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Improving Student Independence and Learning Outcomes Using the Quantum Teaching Model

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A B S T R A C T

This study aims to implement the Quantum Teaching model to improve the independence and learning outcomes of Class VII Phase D students at RK Delimurni Delitua Private Middle School. Classroom Action Research (CAR) involved 38 students in the 2024/2025 academic year. Data analysis showed a significant increase, for example self-awareness and intrinsic learning motivation increased from 40.13% to 80.26%. Likewise, intonation and volume of voice, listening ability, effective use of language, and body language also increased. In addition, the implementation of the TANDUR stages also encouraged a more active and meaningful learning process. Student learning outcomes also increased, students who reached the Advanced category increased from 18.42% to 86.84%. The study concluded that Quantum Teaching can improve independence as well as student learning outcomes, so it is recommended to be applied more widely and studied further

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INTRODUCTION

Education has a very important role in shaping the character and competence of students. In the midst of the challenges of the ever-changing era, the education process is not only required to transfer knowledge, but also to be able to develop students' skills and attitudes so that they can learn independently, creatively, and be able to find solutions to the problems faced.(Nurfadilah & Lukman Hakim, 2019). In the learning process, students are given space and opportunities to actively seek, find, and understand the material, not just relying on instructions and explanations from the teacher.(Ina Magdalena et al., 2023). In this way, students are better able to learn meaningfully and deeply, so that the quality of learning outcomes is also maximized.(Anastasia Sutarni, 2023).

In addition to the cognitive aspect, the learning process must also be able to involve the affective and psychomotor aspects of students. In meaningful learning, students learn not only to fulfill obligations, but also learn to be able to apply what is learned in the community, so that they are able to become useful, independent, and socially capable human beings.(Hayatul Mardhiyah et al., 2024). In the learning process, students are also given the opportunity to actively seek, find, and discuss problems, so that creative thinking and collaboration skills can also be further honed.(Ginanjar, Eggi G. Bambang Darmawan., 2019).

However, based on the results of observations that occurred at SMP Swasta RK Delimurni Delitua, students still seemed less independent, had low learning motivation, and had difficulty learning actively, creatively, and reflectively. This condition was also evident from the lack of student cooperation, low listening skills, inappropriate use of language, and passive student attitudes during the learning process. In learning activities, students were given more instructions and questions to solve, rather than given the opportunity to find solutions and learn independently, so that the learning process became monotonous and less meaningful.(Hayatul Mardhiyah et al., 2024). In such conditions, students also have difficulty achieving maximum learning outcomes and the quality of learning is also hampered.

In addition, the learning process also more often uses a one-way approach (teacher-centered) and less relevant media, so that students have difficulty understanding the teaching material and its application, especially in the subject of Catholic Religious Education. In the learning process, students are given more instructions and questions to solve, rather than being given the opportunity to find solutions and learn independently, so that the learning process becomes monotonous and less meaningful.(Hayatul Mardhiyah et al., 2024). In such conditions, students also have difficulty achieving maximum learning outcomes and the quality of learning is also hampered.

Based on the problems that occur, the application of the Quantum Teaching model is considered important and relevant to be applied. The Quantum Teaching model provides opportunities for students to be more active, creative, and independent, so that the learning process is more enjoyable, meaningful, and according to student needs.(Anastasia Sutarni, 2023). With the implementation of Quantum Teaching, students are expected to be able to learn

more independently, achieve maximum learning outcomes, and be able to apply what is learned into life. In this context, the study was entitled "Improving Student Independence and Learning Outcomes Using the Quantum Teaching Model in Catholic Religious Education Phase D Class VII-2 at SMP RK Delimurni Delitua." This study is expected to provide practical and theoretical contributions regarding the implementation of Quantum Teaching, so that the learning process is more active, creative, and able to improve student learning independence, in accordance with the current vision and goals of education.

LITERATURE REVIEW

This study aims to improve the independence and learning outcomes of Grade VII Phase D students at RK Delimurni Delitua Private Middle School through the implementation of the Quantum Teaching Model. In an effort to achieve these goals, it is important to understand the theoretical basis of independence, learning outcomes, and the Quantum Teaching Model, so that the implementation and learning process can run more optimally and according to the expected goals.

Independence

Learning independence is the attitude and ability of students to learn, organize, and complete their own tasks, without relying entirely on instructions and guidance from teachers. Independence also involves the process of self-management, planning, and decision-making regarding the learning process that students undergo. In the process of independent learning, students are able to find appropriate learning resources, choose and apply them, then reflect on the process they undergo.(Mulyadi & Syahid, 2020).

In addition to cognitive aspects, independence is also closely related to students' affective and psychomotor aspects. Independent students appear more confident, able to carry out their tasks without depending on others, practice skills, and are more responsible for their respective learning processes (Babari, 2012; Fatimah, 2010). In the context of learning, independence is also an important aspect that must be empowered according to the vision of the Merdeka Curriculum, namely students who are independent, creative, able to find solutions, and lifelong learners (Cahyana et al, 2019).

In addition, independent learning can also train students to learn more actively, find problems, seek solutions, and be able to make wise decisions.(Saefullah, 2013). In the independent learning process, students are also better able to learn according to their individual needs, interests, and abilities, so that the learning process is more meaningful and relevant.(Mulyadi & Syahid, 2020).

Learning Outcomes

Learning outcomes are a measure that shows students' abilities that occur as a result of the learning process.(Ahmadiyanto, 2016). In the learning process, students gain knowledge, attitudes, and skills that are useful for their lives. Learning outcomes can also be used as a measure to assess the achievement of learning objectives, so that students can understand what aspects need to be improved.(Supriyadi, 2020).

Apart from cognitive aspects, learning outcomes also include affective and psychomotor aspects.(riyan yulianto, 2020). In Bloom's taxonomy, cognitive aspects include the processes of remembering, understanding, applying, analyzing, and also creating.(Yulianto, 2021). While the affective aspect is more related to the attitudes and feelings of students, and the psychomotor aspect is related to the physical skills that students have.(Nurbudiyanti et al., 2022).

Measuring learning outcomes is useful for providing feedback on the learning process and the quality of learning received by students, so that students are better able to achieve the expected learning goals.(Nurtanto & Sofyan, nd).

Quantum Teaching Model

The Quantum Teaching model is a dynamic, creative, and actively engaging learning approach for students. Quantum Teaching was created by Bobbi DePorter (2004) with the principle of "Bring their world to our world, and deliver our world to their world." The Quantum Teaching learning model also emphasizes the importance of interaction and individual differences in students, so that the learning process is more humane and meaningful.(Anastasia Sutarni, 2023).

Quantum Teaching is implemented with the TANDUR framework, namely Grow, Experience, Name, Demonstrate, Repeat, and Celebrate.(Ii & Theoretical, nd). The Grow step is useful for finding students' interests and motivations; Experience gives students the opportunity to learn based on experience; Name is the process of students giving names or labels to the material they receive; Demonstration students are given space to practice it; Repeat is useful for strengthening and deepening the material; and Celebrate is a celebration of the learning process that occurs(Murnawan, 2021).

The Quantum Teaching model also provides students with more space to learn independently, find solutions, and be creative, so that the learning process is more active, humane, and able to improve student learning outcomes.(Hayatul Mardhiyah et al., 2024).

Research Hypothesis

Based on the theory and framework of thinking that has been built, the action hypothesis proposed in this study is: "The independence and learning outcomes of Phase D Class VII-2 students at RK Delimurni Delitua Private Middle School will increase if the Quantum Teaching learning model is applied." The hypothesis is formulated based on the results of initial observations, problems identified in the class, and support from several theories and previous research results which state that the application of the Quantum Teaching Model can create a more active, creative, independent, and meaningful learning process.(Anastasia Sutarni, 2023). By implementing Quantum Teaching, students are more motivated, able to learn independently, and achieve maximum learning outcomes according to learning objectives.

METHODOLOGY

This research is a Classroom Action Research (CAR) conducted at SMP RK Swasta Delimurni Delitua in Phase D Class VII 2. In this classroom action research, the research subjects included all students of Phase D Class VII 2, totaling 38 students, consisting of 20 females and 17 males.(Iskandar, 2009). While the object of research is the implementation of quantum teaching model learning for student independence and learning outcomes. According to Hamdani (2008), PTK is a type of research conducted in the classroom to assess the impact or results of actions applied to research subjects in that context.

Heris (2018) explains that classroom action research is a scientific activity that is professional and reflective. This research is carried out through special actions that aim to support improvements in learning practices and processes, both inside and outside the classroom. As a process, classroom action research is controlled and updated continuously through continuous reflection, resulting in improvements in various aspects, such as systems, working methods, processes, content, competencies, and learning situations. The design of the Classroom Action implementation cycle, namely: Planning, Implementation, Observation and reflection. Explained by Hopkins, 1993 in the book Fita Nur Arifah, S.Pd.

RESULTS

The results of the action research showed that in the aspects of Self-Awareness and Intrinsic Learning Motivation, students obtained a score of the Interesting category of 31 with a percentage of 40.13%, Enough of 32 (42.10%), and Lacking of 13 (17.76%). The Intonation and Volume aspects showed a score of Interesting 38 (50%), Enough 30 (39.47%), and Lacking 8 (10.66%). In the Listening Ability aspect, students obtained a score of Proficient of 34 (45.26%), Enough 19 (25.78%), and Lacking 21 (27.36%). The Effective Language Use aspect showed a score of Proficient of 46 (60.52%), Enough 25 (33.15%), and Lacking 5 (6.31%).

Finally, the aspect of Good and Appropriate Use of Body Language obtained a score of Proficient of 43 (55.92%), Sufficient 18 (23.68%), and Lacking 16 (20.39%). These results indicate that most students are in the good category, although there are still some aspects that require attention and reinforcement.

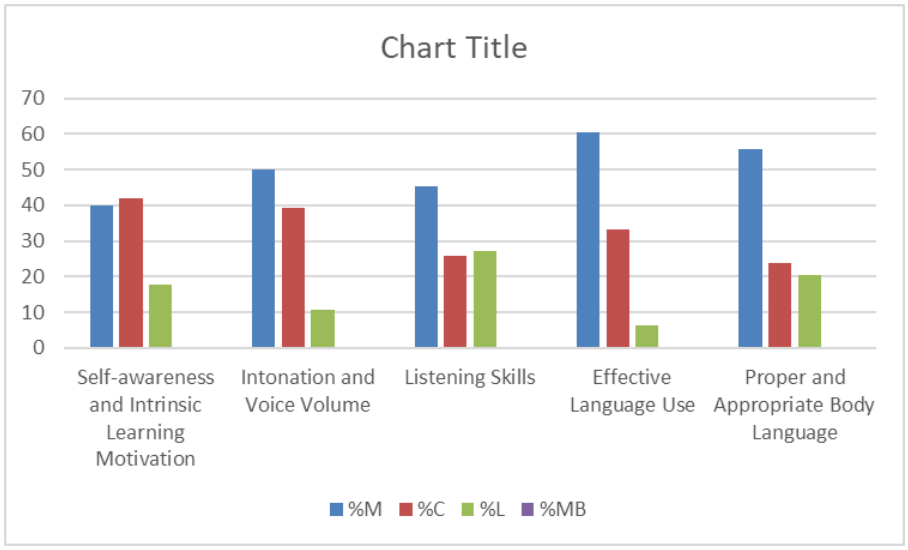

Figure 1. Implementation of Student Independence in Cycle I

The results of the Action Research show that in the implementation of the Quantum Teaching learning model, the Tumbuhkan aspect obtained very good results with a score of 40 (40%) and good with a score of 48 (60%). The Natural aspect showed very good results of 25 (25%), good 56 (70%), and sufficient 3 (5%). In the Nami aspect, very good scores were obtained by 40 (40%), good 44 (55%), and sufficient 3 (5%). The Demonstration aspect showed very good results of 30 (30%) and good 56 (70%) without any sufficient or lacking categories.

The Repeat aspect obtained a score of very good 35 (35%), good 44 (55%), and sufficient 6 (10%). Finally, the Celebrate aspect showed very good results of 35 (35%) and good 48 (60%), and sufficient 3 (5%). These data indicate that most students are in the good and very good categories in all stages of Quantum Teaching learning, which reflects active involvement and increased understanding during the learning process.

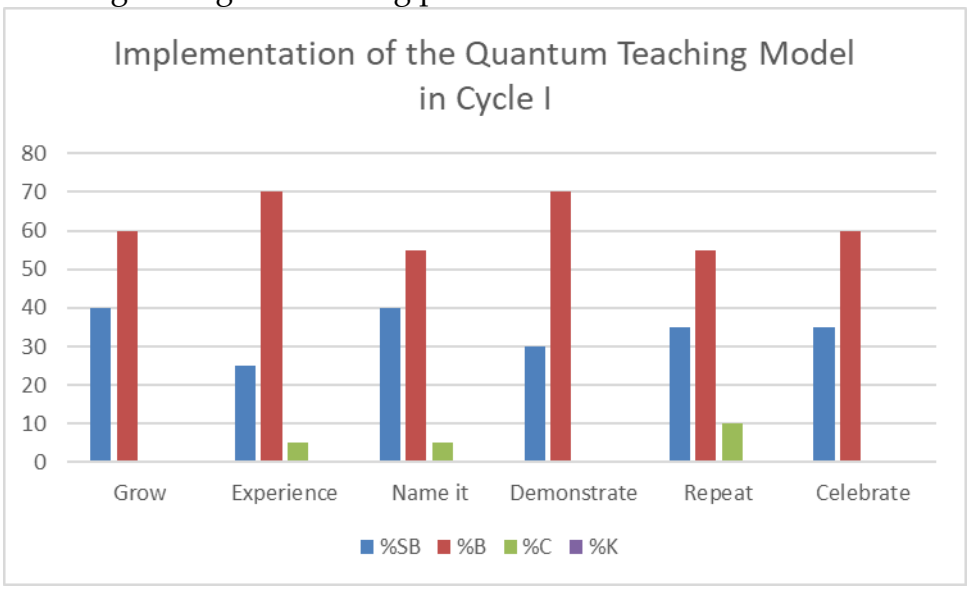

Figure 2. Implementation of the Quantum Teaching Model in Cycle I

The results of the study showed that in achieving overall competency, students in the Advanced category numbered 7 people with a percentage of 18.42%, while the Proficient category dominated with 20 students (52.63%). Furthermore, the Adequate category was also obtained by 7 students (18.42%), and the remaining 4 students (10.52%) were still in the New Developing category.

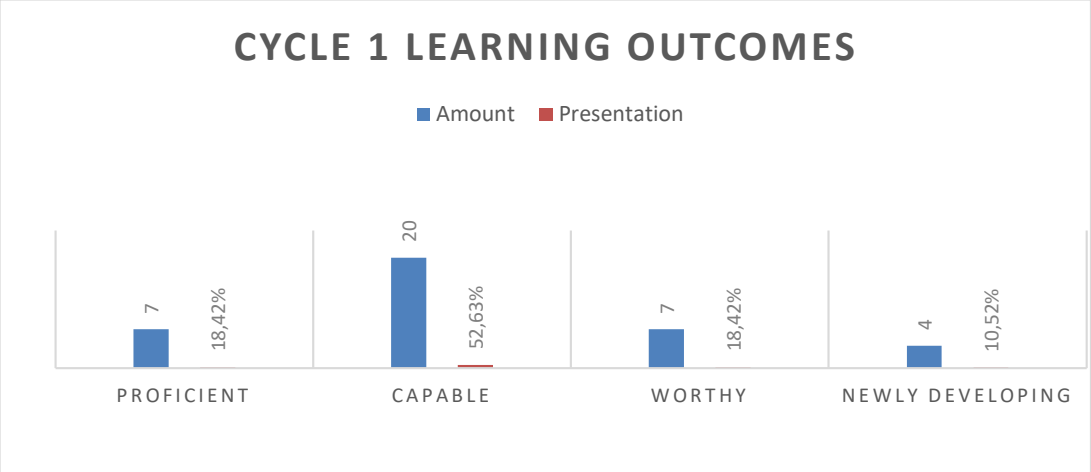

Figure 3. Student Learning Outcomes in Cycle I

Furthermore, the results of classroom action research in Cycle II can be described as follows. Based on the chart below, students' abilities in the aspects of Self-Awareness and Intrinsic Learning Motivation showed very good results, with 80.26% reaching a very good level and 19.73% showing a good level. In the aspects of Intonation and Voice Volume, most students showed very good abilities, with 78.50% in the very good category and 21.49% in the good category. Likewise in the aspect of Listening Ability, where 85.78% of students showed very good abilities and 14.21% showed good abilities.

Furthermore, in the aspect of Effective Language Use, most students showed very good abilities, with 92.10% of students in the very good category and 7.89% in the good category. Finally, in the aspect of Good and Appropriate Use of Body Language, 90.78% of students achieved a very good level and 9.21% of students were in the good category. No students achieved a sufficient or low level in all aspects evaluated. These results indicate that the learning carried out in Cycle II has succeeded in improving student independence as a whole in various aspects.

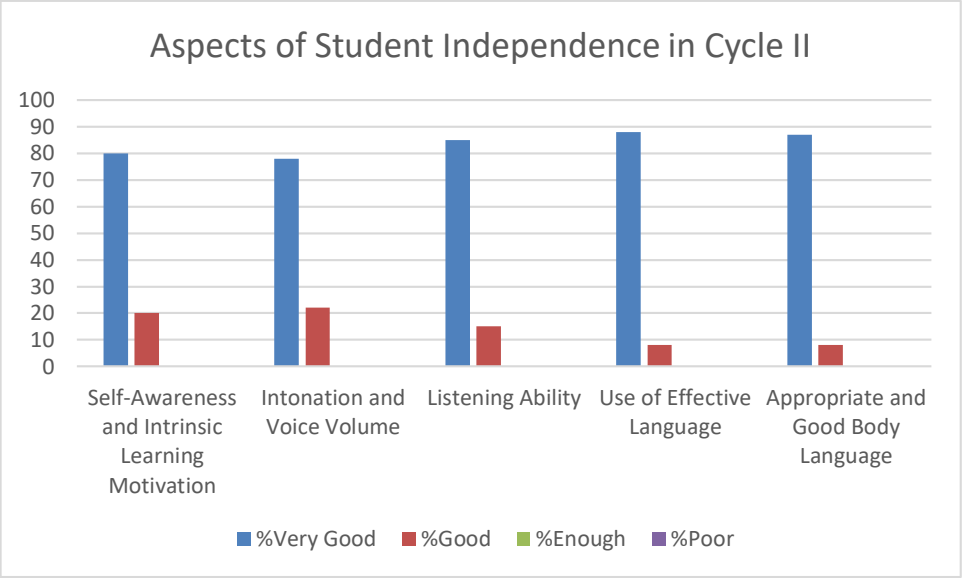

Figure 4. Aspects of Student Independence in Cycle II

Furthermore, the results of classroom action research in Cycle II can be described as follows. Based on the chart below, students' abilities in the Grow aspect show very good results, with 70% reaching a very good level and 30% showing a good level. In the Natural aspect, students' abilities are evenly distributed, with 50% of students reaching a very good category and the other 50% showing a good level. Likewise, in the Name aspect, most students show very good abilities, with 65% in the very good category and 35% in the good category.

In the Demonstration aspect, 50% of students are in the very good category and 50% show a good level, which reflects the balance of student achievement in conducting learning demonstrations. Furthermore, the Repeat aspect also shows the same results, namely 50% of students reach a very good level and 50% are in the good category. Finally, in the Celebrate aspect, most students show very good results, with 65% reaching the very good category and 35% showing the good category. No students reach a sufficient or poor level in all aspects evaluated. These results indicate that the implementation of learning through the Quantum Teaching approach in Cycle II has encouraged active and consistent student involvement in every stage of learning.

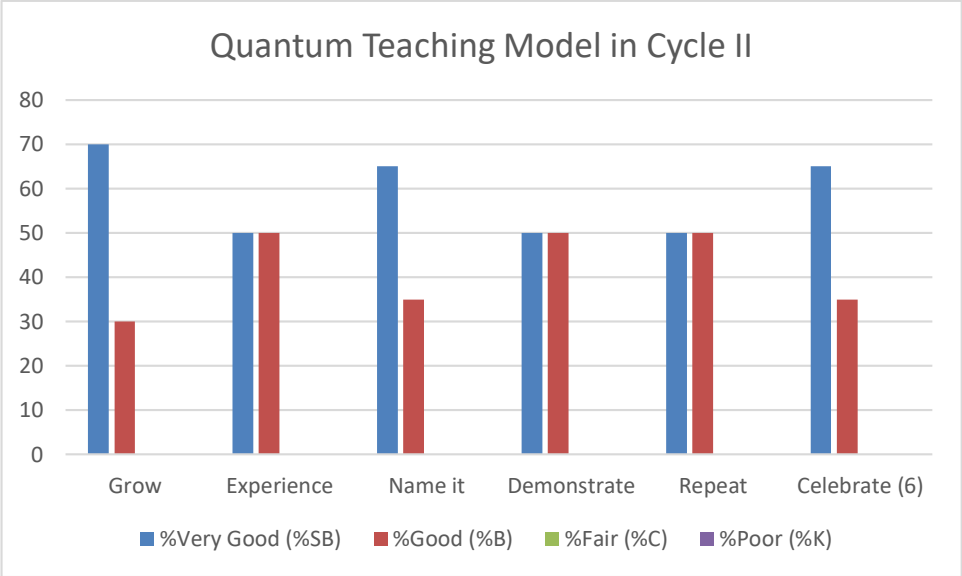

Figure 5. Quantum Teaching Model in Cycle II

Furthermore, the results of classroom action research on the aspect of student competency achievement show that most students have reached the advanced level, with 86.84% of students in that category. Meanwhile, as many as 13.15% of students are in the proficient category. There are no students in the adequate or developing categories.

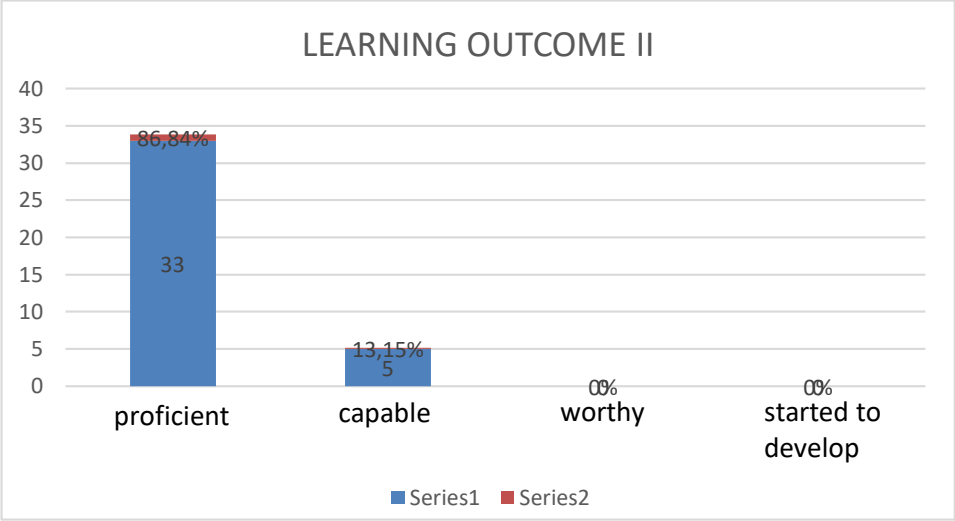

Figure 6. Student Learning Outcomes in Cycle II

This study is in line with the expected objectives, namely to improve the Independence and Learning Outcomes of Class VII-2 Phase D Students of SMP Swasta RK Delimurni Delitua. Based on the table below, it can be seen that there is an increase in the success of the independence of Class VII-2 Phase D Students of SMP Swasta RK Delimurni Delitua, namely: 1) Self-awareness and intrinsic learning motivation, which are easy to understand in cycle I 40.13% increased to 80.26% with an increase of 100%. 2) Intonation and Volume of Voice, in cycle I 50% increased to 78.50% with an increase of 57%. 3) Listening Ability, in cycle I 45.26% increased to 89.52% with an increase of 88.89%. 4) Effective Use of

Language, in cycle I 60.52% increased to 92.10% with an increase of 52.18%. 5) Using good and appropriate body language in cycle I 55.92% increased to 90.78% with an increase of 62.33%.

Table 1. Increase in Student Independence II

ASPECT	**SCORE OBTAINED AVERAGE**		**IMPROVEMENT (From Cycle I-Cycle II)**
	CYCLE I	CYCLE II	
Self-awareness and intrinsic learning motivation,	40.13%	80.26%	100%
Intonation and Volume of Voice,	50%	78.50%	57%
Listening Ability,	45.26%	85.78%	89.52%
Use of Language with Effective,	60.52%	92.10%	52.18%
Using Body Language good and proper;	55.92%	90.78%	62.33%

Based on the table below, it can be seen that there is an increase in the success of implementing the Quantum Teaching Model in Grade VII-2 Phase D Students of Assisi Catholic Private Middle School Medan, namely: Grow in cycle I 40% increased to 70% with an increase of 75%. Experience from 25% in cycle I increased to 50% with an increase of 100%, Name in cycle I 40% increased to 65% with an increase of 62.5%, Demonstration in cycle I 30% increased to 50% with an increase of 66.66%. Repeat in cycle I 35% increased to 50% with an increase of 42.85%. Celebrate in cycle I 35% increased to 65% with an increase of 85.71%.

Table 2. Improving the Implementation of the Quantum Teaching Model

ASPECT	**SCORE OBTAINED AVERAGE**		**IMPROVEMENT (From Cycle I-Cycle II)**
	CYCLE I	CYCLE II	
Grow	40%	70%	75%
Experience	25%	50%	100%
Name	40%	65%	62.5%
Demonstration	30%	50%	66.66%
Repeat	35%	50%	42.85%
Celebrate	35%	65%	85.71%

Based on the table above, it can be seen that there is an increase in Learning Outcomes in Phase D Students of Class VII-2 of SMP Swasta Rk Deli Murni Delitua, namely 1) Proficient in cycle I 18.42% increased to 86.84%% with an increase of 68.42%. 2) Proficient in cycle I 52.63% increased to 13.15% with an increase of -39.48. Eligible from 18.42% in cycle I increased to 0% with a decrease of -18.42 Starting to Develop in cycle I 10.52% increased to 0% with a decrease of -10.52.

Table 3. Score

ASPECT	AVERAGE SCORE OBTAINED-FLAT		IMPROVEMENT (From Cycle I-Cycle II)
	CYCLE I	CYCLE II	
Proficient	18.42%	86.84%	68.42%
Talk	52.63%	13.15%	-39.48
Worthy	18.42%	0%	-18.42
Starting to Grow	10.52%	0%	-10.52

DISCUSSION

The implementation of the Quantum Teaching learning model for Phase D Students of Class VII-2 at SMP Swasta Rk Deli Murni Delitua can be explained that the results of the study show that 1) Cultivate: The teacher succeeded in cultivating students' curiosity by providing stimuli in the form of challenging questions and triggering students' learning motivation. Providing this stimulus is in accordance with the findings of Oktavioni (2017) which states that providing the right stimulus can increase students' curiosity by up to 61% in the good category. 2) Experience: Direct experience gained by students through the use of learning media such as pictures, videos, and real objects has a very positive effect on enthusiasm and understanding of the material. This is reinforced by Nurfadhillah et al. (2021) who explained that learning media plays an important role in fostering interest and enriching students' learning experiences so that the material can be easily understood.

3) Naming: Teachers systematically name or label learning concepts to make it easier for students to understand and remember the material. This naming process is very important to help students organize information and link new concepts to existing knowledge, as explained by Supinawati and Sabri (2013). 4) Demonstration: Demonstrations conducted by teachers in the learning process can increase students' interest and understanding of the material. Demonstrations provide a real picture that can be followed by students so that the learning process becomes more effective. 5) Repeat: Periodic repetition of material through exercises and discussions has been shown to strengthen students' understanding and learning independence. This repetition allows students to internalize the material, making it easier to remember and apply knowledge.

6: Celebrate: Giving appreciation and recognition to students for their efforts and successes can create a positive learning atmosphere and motivate students to continue to participate actively. Wati's (2020) research revealed that a supportive and appreciative learning environment can significantly increase student participation and learning outcomes. The teacher (researcher) has succeeded in effectively guiding students in brainstorming questions or problems related to the learning topic. In this process, most students are actively involved by expressing their ideas and opinions. This indicates that the approach taken by the teacher (researcher) has encouraged active participation and student involvement in discussions. Thus, the teacher's (researcher's) efforts in guiding student brainstorming have created a supportive environment for collaboration and exchange of ideas in the learning process.

The results of the study showed a significant increase in the learning independence of Phase D students of Class VII-2 of RK Deli Murni Delitua Private Middle School after the implementation of a directed and interactive learning model. This development can be seen in various aspects of communication skills, both verbal and non-verbal. The ability to convey ideas verbally has increased, marked by students' confidence in articulating ideas clearly, coherently, and relevant to the learning material. This progress is influenced by the role of teachers in facilitating interactions and building a learning atmosphere that supports active student participation (Suprihatin, 2019).

In terms of word processing and message delivery, students become more active in discussions and show an increase in understanding of vocabulary and concepts. They are able to convey ideas appropriately in both oral and written contexts.(Fatah et al., 2021). Students show progress in strengthening arguments through concrete examples, reflecting increased understanding of the material and persuasive skills (Haryanto, 2019). In addition, intonation and volume skills also increased significantly. Public speaking practice and feedback from teachers help students convey messages clearly and convincingly (Juniarti, 2023).

Listening skills also improved, both in terms of focus on the speaker, concentration, and response to information. Students were better able to absorb information and show enthusiasm in discussions.(Fatah et al., 2021).They also develop in responding to speakers with an active and responsive attitude, as a result of increased interest in learning and understanding of the material (Umi, 2018). In addition, the ability to reflect on information and apply it in the context of learning also increases, indicating a meaningful learning process (Fatmawati, 2023). The use of polite and socially appropriate spoken language has increased. Students are more aware of the importance of inclusive communication and free from SARA elements, driven by consistent teacher guidance.

In terms of formal language, students begin to avoid using informal words and improve their understanding of academic communication norms (Wijaya, 2019). They also demonstrate a critical attitude in filtering information, by not directly conveying information that has not been verified (Warsono, 2019). The ability to answer questions increases with increasing self-confidence and understanding of the material, as well as active encouragement from teachers (Prasetya et al., 2018). Non-verbal communication aspects also develop, including the use of facial expressions, eye contact, body posture, and gestures to clarify messages (Maulia 2023).

CONCLUSIONS AND RECOMMENDATIONS

The implementation of the Quantum Teaching learning model in Phase D students of Class VII-2 of RK Delimurni Delitua Private Middle School has proven to be successful in increasing student independence and learning outcomes. This can be seen from the significant increase in various aspects of learning independence. Self-awareness and intrinsic learning motivation which in cycle I were 40.13% increased to 80.26% in cycle II, with an increase of 100%. The intonation and volume aspects increased from 50% to 78.50%, with an increase of 57%. Listening skills also showed a high increase, from 45.26% in cycle I to 85.78% in cycle II, which was 89.52%. The use of effective language increased from 60.52% to 92.10%, with an increase of 52.18%. Meanwhile, the use of good and appropriate body language increased from 55.92% to 90.78%, with an increase of 62.33%.

The implementation of the Quantum Teaching approach through the TANDUR stages (Grow, Experience, Name, Demonstration, Repeat, and Celebrate) also showed satisfactory results. In the Grow aspect, there was an increase from 40% to 70% or 75%, the Natural aspect increased from 25% to 50% or 100%, and the Name aspect increased from 40% to 65% or 62.5%. In the Demonstration stage, the percentage increased from 30% to 50% or 66.66%, Repeat from 35% to 50% or 42.85%, and Celebrate from 35% to 65% or 85.71%.

Student learning outcomes also experienced significant development. Students in the Proficient category increased from 18.42% in cycle I to 86.84% in cycle II, while the Proficient category decreased from 52.63% to 13.15%. Meanwhile, the Adequate and Beginning to Develop categories that previously appeared in cycle I with percentages of 18.42% and 10.52% respectively, were no longer found in cycle II. These findings indicate that the implementation of the Quantum Teaching model is able to encourage increased independence and student learning outcomes as a whole.

Based on the results of the study on Improving Student Independence and Learning Outcomes Using the Quantum Teaching Model at RK Delimurni Delitua Private Middle School, it is recommended that schools continue to support the implementation of the Quantum Teaching model in learning, especially in Catholic Religious Education subjects. This model has proven effective in encouraging active participation and student independence. Catholic Religious Education teachers are expected to be able to combine faith values with an active and communicative learning approach, and continue to develop

students' independent learning skills. Students are also encouraged to participate actively and create a collaborative learning atmosphere. For further researchers, it is recommended to develop this research at other levels, subjects, or aspects of learning in order to expand the benefits of the Quantum Teaching model in education.

FURTHER STUDY

This study provides an overview that the implementation of the Quantum Teaching Model can improve the independence and learning outcomes of Class VII-2 Phase D students at SMP Swasta RK Delimurni Delitua. However, this study is also not free from limitations. One of the limitations found is related to the management of learning time. The time available at each meeting is sometimes insufficient to carry out all stages of the Quantum Teaching Model optimally, so that the learning process, especially when students do independent learning activities, group discussions, and reflections, cannot run completely according to plan.

Based on these limitations, it is suggested that further researchers can be more careful and flexible in managing learning time, for example by increasing the duration of meetings or conducting additional meetings. Thus, the implementation of the Quantum Teaching Model can run more optimally, so that student independence and learning outcomes can be further improved according to the expected goals. In addition, further researchers are also advised to involve students and teachers more widely, so that the learning process is more meaningful, creative, and able to provide a broader and deeper impact.

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