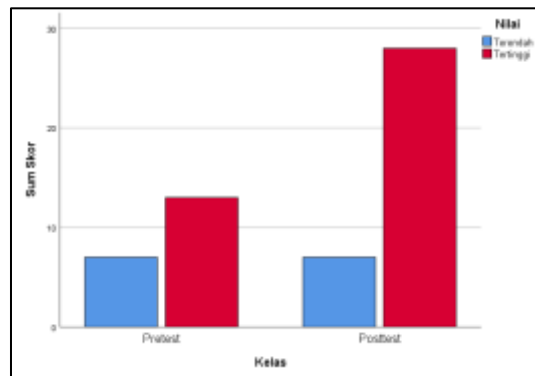


Figure 1. Comparison Graph of Pretest and Posttest

Based on Figure 1, the application of the active learning model to the development of student knowledge has a significant value before and after the application of the active learning model. The comparison is the lowest score from the pretest of 7 and the posttest of 7, while the highest score from the pretest was 13 and from the posttest was 28. This proves a significant difference in the influence between before and after the application of the active learning model.

Table 1. Paired Sample T-test Results

				<b>95% Confidence Interval of the Difference</b>			
--	--	--	--	--	--	--	--

	Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
<i>Pretest - Posttest</i>	-10,000	3,761	.971	-12,083	-7,917	-10,299	14	.000

It can be seen in Table 1 that the results of the analysis of the inferential statistical test, namely the paired sample t-test, the hypothesis test with a calculated t value of -10.299. Then the sign. (2-tailed) value of  $0.000 < 0.05$  was obtained, so  $H_0$  was rejected while  $H_a$  was accepted. This means that the active learning model influences improving the science knowledge of class B students at TK Negeri 16 Dharma Wanita Mandai, Maros Regency. It can be concluded that there is a difference in the average value of students' science knowledge before and after the active learning model is applied, so this learning model is indeed appropriate for improving students' science knowledge.

Student-centered learning will increase activeness and allow them to explore knowledge directly through concrete objects and form knowledge. Science learning allows students to explore and improve their developmental abilities, especially cognitive ones. Teaching science in early childhood does not need to be done simply. Because of the prime interest and curiosity of early childhood, teachers must create learning that refers to solving problems faced by children in everyday life (Muhammad Akil Musi, 2022).

Science games are a great way to teach students about new things because they can see, observe, and try these science games themselves. After that, students will learn many new things and convey the results of their science games (Munajat, 2020). These science games were chosen to improve logical thinking skills and make students directly involved in the learning process. This will make students feel interested in learning to follow the learning procedures. Through science experiments, educators are more innovative and creative in the learning process. This is also one of the media that can attract the attention and interest of students in learning activities (Munajat, 2020). For learning to be more interesting and supportive during the learning process, an active learning model is applied.

This active learning model can encourage children to learn independently, learn actively, participate in learning, and find solutions to problems during the learning process (Gupita, 2023).

Active learning emphasizes the activeness of students; therefore, active learning is very useful in the learning process because educational goals can be achieved well and efficiently (Hartati, 2021).

One of the essential competencies that students must have in science learning is to understand the concepts and attitudes of science related to their daily lives. According to the attitude of science, early childhood must be responsible, curious, disciplined, honest, and open to different opinions (Wulansuci, 2020).

Before the intervention, a pretest was given to evaluate the active learning model's efficacy, then followed by a posttest. There were two stages to the intervention. During the first part of the lesson, students saw posters with pictures of soap bubbles and teacher-drawn pictures of soap bubbles that looked like elephant trunks. The active learning paradigm was used in the second stage. The students worked hard to create a game of soap bubbles that looked like an elephant trunk. Students could conduct direct experiments thanks to this practical experience, which piqued their curiosity and motivated them in the learning process.

Implementing an active learning model will further motivate students to play an active role in learning. In line with the results of Suarsih's research, students become more active and move because active learning makes them excited, agile, fun, passionate, and free and makes them think hard (Hartati, 2021). Introducing science to early childhood is very supportive of using the active learning model because active learning strategies help students not get bored quickly and make lessons accessible to understand. Therefore, fun learning in early childhood is an attractive process (Azmi, 2022).

The results of the data analysis that have been described in this study have proven that there is an influence before and after the treatment, as seen in the graphs and tables that describe significant differences between the pretest and posttest results. The changes are seen in the conditions before the treatment; only a few students meet the indicators, such as some who can already show exploratory activities and recognize cause and effect, but there are still some who do not understand cause and effect and do not understand how to solve simple problems in everyday life.

So, the active learning model can be used as an alternative to stimulate students' science knowledge. All students are allowed to try to make a soap bubble experiment that resembles an elephant's trunk.

#### **4). CONCLUSIONS**

Paper presented at The 1<sup>st</sup> ICONETT on August 21<sup>st</sup>-22<sup>nd</sup>, 2024  
Faculty of Teacher Training and Education  
Universitas Islam Negeri Alauddin Makassar  
South Sulawesi-Indonesia

This study concluded that the science knowledge of class B students before being given treatment as an active learning model is still less apparent or has not developed well, and only a few students meet the indicators. After the active learning model of the elephant trunk game is applied, the science knowledge of students is increased. This can be seen in the post-test score, where the average student shows a category of developing very well and developing as expected. So, the active learning model of the elephant trunk game type affects improving the science knowledge of class B students at TK Negeri 16 Dharma Wanita Mandai, Maros. Further research needs to add variations by providing a mixture of colors in the soap bubble game that resembles an elephant trunk to attract more students' interest.

### Acknowledgment

The author would like to thank all parties who have helped during the process of compiling this scientific work. This acknowledgment especially addressed to TK Negeri 16 Dharma Wanita Mandai, Maros. Until the completion of the writing of this scientific work has received a lot of help in the form of time, energy, and thoughts from many parties. The author is aware that without the help and support of various parties, the compilation of this scientific work cannot run well.

### REFERENCES

- Ahyar, Dasep Bayu, dkk. (2021). *Model-Model Pembelajaran*. Pradina Pustaka.
- Anggraeni, Felia Putri dan Norma Gupita. (2023). Keterampilan Berbahasa Melalui Pendekatan Active Learning Anak Tk Bina Kalam Kecamatan Pakong Kabupaten Malang. *Juraliansi Jurnal Lingkup Anak Usia Dini*. 4(1), h. 75.
- Astuti, Yeni dan Nurhafizah. (2023). Pengembangan Kemampuan Sains Anak Melalui Metode Eksperimen Di Taman Kanak-Kanak. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*. 7(5), h. 5329–42.
- Festiawan, Rifqi. (2020). *Belajar dan Pendekatan Pembelajaran*. Universitas Jenderal Soedirman.
- Laily, Diah Safira dan Nur Ika Sari Rakhmawati. (2023). Peningkatan Kemampuan Sains Anak Melalui Metode Eksperimen Kelompok A di TK Negeri Pembina Kota Mojokerto. *Journal on Education*. 6(1), h. 1655.

- Musi, Muhammad Akil, M Y Bachtiar, dan Herlina. (2022). Pelatihan Pembelajaran Sains Satuan Pendidikan Anak Usia Dini. *SNPPM-4 (Seminar Nasional Penelitian dan Pengabdian Kepada Masyarakat)*. 4, h. 166.
- Nafiqoh, Heni dan Ghina Wulansuci. (2020). Mengembangkan Sikap Sains Anak Usia Dini Melalui Metode Pembelajaran Eksperimen Berbasis Belajar di Rumah (Bdr). *Jurnal Tunas Siliwangi*. 6(2), h. 99.
- Octavia, Shilphy A. (2020). *Model-Model Pembelajaran*. Sleman: Deepublish.
- Poppyariyana, Alfian Ashshidiqi dan Asep Munajat. (2020). Pengaruh Permainan Sains Terhadap Kemampuan Berpikir Logis Anak. *AWLADY: Jurnal Pendidikan Anak*. 6(1), h. 14.
- Roza, Desmawati dan Sri Hartati. (2021). Analisis Urgensi Strategi Pembelajaran Active Learning di Pendidikan Anak Usia Dini. *Jurnal Pendidikan Tambusai*. 5(3), h. 114512.
- Saat, Sulaiman dan Sitti Mania. (2020). *Pengantar Metodologi Penelitian Panduan Bagi Peneliti Pemula*. Gowa: Pusaka Almaida.
- Setyowati, Indri, Ridwan, dan Veni Iswatiningtyas. (2022). Meningkatkan Pengetahuan Sains Melalui Pendekatan Pembelajaran Eksplorasi Lingkungan. *Prosiding SEMDIKJAR (Seminar Nasional Pendidikan dan Pembelajaran)*. 5(1), h. 315.
- Sholeha, Vera. (2021). Hakikat Pembelajaran Anak Usia Dini Mata Kuliah Konsep Dasar PAUD Semester 1 Pertemuan Ke-11. Universitas Sebelas Maret.
- Yanuarsari, Revita, Dianti Yunia Sari, dan Iim Nurjanah. (2022). Kinerja Guru Paud Dalam Mengimplementasikan Standar Tingkat Pencapaian Perkembangan Anak Usia Dini. *Jurnal Pendidikan dan Kebudayaan (JURDIKBUD)*. 2(3), h. 247.
- Zahriani Jf, Nurul dan Khairul Azmi. (2022). Strategi Pembelajaran Aktif Pada Anak Usia Dini. *BUHUTS AL-ATHFAL: Jurnal Pendidikan dan Anak Usia Dini*. 2(1), h. 71.