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Enhancing Elementary Students' Problem-Solving Skills through Modelling Method Integrated with 4C and TPACK Approaches in Islamic Education

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Abstract : This research aims to improve the problem-solving ability of grade II students of SD Negeri Tlogodowo through the application of modelling methods combined with the 4C and TPACK approaches in Islamic Religious Education learning. This study uses the Classroom Action Research (PTK) method through a spiral cycle approach, which includes the planning stages, acting implementation, observing, and reflecting. Data collection techniques are carried out through observation, tests, and documentation. The research was carried out in three cycles which showed a consistent improvement in the learning process and outcomes of students. In Cycle I, the active participation of students is still low so that the results of the formative test have not reached the indicators of completeness. The results of the reflection are then used to improve learning in Cycle II through strengthening small group work, increasing teacher motivation, and improving contextual learning tools in ablution materials. The results showed an increase in the average score to 77 with a completeness of 79%, although some students were still passive. In Cycle III, a more systematic optimization of modelling methods was carried out on tayamum materials accompanied by strengthening learning motivation. The results of the study showed a significant increase, where students became more active, confident, and able to complete tasks well. The observation score reached the very good category with a score of 90, while the learning results obtained an average of 83.33 with 100% completeness. This research contributes to the development of modeling-based Islamic Religious Education learning strategies, 4Cs, and TPACK to improve the problem-solving skills of elementary school students.

Keywords : problem-solving skills, modelling method, 4C skills, TPACK

Abstrak **:** *Penelitian ini bertujuan untuk meningkatkan kemampuan pemecahan masalah peserta didik kelas II SD Negeri Tlogodowo melalui penerapan metode modelling yang dipadukan dengan pendekatan 4C dan TPACK dalam pembelajaran Pendidikan Agama Islam. Penelitian ini menggunakan metode Penelitian Tindakan Kelas (PTK) melalui pendekatan siklus yang bersifat spiral, yang meliputi tahap perencanaan*

(planning), pelaksanaan tindakan (acting), observasi (observing), dan refleksi (reflecting). Teknik pengumpulan data dilakukan melalui observasi, tes, dan dokumentasi. Penelitian dilaksanakan dalam tiga siklus yang menunjukkan adanya peningkatan konsisten pada proses dan hasil pembelajaran peserta didik. Pada Siklus I, partisipasi aktif peserta didik masih rendah sehingga hasil tes formatif belum mencapai indikator ketuntasan. Hasil refleksi kemudian digunakan untuk memperbaiki pembelajaran pada Siklus II melalui penguatan kerja kelompok kecil, peningkatan motivasi guru, dan penyempurnaan perangkat pembelajaran kontekstual pada materi wudhu. Hasilnya menunjukkan peningkatan nilai rata-rata menjadi 77 dengan ketuntasan 79%, meskipun sebagian peserta didik masih pasif. Pada Siklus III dilakukan optimalisasi metode modelling secara lebih sistematis pada materi tayamum disertai penguatan motivasi belajar. Hasil penelitian menunjukkan peningkatan signifikan, di mana peserta didik menjadi lebih aktif, percaya diri, dan mampu menyelesaikan tugas dengan baik. Nilai observasi mencapai kategori sangat baik dengan skor 90, sedangkan hasil belajar memperoleh rata-rata 83,33 dengan ketuntasan 100%. Penelitian ini berkontribusi dalam pengembangan strategi pembelajaran Pendidikan Agama Islam berbasis modelling, 4C, dan TPACK untuk meningkatkan kemampuan pemecahan masalah peserta didik sekolah dasar.

Kata kunci *: pemecahan masalah, metode pemodelan, keterampilan 4C, TPACK.*

INTRODUCTION

Islamic Religious Education (PAI) at the elementary school level has a very important role in shaping the character, attitudes, and habits of clean and healthy living in Abdullah & Amalia students (2025). One of the relevant materials in PAI learning is "Clean It Is Healthy", which not only emphasizes the cognitive aspect, but also behavioral habituation in daily life. This material is very strategic because it is directly related to the formation of religious awareness and environmental health from an early age. Hayat & Kamran (2024) In the context of basic education, students are still at the stage of concrete operational development, so they need a learning approach that is able to provide direct experience and real examples. However, in practice, PAI learning is often still dominated by abstract lecture methods, so that students are less active and less able to internalize the values taught. This has an impact on low learning outcomes, both in terms of knowledge and attitudes (Ainuri et al., 2026). Therefore, innovation is needed in the learning process that is able to connect the material with the real experience of students, so that learning becomes more meaningful, interesting, and easy to understand. Wells, Hestenes & Swackhamer (1995) one of the approaches that is considered relevant to overcome this problem is the modeling method, which emphasizes giving real examples through demonstrations or direct examples. Thus, learners not only hear explanations, but also see, imitate, and practice directly the expected behavior. This approach is expected to increase

student involvement in the learning process and significantly improve learning outcomes in PAI subjects, especially in the material "Clean It Healthy" in elementary schools.

In the learning process of Islamic Religious Education in elementary schools, one of the problems that is often found is the low learning outcomes of students in applicable materials such as "Clean Is Healthy" (Hasan et al., 2026). This low learning outcome is inseparable from the lack of variety of learning methods used by teachers, so that the learning process tends to be monotonous and lacks a meaningful learning experience (Damayanti et al., 2025). Students only receive information verbally without any concrete examples that they can observe and imitate directly. This condition causes students' understanding of the material to be less optimal, and does not have an impact on real behavioral changes in daily life. In addition, the lack of active involvement of students in the learning process is also a factor that weakens learning outcomes. In this context, a learning strategy is needed that not only emphasizes the cognitive aspect, but is also able to touch the affective and psychomotor aspects of students. Ahn & Vega (2020) the modeling method is one of the relevant alternatives to be applied, because this method emphasizes providing examples or examples that can be observed and imitated by students directly. With modeling, teachers can show clearly how to live a clean and healthy life in accordance with Islamic teachings, so that students can more easily understand and internalize these values. Rodriguez-Largacha, et al. (2015) In addition, this method is also able to increase students' learning motivation because they are actively involved in the learning process. Therefore, the application of the modeling method is expected to be a solution to improve student learning outcomes in the PAI subject of the "Clean It Healthy" material.

Previous research studies have shown that the use of modelling methods in learning has a significant influence on improving student learning outcomes. According to Bandura (1977) in social learning theory, learning through observation and model imitation is very effective in shaping individual behavior. Ihsan & Zaki (2018) also explained that a learning model based on demonstration and example is able to improve students' conceptual understanding and skills. Research by Huda, Suyitno & Wiyanto (2017) shows that modelling methods can increase students' motivation and learning activities in elementary school learning. Furthermore, Seel (2017) found that the application of modelling-based learning was able to significantly improve learning outcomes in the cognitive and psychomotor domains. Davis & Arend (2023) also emphasized that learning strategies that provide direct examples are more effective than lecture methods in increasing student engagement. In addition, research by Suyadi, et al. (2023) in the context of PAI learning shows that the modeling method can increase the internalization of Islamic character values in students. These findings show that modelling methods have a strong theoretical and empirical foundation in improving the quality of learning. However, there are still limitations in research that specifically examines the application of modeling methods to the "Clean It Healthy" material at the elementary school level, especially in the context of improving PAI learning outcomes in an integrated manner. Therefore, this research is important to fill this gap by examining more deeply the effectiveness of modelling methods in improving student learning outcomes in the material.

Based on this description, this research is focused on efforts to improve student learning outcomes through the application of the modeling method in the Islamic Religious Education subject of the material "Clean It Is Healthy" in elementary schools. According to Syarifah (2017), the modelling method was chosen because it is considered to be able to provide a more concrete, contextual, and in accordance with the developmental characteristics of elementary school-age students who are still at the stage of concrete operational thinking. Nasruddin (2026) through this method, teachers not only play the role of conveying material, but also as models who provide real examples of clean and healthy living behavior according to Islamic teachings. This research is expected to contribute to the development of PAI learning strategies that are more innovative, effective, and oriented towards improving student learning outcomes. In addition, this research is also expected to be able to provide an empirical picture of the effectiveness of the modeling method in improving students' understanding, attitudes, and skills towards the "Clean Is Healthy" material. The novelty of this study lies in the focus on the application of modelling methods in the context of PAI learning in elementary schools with materials that are very applicable and close to daily life. Thus, the results of this research are expected to be a reference for teachers, researchers, and education practitioners in developing more meaningful learning and having an impact on real changes in student behavior.

LITERATURE REVIEW

The learning outcomes of students in Islamic Religious Education (PAI) subjects in elementary school are important indicators that reflect the success of the learning process holistically, both from cognitive, affective, and psychomotor aspects. According to syarifin (2020), learning outcomes are not only understood as changes in knowledge, but also changes in attitudes and skills acquired through structured learning experiences. In the context of PAI, especially the "Clean It Is Healthy" material, learning not only emphasizes on understanding the concept of cleanliness theoretically, but also internalizing religious values related to cleanliness as part of faith (Wang et al., 2022). However, the reality in the field shows that students' learning outcomes still tend to be low, especially in the aspect of applying values in daily life. This is due to the learning process which is still dominated by lecture methods so that it does not provide direct experience to students. According to Meldayani, et al. (2025), the effectiveness of learning is greatly influenced by the active involvement of students in the learning process. Therefore, a learning approach is needed that is able to increase students' active participation and encourage behavior change. In this context, improving PAI learning outcomes in the material "Clean It Is Healthy" becomes very relevant to be studied through a more interactive and contextual approach at the elementary school level, so that students not only understand the concept, but also be able to practice it in daily life consistently.

The modelling method is one of the learning approaches based on the Social Learning Theory developed by Albert Bandura. According to Bandura (2021), individuals

learn not only through direct experience, but also through observation of the behavior of others, then imitating and internalizing them. In the context of PAI learning in elementary school, modelling methods are particularly relevant because students at that age tend to learn through concrete examples that they see firsthand. Teachers play the role of the main role models who show positive behavior, such as maintaining personal hygiene, the environment, and applying the value of "clean is healthy" according to Islamic teachings. This modelling process includes four main stages, namely attention, retention, reproduction, and motivation. Thus, learners not only receive information verbally, but also absorb grades through observation and hands-on practice. In Mulyasa's (2025) view, effective learning is learning that is able to provide real examples to students, so that there is a process of internalizing values in depth. Therefore, the modeling method has great potential to be used in PAI learning because it is in line with the characteristics of character education that emphasizes example (Aziz, 2026). In addition, this method can also increase student involvement in the learning process, so that it is expected to improve learning outcomes both in terms of knowledge and real behavioral changes in daily life in the school and home environment.

Various previous studies have shown that the application of modelling methods in learning has a positive impact on improving student learning outcomes. Research conducted by Nurjanah, Mubadilla & Wanodyo (2026) shows that the use of modelling methods in PAI learning in elementary schools is able to significantly increase students' understanding of religious values. Furthermore, research by Fauzi & Kamilah (2021) also found that modelling methods are effective in improving students' worship practice skills because they provide direct examples that are easy to imitate. In addition, research by Hasibuan (2025) confirms that exemplary-based learning can increase students' learning motivation in PAI subjects. Another study by Gao, et al. (2024) shows that students who learn by modelling method have higher levels of learning engagement compared to conventional methods. Meanwhile, research by Khodarahmi & Maihami (2023) revealed that the integration of modelling methods in thematic learning in elementary schools is able to improve overall learning outcomes, both cognitive and affective. Based on some of these studies, it can be concluded that the modelling method has a significant contribution in improving the quality of learning, especially in subjects related to character formation such as PAI. This is in line with the opinion of Kudela & Matousek (2022) who stated that observation-based learning and hands-on practice are more effective in forming deep understanding. Thus, the empirical study is an important basis in supporting the application of the modelling method in the material "Clean It Is Healthy".

Based on theoretical studies and previous research, it can be seen that there is still a gap between ideal PAI learning and practice in the field, especially in the material "Clean It Is Healthy" in elementary schools. Learning that is still conventional causes students to be less able to internalize the value of cleanliness as part of Islamic religious teachings (Suwanto, 2025). In fact, the concept of cleanliness in Islam has spiritual and social dimensions that are very important to shape the character of students. Therefore, learning innovations are needed that are able to connect cognitive aspects with real practice, one of

which is through modeling methods. This method not only emphasizes on knowledge transfer, but also provides a hands-on learning experience through real-life examples provided by teachers. According to McCourt (2022) in the perspective of constructivist theory, meaningful learning occurs when learners build their own knowledge through direct experience. Thus, the application of the modelling method to the "Clean It Healthy" material is expected to be able to significantly improve learning outcomes, both in terms of understanding concepts and forming clean and healthy living behaviors. In addition, Suwastini (2022) this method is also relevant to the purpose of character education proclaimed in the basic education curriculum in Indonesia. With this literature review, research on improving learning outcomes through modeling methods is important to be carried out in order to provide solutions to PAI learning problems that are still not effective in forming positive habits of students.

In addition, the implementation of the modelling method in Islamic Religious Education (PAI) learning in the material "Clean It Is Healthy" can also be analyzed from the perspective of modern pedagogy that emphasizes the importance of experiential learning. According to Kemhuy (2023), an effective learning process occurs through a cycle of concrete experience, reflection, conceptualization, and active experimentation. In this context, teachers who act as models not only show cleanliness behavior, but also invite students to reflect on the meaning of cleanliness in daily life, relate it to Islamic teachings, and then practice it directly in the school and home environment. This is in line with the view of Joyce, B., & Calhoun, E. (2024) that a good learning model is one that is able to provide a learning experience structure that allows students to observe, imitate, and practice repeatedly until it becomes a habit. At the elementary school level, the characteristics of students who are still in the concrete operational stage according to Pakpahan & Saragih (2022) make the modeling method very suitable because it is easier for children to understand something real than abstract. In addition, a supportive school environment is also an important factor in the successful implementation of this method, such as the existence of a clean culture, the availability of hygiene facilities, and the consistency of teachers in setting an example. This shows that the modelling method serves not only as a learning strategy, but also as an integrated character-building approach. Therefore, the application of this method in PAI learning is expected to be able to create sustainable behavioral changes in students, especially in accustoming clean living as part of Islamic values inherent in daily life consistently and meaningfully.

METHOD

This research is a Classroom Action Research (PTK) which is carried out with the aim of improving and improving the quality of the learning process and the learning outcomes of students directly in the classroom. PTK is carried out through a spiral cycle approach, which consists of the stages of planning, acting, observing, and reflecting (Siregar, 2025). The four stages are carried out repeatedly for at least two cycles until the expected

results are obtained. This research is focused on the application of modelling methods in the learning of Islamic Religious Education (PAI) material "Clean It Is Healthy" in grade II students of SD Negeri Tlogodowo. In its implementation, the researcher acts as an executor of the action as well as an observer of the learning process, while the classroom teacher acts as a collaborator. Friedlander & MacDougall (1992) The success indicators in this study are determined based on the improvement of student learning outcomes as shown through test scores and students' active involvement in the learning process. In addition, success is also measured through the achievement of the Minimum Completeness Criteria (KKM) that have been set by the school, so that this study not only assesses the cognitive aspect, but also the learning process as a whole.

This research was carried out at SD Negeri Tlogodowo, Wonosalam District, Demak Regency in the first semester of the 2024/2025 school year for five months, from July to November 2024. The subjects of the study were grade II students who participated in PAI learning with the number of students according to class conditions. The collaborator in this study is a grade II teacher, Mrs. Wahyuningsih, S.Pd.SD who assists in the process of observation, reflection, and validation of action data. The data used in this study consisted of quantitative and qualitative data. Marek & Methven (1991) quantitative data were obtained from the results of students' learning tests in each cycle, while qualitative data was obtained through observation of student and teacher activities during the learning process. Research data sources include students, teachers, and learning documents such as Teaching Modules, syllabus, and attendance lists. The instruments used include observation sheets for teacher and student activities, learning outcome test questions, and documentation sheets for learning activities (Kartowagiran et al., 2019). Thus, this study uses a data triangulation approach to ensure the validity of research results through various complementary sources and data collection techniques.

The data collection techniques in this study are carried out through observation, tests, and documentation which are carried out systematically in each learning cycle. According to Doerr & English (2006), observations were made to observe the activities of students and teachers during the application of the modeling method, especially related to student involvement, attention, and their ability to follow the examples given by the teacher. The test is carried out at the end of each cycle to measure the improvement of student learning outcomes after the learning process takes place, both in the form of written tests and formative evaluations. Meanwhile, documentation is used to complete research data in the form of Teaching Modules, lesson plans, photos of learning activities, and other administrative data that support the analysis process. According to Nassaji (2015), data analysis is carried out through two approaches, namely quantitative descriptive analysis for test results and qualitative descriptive analysis for observation results. Quantitative data was analyzed by calculating average grades, percentage of learning completeness, and comparisons between cycles, while qualitative data was analyzed through data reduction, data presentation, and conclusion drawn. With this procedure, it is hoped that this study can provide a comprehensive overview of the effectiveness of the modelling method in

improving student learning outcomes in PAI learning in a sustainable and measurable manner.

RESULT AND DISCUSSION

Results

In Cycle I, observation activities were carried out collaboratively by involving observers using observation sheets that had been prepared beforehand. The focus of observation is directed to the activities of teachers and students during the learning process. The results of the observation showed that the teacher had carried out learning in accordance with the steps in the Teaching Module, starting from the introductory, core, to closing activities. However, there are still some weaknesses, especially in the aspect of providing motivation to students and classroom management that is not optimal. From the student side, most are still passive, only a few students actively respond to the teacher's questions, while others tend to wait for direct directions. The results of the first cycle formative test also showed that the average score of students had not reached the completeness indicators that had been set in the research. This condition shows that the application of the modelling method in the early stages has not given maximum results. Therefore, an in-depth analysis was carried out that showed the need to improve learning strategies, especially in increasing student interaction and engagement. The reflection resulting from Cycle I is an important basis for revising Cycle II, especially in strengthening participatory-based learning activities and increasing the effectiveness of the methods used so that learning outcomes can be significantly improved.

The planning in Cycle II was prepared based on the results of reflection from Cycle I which showed that there was still low active participation of students in learning. Therefore, teachers revise the Teaching Module while maintaining the use of modeling and discussion methods, but with an emphasis on small group-based learning to improve interaction between students. The learning material is focused on the Procedure of Ablution with more detailed indicators, including understanding the conditions, harmony, sunnah, and things that cancel ablution. In addition, teachers also prepare more structured PTK observation instruments to measure learning effectiveness more accurately. The assessment is carried out using a written test for the knowledge aspect and performance for the skill aspect, so that learning outcomes can be measured comprehensively. In this planning, teachers also add more varied motivation strategies to increase students' courage in asking and answering. The 4C and TPACK approaches are still used as the basis for learning to support the development of 21st century skills. With this more careful planning, it is hoped that the learning process in Cycle II can run more effectively, interactively, and be able to improve student learning outcomes more optimally than the previous cycle.

The implementation of Cycle II was carried out on Saturday, September 28, 2024 in grade II of SD Negeri Tlogodowo with a total of 28 students. Learning is carried out for 35 minutes in accordance with the revised Teaching Module based on the results of Cycle I

reflection. In the core activity, teachers apply small group-based learning to improve interaction between students, where the modeling method is still used as a basis for providing concrete examples before students practice them. The 4C and TPACK approaches are also still in place to support active and collaborative learning. Teachers try to be more intensive in directing and motivating students to be more active in the learning process. At the end of learning, students are given a formative test to measure their level of understanding of the material that has been delivered. The results of the implementation show an increase in student involvement compared to Cycle I, although there are still some students who are not fully active in the learning process. This shows that the improvements made are starting to have a positive impact on the learning process.

The results of observations in Cycle II show an improvement in the quality of learning both from the aspects of teachers and students. Based on the observation sheet, teachers obtained a total score of 51 with a score of 85 which was included in the good category. Teachers are considered to be good enough in opening lessons, mastering the material, providing examples, and guiding students in the learning process. However, there are still several aspects that need to be improved, especially in terms of motivation and management of class interactions. From the student side, there is an increase in participation even though it is not even. Some students are already active in asking and answering, but others are still passive and tend to wait for instructions. The test results showed the highest score of 90, the lowest score of 65, with an average of 77 and a learning completeness of 79%. This data shows that there has been an increase compared to Cycle I, but has not reached the research success indicator of 80% classical completeness. Therefore, these results show that the actions in Cycle II have not been fully successful and still require further improvement. Reflection shows that learning strategies need to be strengthened, especially in increasing the active participation of all students, so that they are not only dominated by students.

The analysis of the results of Cycle II shows that the application of the modeling method has a positive impact on improving student learning outcomes, even though it has not reached the expected completeness target. The average observation results increased from 78 in Cycle I to 85 in Cycle II, indicating an improvement in the quality of the learning process. In addition, learning completeness also increased from 67% to 79.16%. However, this increase still does not meet the research success indicator, which is that at least 80% of students complete their studies. Some of the obstacles that are still found include the lack of courage of students to ask and answer questions, and the still dependence on active students only. Teachers also still need to improve motivational strategies so that all students can be actively involved in learning. Reflection shows that the method used is quite effective, but needs to be strengthened in terms of classroom management and learning interactions. Therefore, follow-up actions are needed in Cycle III with more innovative and intensive strategies to achieve optimal results according to the research targets.

Table 1. Observation Results of Cycle II

No	Observed Aspects	Score
1	Opening a lesson	4
2	Provide motivation	3
3	Application of modelling	4
4	The role of teachers	3
5	Material mastery	4
6	Teacher communication	4
7	Reciprocal communication	3
8	Guiding problem-solving	4
9	Answer questions	3
10	Assign tasks	3
11	Time management	3

**) Total score of 51 with a score of 85 (good category). This result shows an increase compared to Cycle I.*

The planning in Cycle III is prepared based on reflections from Cycle II which shows that there are still shortcomings in the active involvement of students. At this stage, teachers continue to use modelling and discussion methods, but with a focus on small-group-based learning that is more structured. The learning material is focused on Tayamum Procedures with indicators that include understanding the conditions, harmony, sunnah, and things that cancel tayamum. Teachers also updated learning instruments and observation sheets to measure learning effectiveness more accurately. Assessment is carried out through a written test for the knowledge aspect and a work performance for the skill aspect. In this planning, teachers pay special attention to increasing students' learning motivation so that they are more active and confident in the learning process. The 4C and TPACK approaches remain to be used as the basis for learning to support 21st century skills. With this more careful planning, Cycle III is expected to be a decisive cycle for the success of research in improving students' learning outcomes as a whole.

The implementation of Cycle III was carried out on Saturday, October 5, 2024 with a duration of four hours of lessons in grade II of SD Negeri Tlogodowo. Learning was carried out in a more intensive and structured manner than in the previous cycle. Teachers provide deeper insights and relate the material to the real experiences of students. In the core activity, teachers apply the modeling method more systematically by providing clear examples before students practice. Small group learning is also optimized to increase interaction and cooperation between students. The 4C and TPACK approaches are still used to support active, creative, and collaborative learning. At the end of learning, students are given a formative test to measure learning outcomes. The observation results showed a significant increase with a score of 90 which was included in the very good category. Students look more active, enthusiastic, and able to complete tasks well. The test results showed the highest score of 95, the lowest score of 75, and the average of 83.33 with

completeness reaching 100%. This shows that all students have achieved the success indicators set in the research.

Table 2. Cycle III Learning Outcomes

No	Name	MOH	Value
1–28	**Students**	**70**	**75–95**

**) Average score of 83.33 with 100% completeness. These results show the full success of the application of the modelling method.*

Overall, the results of the study showed a very significant increase from Cycle I to Cycle III. In Cycle I, students' learning outcomes are still low and have not met the success indicators. In Cycle II, there was an increase with completeness reaching 79%, although it has not reached the research target. However, in Cycle III, the results of the study showed full success with 100% completeness and an average score of 83.33. This shows that the application of modelling methods combined with the 4C and TPACK approaches is able to improve students' problem-solving skills and learning outcomes effectively. In addition, the increase is also seen in the activities of teachers and students who are increasingly active and interactive from cycle to cycle. Teachers are able to improve learning strategies based on the results of reflection in each cycle, so that the quality of learning continues to improve. Thus, this study proves that the application of classroom action research gradually and systematically can improve students' learning outcomes optimally and achieve previously set success indicators.

Discussion

The implementation of this classroom action research consists of three cycles that show a consistent improvement in the learning process and outcomes of grade II students of SD Negeri Tlogodowo through the application of modelling methods combined with the 4C and TPACK approaches. In Cycle I, learning still showed various obstacles, especially the low active participation of students, where only a small number of students were involved in discussions and learning responses, so that the results of the formative test had not reached the set indicators of completeness. Reflection in this cycle resulted in improvements in Cycle II by strengthening small group-based learning, increasing teacher motivation, and improving more contextual learning tools in ablution materials. The results showed an increase in the average score to 77 with 79% completeness, although it still did not reach the target of 80%, because some students were still passive and tended to depend on active students. In Cycle III, the planning was improved again by focusing on tayamum material, strengthening motivation, and optimizing modelling methods more systematically in small groups. The results of the implementation showed a significant improvement, where students became more active, confident, and able to complete tasks well. The observation results showed that the category was very good with a score of 90, while the learning results reached an average of 83.33 with 100% completeness, which means that all students have reached the KKM standard. Overall, this study proves that the application of modeling methods accompanied by continuous improvement through action cycles is able to significantly increase teacher activities, student involvement, and learning outcomes, so that the research goal of improving students' problem-solving abilities can be

achieved optimally and sustainably through a reflective process in classroom action research.

The findings of this study can be explained through several relevant learning theory perspectives, especially the social learning theory of Albert Bandura and the theory of Vygotsky's constructivism. According to Bandura (2021), the learning process occurs through observation, imitation, and imitation of models that are considered competent, so that the use of modeling methods in this study greatly affects the improvement of students' abilities. When teachers give hands-on examples, learners not only receive information verbally, but also observe behaviors, steps, and problem-solving strategies that they then imitate in practice. This is reinforced by Wass, Harland & Mercer (2011) who revealed Vygotsky's theory of the Zone of Proximal Development (ZPD) which explains that learners can achieve higher abilities when they get help from more skilled people through scaffolding. In the context of this research, teachers play the role of facilitators who provide gradual guidance so that students are able to understand the concepts of ablution and tayamum more concretely. In addition, the 4C and TPACK approaches strengthen social interaction and the use of technology as a learning medium that supports the construction of knowledge. The improvement in learning outcomes from cycle to cycle can also be understood as the result of a learning process that is increasingly structured, reflective, and adaptive to the needs of students, so that changes in learning behavior occur gradually and consistently.

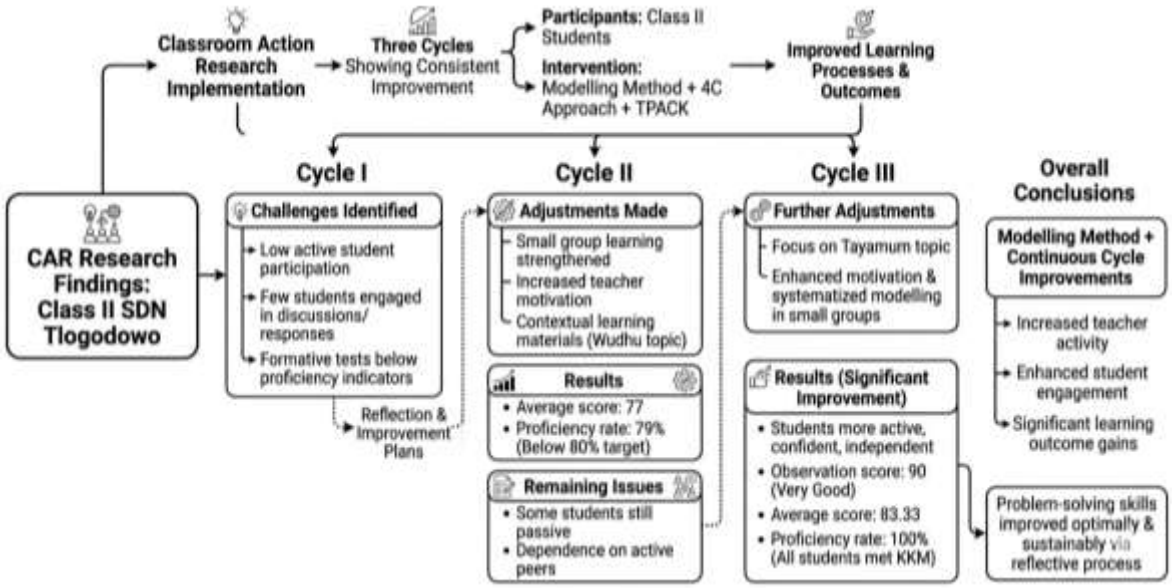

Figure 1: Analysis of research findings

Compared to several previous studies, the findings of this study have novelty in the integration of modelling methods with the 4C and TPACK approaches in the learning of Islamic Religious Education at the elementary school level. Research by Yang et al (2026). shows that modelling methods are effective in improving worship practice skills, but have

not integrated the 21st century approach comprehensively. Anggraeni's research (2023) emphasizes more on the use of problem-based learning without focusing on demonstrating the model directly from teachers. Meanwhile, Azizah's research (2024) uses a conventional approach in learning fiqh without technology integration. Irham's research (2024) shows an improvement in learning outcomes through the group discussion method, but has not emphasized the aspect of systematic model imitation. The research of Saputro, Asmara & Fiddarain (2025) examines the use of TPACK in digital learning, but does not combine it with modelling methods in worship materials. The novelty of this research lies in the synergy between hands-on demonstration, problem-based learning, small group work, and the integration of learning technologies that result in significant incremental improvements through the action cycle. This combination makes learning more contextual, interactive, and in line with the needs of 21st century students.

An important contribution of the findings of this study lies in strengthening learning models that are able to improve not only cognitive learning outcomes, but also process skills and attitudes of students in Islamic Religious Education learning. According to Gani (2024), the application of modelling methods combined with the 4C and TPACK approaches contributes to creating more active, collaborative, and meaningful learning. Practically, this study provides an alternative model for elementary school teachers in teaching fiqh material that has tended to be more theoretical and easy to understand. Theoretically, this study reinforces the concept that observation-based learning and hands-on practice are more effective in improving the understanding of abstract concepts in elementary school-age children. In addition, this study also shows that continuous reflection in classroom action research can be an important mechanism to systematically improve the quality of learning (Siregar, 2025). Thus, the contribution of this research is not only limited to improving learning outcomes, but also to the development of innovative learning strategies that can be replicated in other similar learning contexts, especially in basic education.

In the future, to support and develop the findings of this research, several strategic steps are needed that can strengthen the effectiveness of modeling-based learning. First, teachers need to continue to develop professional competence in designing creative and technology-based learning so that TPACK integration can run more optimally. Second, the development of digital-based interactive learning media is needed that can strengthen the observation and imitation process of students, such as learning videos or virtual simulations. Third, follow-up research needs to be conducted with a wider scope, both in terms of sample size and variety of learning materials, to test the consistency of the effectiveness of this method in different contexts. Fourth, collaboration between teachers, researchers, and curriculum developers needs to be improved so that this learning model can be implemented sustainably in various schools. In addition, it is also important to integrate more comprehensive authentic assessments to measure not only the final results, but also the overall learning process of students. With these steps, the findings of this research are not only academic results, but can also develop into a learning model that is sustainable, adaptive, and relevant to the development of 21st century education.

More deeply, the success of this research findings can also be understood as the result of the synergy between pedagogical, psychological, and contextual principles in learning in elementary schools that reinforce each other. From a pedagogical perspective, the application of the modelling method provides a clear learning structure for students because they not only hear the teacher's explanation, but also see firsthand how a concept is practiced, thereby accelerating the process of internalizing knowledge. From the point of view of educational psychology, especially Piaget's theory of cognitive development, elementary school-age students are at a concrete operational stage, so they are more likely to understand the concepts presented through real examples rather than abstract explanations. This explains why the increase in learning outcomes occurs significantly from cycle to cycle, as learning is increasingly concrete, directed, and based on direct experience. In addition, intrinsic motivational factors strengthened through the 4C approach also play a role in increasing student engagement, especially when learning is carried out in small groups that encourage social interaction. TPACK integration also makes an important contribution to creating more interesting and varied learning, thereby reducing learning saturation. Thus, the success of this research is not only due to a single factor, but is the result of a complex interaction between learning methods, student readiness, the role of teachers as facilitators, and learning designs that continue to be improved through reflective cycles. This combination results in a more active, meaningful, and student-centered learning environment, so that the goal of improving learning outcomes can be achieved optimally and sustainably in the context of dynamic and contextual basic education.

CONCLUSION

Overall, this classroom action research produced findings that not only showed a gradual improvement in learning outcomes, but also presented quite surprising facts regarding the effectiveness of modelling methods when combined with the 4C and TPACK approaches in Islamic Religious Education learning in grade II of SD Negeri Tlogodowo. The surprising finding can be seen in the significant spike in learning outcomes from Cycle II to Cycle III, where learning completeness which was previously still at 79% suddenly increased to 100%, showing that all students were able to achieve KKM standards after strengthening the learning strategy based on demonstrations, small groups, and intensive teacher motivation. This fact shows that it is not only the learning method that has an effect, but also the quality of teacher interaction and the intensity of scaffolding in the modelling process that are the main determinants of learning success. In addition, the increase in the activity of students who were initially passive in Cycle I changed drastically to be active, confident, and able to solve problems independently in Cycle III was also an important finding that was not fully predicted at the beginning of the study. This reinforces the assumption that observation-based learning and imitation, when supported by a collaborative and reflective learning environment, can result in very rapid and significant changes in learning behavior in elementary school students. Thus, this study concludes that

the integration of modelling, 4C, and TPACK methods is not only effective, but also able to create a learning transformation that is faster than initial expectations, thus making an important contribution to the development of innovative learning strategies at the elementary school level that are oriented towards improving overall and sustainable learning outcomes.

Although this classroom instrument research shows very positive results in improving student learning outcomes through the application of modeling methods combined with the 4C and TPACK approaches, this study still has some limitations that need to be considered. The main weakness lies in the scope of research which is still limited to one class with a small number of students, namely 28 students, so generalization of research results to a wider context still needs to be careful. In addition, the implementation of nstrume is still highly dependent on the ability of teachers as researchers in managing the classroom, so that the potential for subjectivity in observation and reflection is still possible even though collaborators have been involved. Time constraints are also an issue that affects the depth of exploration of students' abilities, because each cycle is only carried out in a short learning duration. In terms of instruments, although observation sheets and formative tests have been used, the measurement of affective aspects and social skills of students has not been explored in depth. Therefore, future research needs to expand the scope of the sample by involving more classes or schools so that the results are more nuanced and generalizable. Researchers are also advised to use mixed methods research designs in order to combine quantitative and qualitative data more comprehensively, especially in seeing changes in students' learning behavior. In addition, the use of learning technology that is more instrumental and more in-depth evaluation instruments for affective and psychomotor aspects also needs to be improved. Thus, future research can produce stronger, objective, and applicable findings in the development of innovative learning models in elementary schools.

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