



## The Influence of Quantum Teaching Learning Approach on Science Activities of Elementary School Students

### Pengaruh Model Pembelajaran Quantum Teaching Terhadap Aktivitas IPA Siswa Sekolah Dasar

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Received: 30-04-2022

Accepted: 25-10-2022

Published: 30-10-2022

#### How to cite this article:

Nuralisa, A. D., Kune, S., & Ristiana, E. (2022). The Influence of Quantum Teaching Learning Approach on Science Activities of Elementary School Students. *Pedagogik Journal of Islamic Elementary School*, Vol. 5(2), 267–278. <https://doi.org/10.24256/pijies.v5i2.2671>

#### Abstract

*This study aimed to determine the effect of the quantum teaching approach on student learning activities on homogeneous and heterogeneous mixed materials. This study uses a quasi-experimental design method. The research design used in this study is a non-equivalent control group design. The population in this study were all students of class VA and VB, as many as 62 students, while the sample in this study was class VA as the experimental class, as many as 30 students and class VB, as many as 32 students. They collected data using observation sheets, test sheets, and documentation – analysis of student learning activity data using the percentage formula and t-test. The results of data analysis show that the average student learning activity in the experimental class using the quantum teaching approach is classified as very active with a percentage value of 81%, and the average student learning activity in the control class with a conventional learning approach is classified as active with a percentage value of 72%. Thus, it can be concluded that the quantum teaching approach has a significant influence on science learning activities with homogeneous and heterogeneous mixed concepts for class V of the Mandai State Elementary School, Makassar City.*

**Keywords:** learning activity; natural science; quantum teaching approach

#### Abstrak

*Tujuan penelitian ini adalah untuk mengetahui pengaruh model pembelajaran quantum teaching terhadap aktivitas belajar siswa pada materi campuran homogen dan heterogen. Penelitian ini menggunakan metode quasi experimental design. Jenis desain penelitian yang digunakan pada penelitian ini adalah non equivalent control group design. Populasi dalam penelitian ini adalah seluruh siswa kelas VA dan VB sebanyak 62 siswa, sedangkan sampel dalam penelitian ini adalah kelas VA sebagai kelas eksperimen sebanyak 30 siswa dan kelas VB sebanyak 32 siswa. Pengumpulan data menggunakan lembar observasi, lembar tes, dan dokumentasi. Analisis data aktivitas belajar siswa menggunakan rumus persentase dan uji-t.*

*Hasil analisis data menunjukkan rata-rata aktivitas belajar siswa pada kelas eksperimen dengan menggunakan model pembelajaran quantum teaching tergolong sangat aktif dengan nilai persentase 81%, dan rata-rata aktivitas belajar siswa pada kelas kontrol dengan model pembelajaran konvensional tergolong aktif dengan nilai persentase 72%. Sehingga dengan demikian dapat disimpulkan bahwa terdapat pengaruh model pembelajaran quantum teaching yang signifikan terhadap aktivitas belajar IPA konsep campuran homogen dan heterogen kelas V SDNegeri Mandai Kota Makassar.*

**Kata kunci:** *aktivitas belajar; ipa; model pembelajaran quantum*

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## **Introduction**

The development of learning in the field of science and technology is currently increasing day by day. This phenomenon results in competition in different lives, one of which is education. Quality education will produce quality human resources. Quality human resources are the ideals of all nations and countries in the world through education (Subarjono, 2012). Education in the 21st century is increasingly essential to ensure that students have the skills to learn and innovate, use technology and information media, and work and survive using life skills (Trilling & Fadel, 2009).

Science subjects are the main subjects in the education curriculum at every level of education, especially at the elementary school level (Ritonga, 2018). Science learning is an effort made by humans to understand the universe through an observation that remains on target, uses procedures, and is explained by reasoning to get a conclusion (Sabron et al., 2019). Science is formed from a systematic and structured collection of knowledge based on facts. Science emphasizes direct giving through scientific processes (Susanto, 2013).

One of the subjects that can develop students' skills is Science Learning. Science is not only a collection of facts but the process of obtaining facts using basic science skills, which aims to predict or explain different phenomena in processes and attitudes (Rosa, 2015). One of the science learning materials related to all aspects of the process and attitude is homogeneous and heterogeneous mixed learning. Learning about homogeneous and heterogeneous mixed material is not just mentioning the meaning of the difference between homogeneous and heterogeneous mixtures, but how to know the process and attitude to produce an understanding of the concept of homogeneous and heterogeneous mixed material.

Based on the results of observations and interviews about science learning in an elementary school, the researchers found the fact that the teacher did not involve the active role of students in learning, there was no use of varied approaches, less than optimal student learning outcomes as evidenced by the value of previous student learning outcomes, and students not motivated in the learning process. Conditions like this will affect student activities to have a negative impact on learning outcomes.

Student activity is one of the essential parts of the learning process. Activities carried out by students will directly impact the student's learning experience, so student

activities should be memorable and enjoyable (Nurhasanah et al., 2016). One way that can be used to optimize student learning activities is by using a learning approach. The learning approach is a plan or a pattern that is used as a guide in planning learning in class or learning in tutorials (Trianto, 2011). A fun learning approach that motivates students to participate actively is the quantum teaching approach.

The quantum teaching approach is the right choice for elementary school teachers to foster student interest and motivation in learning science (Supramono, 2016). This approach also makes teaching and learning more exciting. The theoretical basis of this approach is very suitable to be applied in the science learning process in elementary school. A supportive environment and a fun and exciting learning process can create and improve learning activities (Djenewa, 2020). The Quantum Teaching approach has the main principle of bringing their world into ours and bringing our world into theirs (Porter, 2009). So teachers can create a fun learning process so students can easily understand the learning material. In addition to these principles, according to (Porter, 2009), there are basic principles contained in the quantum teaching approach, namely, (1) Everything speaks, meaning both from the classroom environment to body language and from the distributed paper and the learning design, everything sends a message. About learning; (2) Everything has a purpose, meaning that everything that happens in the learning process has a purpose; (3) Experience precedes naming, meaning that good learning is if students have obtained information beforehand about what they will learn before getting a name for what they are learning; (4) Admit every effort, meaning that in the learning process students should be appreciated and recognized for every effort even though it is wrong, because learning is defined as an effort that contains risks to get out of comfort to dismantle previous knowledge; and (5) If it is worth learning, then it is also worth celebrating. Everything that students have learned is worth celebrating its success.

## **Method**

The research method used in this study is a quantitative quasi-experimental type. This design has a control group but cannot fully function to control external variables that affect the implementation of the experiment. In this case, the researcher uses a quasi-experimental design because the researcher cannot control or control the variables strictly or entirely. The classroom situation as a place of treatment does not allow such tight control. So, in this case, the researcher can control the variables according to the

existing circumstances or conditions. With such conditions, the quasi-experimental design model used is the nonequivalent control group design. In this design, neither the experimental group nor the control group was selected randomly. The experimental group received treatment using quantum teaching-learning, while the control group used conventional learning. These two groups in the learning process get the same subject matter in terms of the objectives and content of the subject matter.

The population in this study were all class VA and class VB, as many as 62 students in the Mandai public elementary school, Makassar City. The data collection technique used was an observation sheet on the implementation of quantum teaching learning and student activity observation sheets and documentation. On the observation sheet, researchers will focus on observing student learning activities, including viewing, oral, listening, writing, and mental activities. The collected data were then analyzed using the percentage formula and t-test.

## **Result**

The learning process was measured using an instrument as an observation sheet. The observation sheet in the experimental class uses a quantum teaching-learning model, while the control class uses a conventional learning model. The observer at the time the teaching and learning activities took place was the teacher in the class to know the quality of the implementation of learning activities.

The implementation of learning in class V of the Mandai public elementary school is divided into two, namely, the experimental class using the quantum teaching-learning model and the control class using the conventional learning model with the concept of homogeneous and heterogeneous mixed material. The implementation of the quantum teaching-learning model can be seen in table 1.

Table 1 Implementation of Quantum Teaching Learning Approach

Stages	Activity
Learning Preparation	The teacher greets and invites students to pray according to their respective religions and beliefs. The teacher checks students' presence and readiness in terms of the neatness of clothes, stationery, and seats.
Grow Stage ( <i>Tumbuhkan</i> )	The teacher gives motivation before starting the lesson with cheers and cheers, the teacher explores the students' initial abilities related to the material.
Natural Stage ( <i>Alami</i> )	The teacher asks students to observe the learning media using tools and materials for homogeneous and heterogeneous mixed experiments. The teacher explains the stages of the experiment to be carried out. The teacher asks students to carry out the experimental stages by mixing these materials according to the practical steps described by the previous teacher.
Name Stage ( <i>Namai</i> )	The teacher asks students to discuss the questions on the student activity sheet according to the information that has been collected.
Demonstration Stage ( <i>Demonstrasikan</i> )	The teacher asks students to present the results of the experiments that have been made. The teacher guides other students to think.
Repeat Stage ( <i>Ulangi</i> )	The teacher gives repetition questions orally about the concept of homogeneous and heterogeneous mixed material to ensure that students have mastered the given learning material.
Celebrate Stage ( <i>Rayakan</i> )	The teacher praises students for celebrating success in learning. The teacher guides students to celebrate success by clapping and cheering to increase confidence and become a motivation for further activities.
Final Stage of Learning	The teacher allows students to express their opinions about the learning that has been followed. The teacher and the students make conclusions about today's learning. The teacher closes the lesson by praying together according to their respective religions and beliefs and greetings.

Table 1 shows the learning process using the quantum teaching approach that has been implemented.

The results of observing student activities in participating in learning with the quantum teaching model for four meetings can be seen in table 2.

Table 2 Analysis of Student Activity Observation Data

No	Student Activities	Average Number of Active Students at the meeting						Total	%	Category
		I	II	III	IV	V	VI			
1	Viewing activities (reading, paying attention, experimenting, demonstrating seeing other people's work)		3,0	3,4	3,5	3,5	13,4	83,75	Very active	
2	Speaking activities (asking, giving advice, expressing opinions, discussing)	P	2,8	3,2	3,3	3,3	12,6	78,75	Active	
3	Listening activities (explanations, conversations, discussions)	R	2,6	3,2	3,3	3,2	12,2	76,25	Active	
4	Writing activities (taking notes, writing reports or tests, copying)	E	2,7	3,3	3,3	3,3	12,6	78,75	Active	
5	Mental activity (responding, remembering, solving problems, analyzing, seeing relationships, making decisions)	S	3,0	3,5	3,6	3,6	13,7	85,63	Very active	
	Total Average						65 13	404 81	Very active	

Table 2 shows that the percentage of the average results of observing the activity of experimental class students in the learning process using the quantum teaching-learning model is 81%, with a very active category.

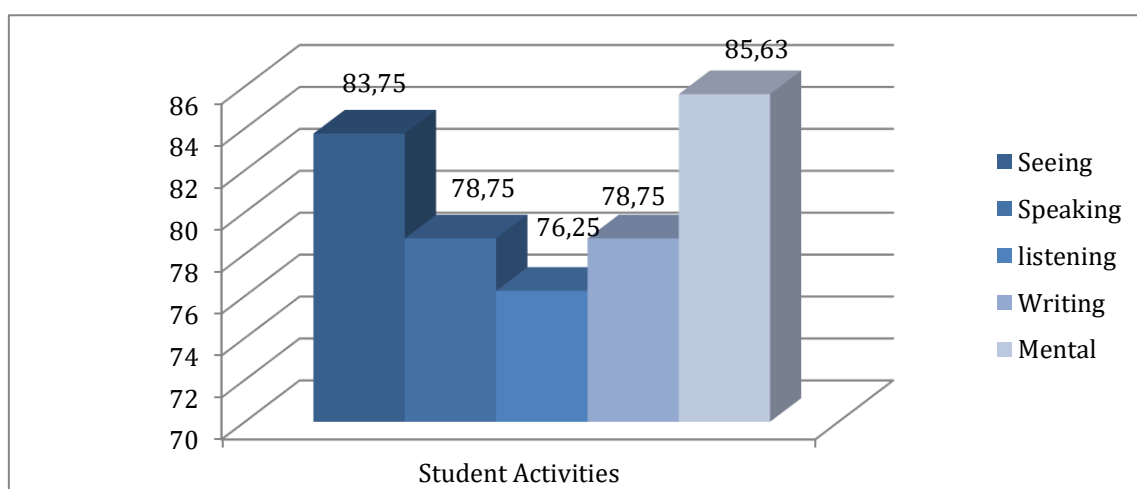


Figure 1 Percentage of experimental Class Student Activity





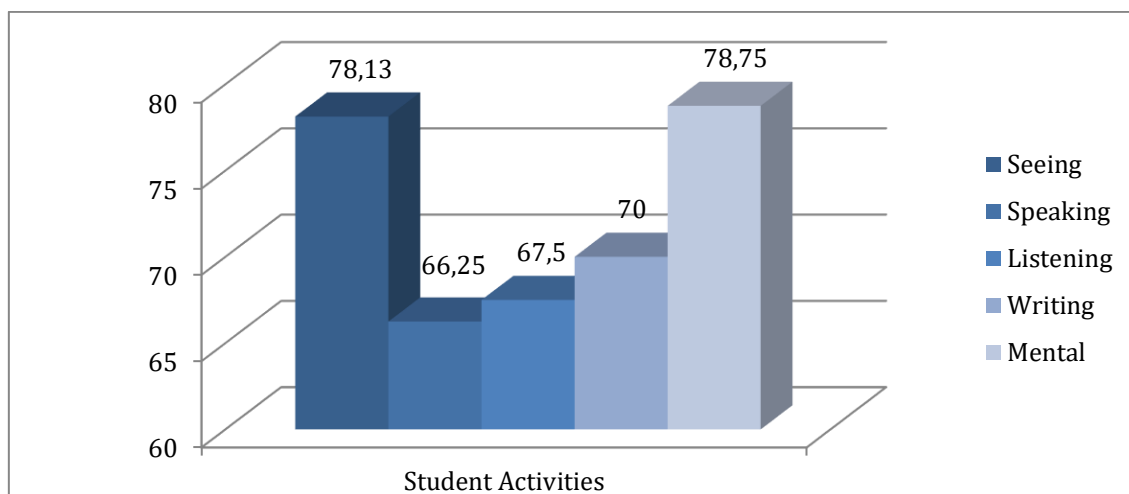


Figure 2 Percentage of Control Class Student Activity

## Discussion

The results of the data analysis of learning activities on homogeneous and heterogeneous mixed materials show an effect of learning activity scores between the experimental class that applies the quantum teaching-learning model and the control class that applies the conventional learning model. The descriptive analysis of learning activities in Table 2 shows that the average percentage of student learning activity scores in the experimental class reached 81% in the very active category. In comparison, the average percentage of student learning activity scores in the control class reached 72% in the active category.

Several theories from previous research support the results obtained in this study, Jayantika, which shows that applying the quantum teaching-learning model affects learning activities and students' problem abilities (Trisna et al., 2020). This research is quasi-experimental research using a Non-Equivalent Control Design. The population of this study was all students of class VIII SMP Negeri Kuta. Samples were taken randomly with a random sampling technique. Data on learning activities and problem-solving abilities were collected using questionnaires and tests, then analyzed using the manova test. The results of this study indicate that: (1) there are differences in the learning activities of students who follow the quantum teaching-learning model and students who follow conventional learning, (2) there are differences in the problem-solving abilities of students who follow the quantum teaching-learning model and students who follow the quantum teaching model. Conventional learning models, (3) there are simultaneous differences in learning activities and problem-solving abilities of students

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who follow the quantum teaching-learning model with students who follow the conventional learning model.

Based on the results and discussion of this study, it can be concluded that the quantum teaching-learning model affects student learning activities because it is exciting and fun for students to increase learning activities.

### **Conclusion**

Based on the results of data analysis and discussion of research results about the effect of the quantum teaching-learning model on science learning activities with homogeneous and heterogeneous mixed concepts in class V of the Mandai State Elementary School Makassar, it can be concluded that the use of the quantum teaching-learning model on science learning activities with homogeneous and heterogeneous mixed concepts has an effect on student learning activities in the experimental class and get a very active category compared to student activities in the control class are in the active category.

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