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# Difference in Ecosystem Learning Outcomes with learning models Quantum Teaching and Conventional in Elementary School

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**Abstract:** This study aims to determine whether there is a difference between Ecosystem Learning Outcomes and Quantum Teaching and Conventional learning models in Primary Schools The method used in this study is quantitative with an experimental approach. Respondents in this study were class V A students as the experimental class and class V B as the control class. The results of this study indicate that the Quantum Teaching learning model is superior because the Quantum Teaching Model is a learning model that involves students actively and creatively in using their ability to logically analyze the material being studied. Because, in this learning model students are guided to discover for themselves what they have learned and what they will get through the stages described in the Quantum Teaching model design framework
**Keywords:** Learning Outcomes, Quantum Teaching, Conventional

## Introduction

Education is an attempt at awareness to educate the nation. The development of science and technology that is developing very rapidly makes competition in the global world more intense. Education demands efforts to reform and use technology products to meet the needs of daily life (Sumantri, Prayuningtyas, Rachmadtullah & Magdalena, 2018).The development of natural sciences and technology are two things that cannot be separated so that education must improve the quality of infrastructure advice, tools and media and school management, such as teacher qualifications in carrying out the teaching and learning process.

Natural Sciences is one of the science learning that emphasizes the direct experience of a process and product to develop competencies so that learners are able to understand the environment scientifically.IPA education is directed at scientific work such as finding out and doing so that students gain a deeper understanding to answer questions and draw conclusions (Winaputra, 1992). In IPA learning, learning independence also involves cognitive or intellectual, manual and social skills.Cognitive or intellectual skills by carrying out the process of students using their thoughts, manual skills involved in the use of tools and materials, measurement of the preparation or assembly of tools, social skills are intended that with the independence of learning students interact with others in carrying out teaching and learning activities.

IPA learning in elementary schools needs to emphasize the process of direct learning experience both through experiments, observations, discussions and other activities in order to form learners who think objectively, systematically and scientifically (Mikerova et al, 2018).In creating fun IPA learning, we need to understand the characteristics of the learners themselves, especially in terms of the cognitive development of learners (Camasso & Jagannathan, 2018). Furthermore, the purpose of learning IPA according to Sulistyanto & Wiyono (2008) serves to provide knowledge about the natural environment, develop skills, insights, and awareness of technology in relation to its use for everyday life".The principle of science learning in Elementary School equips students with the ability of various ways to "know" and "how to work" that can help students in understanding the environment (Asy'ari, 2006).

Based on PISA results in 2015 Indonesia's Ranking for Science 62, Mathematics 63, and Reading 64 out of 70 countries. These results generally improved especially for Science and Mathematics. In PISA 2012, the Science and Mathematics ranking was 64 out of 65 while Reading was 61 out of 65 countries. The average score for PISA 2015 (and 2012) was a Science score of 403 (382),Mathematics 386 (375) and Reading 397 (396) (Bieber & Martens, 2011). Based on this data, it is necessary to continuously improve learning activities, one of which is the use of appropriate learning methods, according to the results of mustika research, Anwar & Hizir (2018) the right learning method will have a significant influence on students' learning achievements, while according to the results of research conductedRaley, Shogren & McDonald (2018) In addition to learning methods, the importance of learning independence is owned by students because through learning independence developed attitudes and values that include curiosity, honest, patient, open, not believing superstition, critical, diligent, tenacious, careful, disciplined, caring for the environment, paying attention to work safety and cooperating with others(Anders, Stellrecht, Davis & McCall, 2019; Dyer & Hall, 2019). In this research, it is expected to increase learning independence in solving problems, understanding knowledge from learning materials and improving learning outcomes and having direct experience so that knowledge is meaningful in everyday life.

Based on the above description, researchers feel compelled to carry out research using the Quantum Teaching learning model as an alternative tool to improve the learning outcomes of SDS Kartini elementary school students.The quantum teaching model is a new way that facilitates the learning process, which combines elements of art and targeted achievement for all subjects by combining learning privileges into a form of teaching planning that will skyrocket the achievements of Quantum students means interactions that convert energy into light(Landa & Ismaniar, 2019; Trisnawati & Wutsqa, 2015). Deporter (2010) explains that Quantum Teaching is a lively learning change, with all its nuances and includes all the links, interactions, and differences that maximize learning moments.With optimal learning conditions, learning goals are easily achieved. To create these learning conditions, teachers must be able to organize students and learning resources and maintain a pleasant learning environment.

Quantum Teaching is a lively learning atmosphere change with all its nuances, and includes all the links, interactions and differences that maximize learning moments. Or it can also be defined as a change of various interactions that exist in and around the learning moment

These interactions include elements for effective learning that affect student success. These interactions turn students' abilities and talents into a light that will benefit themselves and others (Rumapea, Syahputra & Surya, 2017).Based on the identification of the problems that have been stated above, the formulation of the problem is whether there is a difference in Ecosystem Learning Outcomes between students and Quantum Teaching and Conventional learning models.

Research conducted at SDS Kartini has several benefits for Students, This research is expected that students can build their own knowledge through direct experience in studying IPA subjects towards learning independence so that it is easier to understand them and improve learning outcomes.For teachers, the research results are expected to be able to increase the teacher's scientific insight in developing how to teach teachers and be able to determine the appropriate learning model of teaching materials in the learning process.

## Method

This research uses a quantitative approach with experimental methods. Treatment is carried out in IPA lessons consisting of learning models and learning independence. Sugiyono said experimental research is a research method used to look for the influence of certain treatments on others with controlled conditions.The draft treatment in this study is the implementation of treatment of two groups of students. Treatment was given to two classes that became experimental groups and control groups.

The sample in this study was students of class V A and V B of Kartini Elementary Year 2018/2019. Students of class V A as an experimental class and class V B as a control class. When learning took place for 3 meetings, each class had a sample of 30 students.Researchers provided questionnaires related to learning independence with the results in the form of scores arranged in the order of the highest to lowest rankings. Furthermore, two groups are set, namely top and bottom based on the ranking score.The withdrawal of samples to determine the group was carried out with the provision of high independence with a proportion of 27% of the 30 students as a high-level group with 8 students and a proportion of 27% of the 30 sample students with low learning independence as a lower group (low level) with 8 students.

The data collection techniques in this study used tests. Test techniques are used for learning outcome tests and student learning independence tests. Test instruments to measure student learning outcomes and learning independentness. The learning independence test is made in questionnaires as a measurement of high and low learning independence.The learning outcome test is made in a multiple choice test as a measuring tool for students' success in learning activities using the Quantum Teaching learning model. The instruments used in the research to be used are as follows:

1. Learning independence variables use a learning independence test in the form of questionnaires with a tick (√) of letters on the answer sheet.
2. 2. Ecosystem learning outcome variables use test instruments in multiple selections. Tests to measure the ability of ecosystem learning outcomes are arranged with the following steps;(1) analyze the syllabus, (2) analyze textbooks, (3) arrange test grids, (4) write indicators, (5) write questions

Based on the description above, there are two types of instruments used in this study. Here are the details of the instruments to be used in the research.

## Result and discussion

The analysis in this study is to find out the Differences in Ecosystem Learning Outcomes with Quantum Teaching and Conventional learning models in Elementary Schools can be seen as follows:

Tabel 1 Paired Samples Statistics

| | Mean | N | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|
| Quantum Teaching | 98.19 | 27 | 9.047 | 1.741 |
| Konvensional | 96.22 | 27 | 7.218 | 1.389 |

Based on the calculations in the table above, the average use of conventional methods is 96.22 while the use of the Quantum Teaching method has an average value of 98.19. This means that deskriphally there is a difference in ecosystem learning outcomes with quantum teaching and conventional learning models in elementary schools.

**Tabel 2** Paired Samples Correlations

| | N | Correlation | Sig. |
|---|---|---|---|
| Quantum Teaching & Konvensional | 27 | .574 | .002 |

Tabel 3 Paired Sample Corelations

| Paired Differences | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Std. Deviation | Std. Error Mean | 95% Confidence Interval of theDifference | | t | df | Sig.(2-tailed) |
| | | Mean | | | Lower | Upper | | | |
| Pair 1 | Quantum Teaching - Konvensional | 1.963 | 7.679 | 1.478 | -1.075 | 5.000 | 1.328 | 26 | .000 |

In table 2 above obtained coeffesien correlation of the result score of 0.574 with a sig number, or p-value = 0.002 ≥ 0.05 or insignificant while in table 3 above obtained a difference of mean = 1.963 which means as clean as the score of the results of writing narrative text after and before using experiential learning model based on Creative Thinking.Positive prices are meaningful after being treated using Quantum Teaching rather than Conventional. Furthermore, this table is also obtained a standard error mean which shows the number of standard errors on average difference. Furthermore the most important result of this table is the statistical price t = 1.328 with db 26 and significant numbers. Or a p-value of 0.000 < 0.05 or H0 is rejected.Thus it can be concluded that there is a difference in Ecosystem Learning Outcomes with Quantum Teaching and Conventional learning models in Elementary Schools.

## Discussion

Based on the findings of the research that was put forward, it was obtained that there is a Difference in Ecosystem Learning Outcomes with Quantum Teaching and Conventional learning models in Elementary Schools in this study the Quantum Teaching learning model is superior because the Quantum Teaching Model is a learning model that involves students actively and creatively in using their abilities to logically analyze the material learned.Because, in this learning model, students are guided to discover for themselves what they learn and what they will get through the stages described in the quantum teaching model design framework (Müller & Wiesner, 2002). The results of this study are also in line with the results of freericks, Cutler, Kruse & Vieira (2019) research suggests that Quantum Teaching is a learning process by providing background and strategies to improve the teaching and learning process and make the process more enjoyable.This method provides a teaching style that empowers students to excel more than they think possible. It also helps the teacher expand the student's skills and motivation, so that the teacher will obtain greater satisfaction from his work.

In Quantum Teaching there are three things that must be understood, namely, Quantum, Speeding up learning, and facilitation. Quantum means an interaction that converts energy into light (Rahmawati, 2018). So Quantum Teaching is the teacher's effort to emphasize various interactions that are in and around the learning moment, so that students' natural abilities and talents become light.Interactions include elements for effective learning that affect student success, while transforming students' natural abilities and talents into a light that is beneficial to themselves and others.

## Conclusion

Based on the findings of the research results and the discussions outlined, this study can conclude that the use of Quantum Teaching is an effort by teachers to emphasize various information in the learning process into a light that increases student achievement, by removing obstacles through the use of appropriate means and tools,So that students can learn easily and naturally. Quantum Teaching is a learning method that is proven to be able to increase students' learning motivation, improve achievement, increase self-confidence, increase self-esteem and continue the use of skills so as to improve the quality of education.Quantum Teaching method is one of the methods described as similar to an orchestra, where we are leading a concert while in the classroom, because it requires understanding the character of different students as well as different musical instruments.Therefore Quantum Teaching teaches that every character can have a role and be actively involved in the teaching and learning process so that learning brings success.

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