

THE USE OF SCIENCE PUZZLE MEDIA TO IMPROVE COOPERATIVE SKILLS AND LEARNING OUTCOMES OF 11TH-GRADE STUDENTS IN CLASS D AT MAN 2 BONE IN THE AL-QUR'AN AND HADITH COURSE

Widia¹, Nurul Ishlah¹, Al Fikrah¹, Muh. Taufiqul Rahman¹

¹ Institut Agama Islam Negeri Bone, Indonesia

Corresponding Author: Widia (widia080805@gmail.com)

Keywords:

Science Puzzles,
Cooperative
Skills, Learning
Outcomes,
Classroom
Action-
Research, Al-
Qur'an and
Hadith

ABSTRACT

This study aims to improve students' cooperation skills and academic achievement by applying the Puzzle Ilmu media in the Al-Qur'an and Hadith subject for Class XI D at MAN 2 Bone. This study was conducted as Classroom Action Research (CAR) and spanned two cycles, each consisting of preparation, implementation, monitoring, and evaluation stages. The research participants were students in Class XI D at MAN 2 Bone, with a focus on the use of the "Puzzle Ilmu" media, cooperation skills, and student learning achievement. Data were collected through observation and end-of-cycle assessments, followed by qualitative and quantitative descriptive analysis. The results showed that the use of the "Puzzle Ilmu" media improved collaboration skills—such as active participation, interaction, responsibility, and teamwork—and also improved student learning outcomes from Cycle I to Cycle II, reaching a mastery level. Therefore, the "Puzzle Ilmu" media proved to be effective in developing collaboration skills and improving academic outcomes in the Al-Qur'an and Hadith subject.

Article History:

Received:
April 8, 2026

Accepted:
May 1, 2026

Published:
May 29, 2026

Author(s) retain copyright and grant the journal right of first publication with the work simultaneously licensed under a [Creative Commons Attribution-ShareAlike License \(CC BY-SA 4.0\)](https://creativecommons.org/licenses/by-sa/4.0/) that allows others to share the work with an acknowledgment of the work's authorship and initial publication in this journal.



INTRODUCTION

Education can be defined as a deliberate and systematic effort to create a learning environment and process that enable students to develop their potential actively. Through education, students are expected to master spiritual aspects, self-control, good morals, and essential skills for social life. Quality education focuses not only on academic achievement but also on character building,

social attitudes, and collaboration skills, as these elements are crucial for facing the challenges of the modern era (Aisyi et al., 2025).

Education plays a vital role in a nation's progress. Therefore, education must continue to improve in both quality and quantity. Education is a basic human need that must be met at all times. Without education, a community cannot develop in accordance with its ideals of progress, prosperity, and happiness, as shaped by its worldview. (Permadani et al., 2023) . In this context, Islamic religious education is a key element in shaping students' values and character development. Islamic religious education plays a vital role in shaping students' character, particularly through the values contained in the Qur'an and Hadith. (Zain et al., 2024) . According to (Arifin, 2012) The Qur'an and Hadith subject contributes to instilling character education values. Elements such as teaching materials, curriculum, learning media, pedagogical approaches, and assessment can be utilized by teachers to develop positive character traits in students through the Qur'an and Hadith learning process. (Yusriyah, 2023) .

However, in practice, Qur'an and Hadith instruction is often still teacher-dominated, causing some students to become passive or less active during learning activities. (MUKHAFIDOH et al., 2024) . A similar situation was also observed in Class XI D at MAN 2 Bone. From initial observations, several issues emerged in the learning process. First, students' ability to collaborate remains suboptimal. Some students struggle to work together effectively in group activities, are less participatory in discussions, and rarely offer input or ideas. This relates to the concept of cooperative skills. Cooperative skills refer to an individual's ability to collaborate with others in achieving common goals, as demonstrated through participating, communicating, supporting one another, and taking responsibility within a group. Furthermore, these skills not only reflect an individual's cognitive and social abilities but also illustrate how individuals can integrate their potential to make active, constructive contributions to group activities. (Harefa et al., 2022) .

Second, students' academic achievement has not yet met the established graduation standards. Many students are not yet able to deeply understand the meaning of the verses of the Qur'an and the content of the hadith, resulting in their pre-test and formative assessment scores falling below the Minimum Graduation Criteria (KKM). Learning outcomes are changes in students' abilities achieved through the learning process, which indicate the attainment of learning objectives and can be evaluated using various assessment methods, including written exams. (Friskilia & Winata, 2018) . Since learning outcomes reflect learning success, the students' low scores indicate that the learning process has not been optimal. This highlights the need to improve the quality of the learning process.

This issue must be addressed immediately by implementing learning strategies and materials that are more engaging, more challenging, and better at encouraging students to collaborate. One option is "Puzzle Ilmu," which consists of pieces of information—such as verses, word definitions, parts of meaning, or content points—that students must assemble in groups. The Puzzle medium is a simple, game-based learning tool that involves arranging pieces of letters, words, sentences,

or images to form a complete whole (PURBA,2025). This assembly activity creates an engaging, comfortable, and enjoyable learning environment, thereby encouraging students to be more active and involved in the learning process (Nurpratiwiningsih & Mumpuni, 2019). Therefore, puzzles serve as an effective teaching approach without neglecting the core of learning, as they encourage students to engage directly in thinking and problem-solving. This puzzle-assembling activity requires students to discuss, divide tasks, express opinions, and collaborate to achieve a common goal. In this study, the “knowledge puzzles” refer to a type of educational puzzle relevant to the subject matter of the Qur’an and Hadith, specifically the main topic of Religious Tolerance. Thus, knowledge puzzles are well-suited to enhancing collaboration skills while helping students gain a deeper understanding of the Qur’an and Hadith.

Several studies have shown that the use of interactive and collaborative media, such as puzzles, information cards, and educational games, can increase student participation, collaboration skills, and learning outcomes. Previous research by (Soleha et al., 2025) revealed that puzzles have a positive impact on improving student learning outcomes. Another study by (Kurnia & Yulianengsih, 2024) stated that during the learning process using puzzles, students become more active and do not feel bored because all students can answer each question more effectively. Based on the learning situation in Class XI D at MAN 2 Bone and the results of previous research, the researcher felt the need to innovate by implementing the “Puzzle Ilmu” medium to improve students’ collaborative skills and learning outcomes. This medium is believed to engage students, deepen their understanding of Qur’anic verses and hadiths, and create a more engaging learning environment. Therefore, the researcher subsequently developed a study titled: “The Application of the ‘Puzzle Ilmu’ Media to Improve Cooperative Skills and Learning Outcomes of Class XI D Students at MAN 2 Bone in the Qur’an and Hadith Subject.”

METHOD

This study aims to improve students’ cooperative skills and learning outcomes by using the “Puzzle Ilmu” media in the teaching of the Qur’an and Hadith in Class XI D at MAN 2 Bone. This study is a Classroom Action Research (CAR) conducted in two cycles, with each cycle comprising the planning, implementation, observation, and reflection stages. The research subjects consisted of students in Class XI D at MAN 2 Bone. In contrast, the research objects included the application of the “Puzzle Ilmu” media, students’ cooperative skills, and their learning outcomes. Data were collected through observations and learning outcome tests at the end of each cycle, then analyzed descriptively using both qualitative and quantitative approaches.

RESULTS AND DISCUSSION

RESULTS

Indicators of Cooperative Learning Skills in the Al-Qur’an and Hadith Subject

There are four indicators of cooperative learning skills addressed in this study, namely:

1. Active Participation

Active participation indicates students' physical and mental engagement in group activities, such as expressing opinions, asking questions, discussing, and contributing to task completion. This engagement can be enhanced through active learning and a clear division of roles. (Kasi, 2023) . Based on this dimension, the indicators are as follows:

- Students are actively involved in group activities.
- Students contribute ideas or perspectives during discussions.

Table 1. Observation Data on Students' Active Participation in Cycles I and II

Indicator	Cycle I				Cycle II			
	Number of Active Students		Number of Inactive Students		Number of Active Students		Number of Inactive Students	
Students actively participate in group activities.	22	85%	4	15%	24	100%	-	-
Students contribute ideas or perspectives during the discussion.	19	73%	7	27%	19	79%	5	21%

Based on Table 1, there was an increase in students' active participation from Cycle I to Cycle II across all indicators. For the indicator of active involvement in group activities, the number of active students increased from 22 students (85%) in Cycle I to 24 students (100%) in Cycle II. Meanwhile, students' ability to contribute ideas or perspectives during discussions also increased from 73% to 79%. Overall, these data indicate that the use of the Puzzle Ilmu media was effective in enhancing students' active participation in learning.

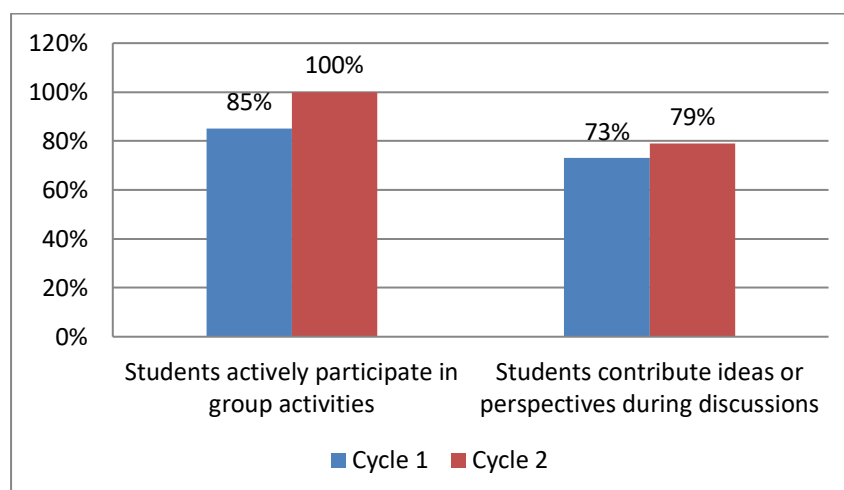


Figure 1. Comparison of Students' Active Participation in Cycles I and II

Graph 1 shows an increase in student active participation from Cycle I to Cycle II for both observed indicators. Student engagement in group activities increased from 85% in Cycle I to 100% in Cycle

II, while students' ability to contribute ideas or opinions during discussions increased from 73% to 79%. Overall, this graph indicates that the use of the Puzzle Ilmu learning tool positively increases student engagement in learning.

2. Responsibility

Responsibility in cooperative learning is reflected in students' willingness to carry out their respective roles within the group and to help one another achieve common goals. Each group member has tasks to carry out, thereby actively encouraging student engagement and cooperation. (Alwi et al., 2024) Based on the dimensions above, the indicators are as follows:

- Students carry out tasks in accordance with their roles within the group.
- Students assist peers who are experiencing difficulties.

Table 2. Observation Data on Student Responsibility in Cycles I and II

Indicator	Cycle I				Cycle II			
	Number of Active Students		Number of Inactive Students		Number of Active Students		Number of Inactive Students	
Students carry out tasks according to their roles in the group.	13	50%	13	50%	16	67%	8	33%
Students help classmates who are having trouble.	20	77%	6	23%	22	92%	2	8%

Based on the table of observation results regarding student responsibility in cycles I and II, an increase is evident in both indicators. For the indicator of performing tasks according to their roles, the percentage of active students increased from 50% in Cycle I to 67% in Cycle II. Meanwhile, the indicator of assisting peers experiencing difficulties also increased from 77% to 92%. These results indicate that the use of the Puzzle Ilmu medium is effective in enhancing student responsibility in group learning.

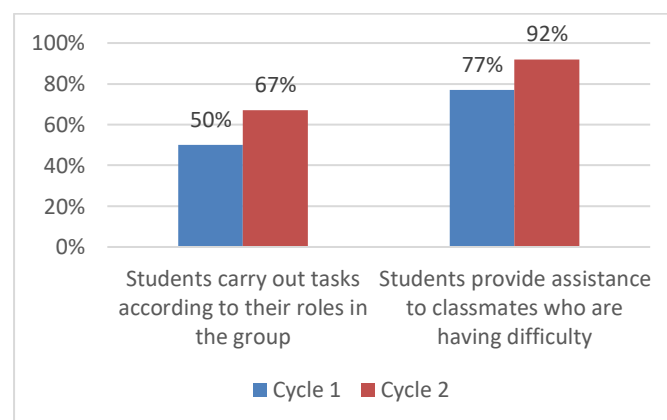


Figure 2. Comparison of Student Responsibility in Cycles I and II

The graph comparing student responsibility in Cycles I and II shows an increase in both indicators. The percentage of students who carried out tasks in line with their roles increased from 50% in Cycle I to 67% in Cycle II. Meanwhile, the indicator for assisting peers experiencing difficulties also increased significantly, from 77% to 92%. This increase confirms that the use of the Puzzle Ilmu media is effective in fostering a sense of responsibility, care, and cooperation among students in group learning.

Implementation of the “Puzzle Ilmu” Media to Improve Student Learning Outcomes

Instruction in Cycles I and II focused on determining the extent to which the use of the Puzzle Ilmu media could improve student learning outcomes. At the beginning of the intervention, most students still struggled to understand the material, so the class average score did not yet meet the mastery criteria. After refining the strategy using the “Puzzle Ilmu” learning tool, students appeared more enthusiastic and were more actively engaged in learning activities. They were able to solve problems with greater confidence. This resulted in a significant improvement in learning outcomes from Cycle I to Cycle II.

Table 3. Comparison of Student Learning Outcomes in Cycles I and II

	Cycle I	Cycle II
Class Average	56.9	97.1
Highest Value	80	100
Lowest Score	25	85
Students Who Met the Standard	7	24
Students Who Have Not Met the Standards	19	-

Student learning outcomes in Cycle I and Cycle II showed a very significant improvement. The average class score increased from 56.9 in Cycle I to 97.1 in Cycle II. In addition, the highest score increased from 80 to 100, while the lowest score rose from 25 to 85, indicating a more even distribution of student abilities. In terms of learning mastery, in Cycle I, only 7 students met the minimum passing score, whereas in Cycle II, all students (24 students) were deemed to have mastered the material. These findings confirm that the use of the Puzzle Ilmu media is effective in improving learning outcomes, equalizing ability levels, and ensuring overall student mastery of learning.

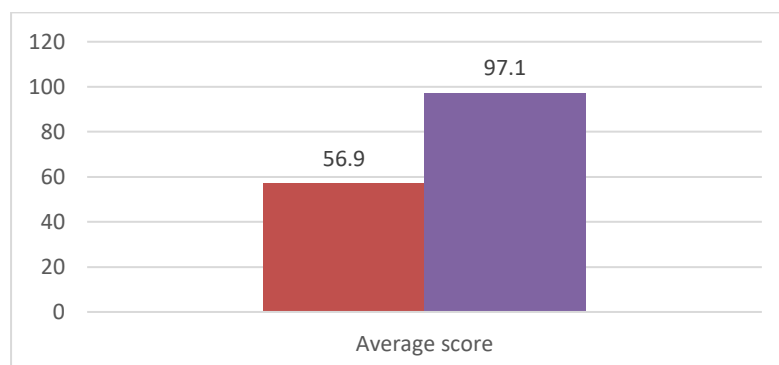


Figure 3. Comparison of Class Average Scores in Cycles I and II

The graph and analysis results show that the use of the “Puzzle Ilmu” learning medium positively impacts student learning outcomes. The class average score increased from 56.9 in Cycle I to 97.1 in Cycle II, indicating an improvement in the quality of learning. This suggests that students have a better understanding of the material, are more active in the learning process, and can complete tasks more independently.

DISCUSSION

The Use of the “Puzzle Ilmu” Media in Improving Students’ Cooperative Skills

Based on observations in Cycles I and II, the use of the Puzzle Ilmu media was shown to have a positive and significant impact on students’ cooperative skills. All observed indicators—active participation, the ability to express ideas, responsibility within the group, and a spirit of mutual assistance—showed consistent improvement from Cycle I to Cycle II. This indicates that learning with the “Puzzle Ilmu” media can create a collaborative learning environment that actively engages students in the learning process.

The findings of this study align with the views expressed at , which affirm that puzzle-based media is an effective strategy for fostering collaboration in learning by enhancing indicators of cooperation, such as contribution, responsibility, and punctuality. Similarly, (Kurnia & Yulianengsih, 2024) states that learning through puzzles makes students more active, focused, and less prone to boredom because all group members are encouraged to participate in completing tasks together. These findings are further supported by (Kusuma & Ananda, 2025) , which notes that puzzle-based learning naturally requires the active involvement of every group member, ensuring that no student can complete the task individually. This situation encourages students to share roles, help one another, respect their peers’ opinions, and complete tasks collectively. Consequently, indicators of cooperation—such as contribution, responsibility, and punctuality—show a significant improvement.

Furthermore, (Maharani & Avana, 2025) emphasizes that integrating collaborative methods with concrete learning materials not only improves academic outcomes but also fosters students’ social skills, such as communication, cooperation, and responsibility. This indicates that the use of Puzzle Ilmu is not only focused on cognitive learning outcomes but also on shaping students’ social attitudes. This view aligns with the perspective of “ , which states that puzzle games in group learning can foster a sense of togetherness, belonging, and mutual respect among group members. Through puzzle-solving activities, students learn to express ideas, listen to their peers’ opinions, and collaborate to solve problems, thereby allowing their cooperative skills to develop optimally.

The Application of the “Puzzle Ilmu” Medium in Improving Student Learning Outcomes

In addition to improving cooperative skills, the results of this study also show that the use of the “Puzzle Ilmu” media has a highly significant impact on improving student learning outcomes. The class average score, which was initially 56.9 in Cycle I, rose sharply to 97.1 in Cycle II. This improvement was also reflected in student mastery of the material; while only 7 students achieved

mastery in Cycle I, this increased to all 24 students (100%) in Cycle II. These results demonstrate that the implementation of appropriate instructional media can be a key factor in improving students' overall learning outcomes. This finding aligns with the “, which states that the use of instructional media tailored to students' characteristics can significantly enhance learning outcomes.

This improvement in learning outcomes indicates that the “Puzzle Ilmu” medium helps students understand the material more deeply. The process of assembling pieces of information in the form of a puzzle requires students to analyze, pay attention to details, and connect interrelated concepts. This activity fosters higher-order thinking, thereby strengthening students' understanding of the material and moving beyond mere rote memorization. This aligns with the findings in “, which demonstrates that the use of educational game-based media, such as puzzles, can develop critical thinking skills and help students connect one concept to another, thereby positively impacting learning outcomes.

In addition, learning through educational games such as Puzzle Ilmu makes the classroom atmosphere more enjoyable and less monotonous. A pleasant learning environment positively affects students' motivation to learn, ultimately leading to improved memory and learning outcomes. (Rahman, 2022) explains that motivation to learn is closely related to learning outcomes, as motivated students find it easier to absorb and understand the material. The findings of this study are also supported by previous research. A study conducted by (Sari et al., 2025) shows that using puzzle-based media in learning can significantly improve students' learning outcomes. Puzzle-based media are considered effective because they provide students with the opportunity to actively engage in the learning process, both cognitively and psychomotorically. This indicates that the results of this study are consistent with and relevant to the findings of previous research.

Similar results were also found in the study. (Soleha et al., 2025) , which concluded that puzzle-based media positively influence student learning outcomes. The interactive and challenging nature of puzzles stimulates students' active engagement and helps them understand the material more systematically. Through this active engagement, students do not merely passively receive information but also process and construct their own knowledge, as emphasized by (Agustin et al., 2021) regarding the importance of student activity in the learning process.

CONCLUSION

1. The implementation of the Puzzle Ilmu medium has proven effective in enhancing students' cooperative skills in the Al-Qur'an and Hadith subject. Improvements were observed in indicators such as active participation, the ability to express opinions, responsibility within the group, and a spirit of mutual assistance, indicating that puzzle-based learning is effective in fostering cooperation and social interaction among students.
2. The use of the “Puzzle Ilmu” media has not only been shown to improve students' cooperative skills but has also significantly improved their learning outcomes. This is evidenced by an

increase in the class average score, more equitable scores among students, and the achievement of class-wide learning mastery in Cycle II, indicating that the “Puzzle Ilmu” media is effective in enhancing students’ understanding of the Al-Qur’an and Hadith curriculum.

REFERENCES

- Agustin, S., Sumardi, S., & Hamdu, G. (2021). A Study on Student Engagement in Social Studies Learning Using Crossword Puzzles in Elementary School. *Pedadidaktika: Scientific Journal of Elementary School Teacher Education*, 8(1), 166–176.
- Aisyi, H. R., Mardiana, P., & Anjani, D. (2025). Analysis of Holistic Education from Intellectual, Emotional, Psychomotor, and Spiritual Perspectives. *An-Nidzam: Journal of Educational Management and Islamic Studies*, 12(1), 113–131.
- Alwi, A., Aziz, N. A., Azmira, R., Putri, R. J., & Lubis, M. R. (2024). Cooperative learning: enhancing students’ understanding, social skills, and motivation to learn. *Cognoscere: Journal of Educational Communication and Media*, 2(1), 1–6.
- Arifin, Z. (2012). Multicultural-religious education to foster a humanistic-religious character in students. *Journal of Islamic Education*, 1(1), 89–103.
- Friskilia, O., & Winata, H. (2018). Self-regulation as a determinant of learning outcomes for vocational high school students. *Journal of Office Management Education*, 3(1), 36–43.
- Harefa, D., Sarumaha, M., Fau, A., Telaumbanua, T., Hulu, F., Telambanua, K., Lase, I. P. S., Ndruru, M., & Ndraha, L. D. M. (2022). The use of the jigsaw cooperative learning model on students’ conceptual understanding. *Aksara: Journal of Nonformal Education*, 8(1), 325–332.
- Kasi, R. (2023). *Active learning: Encouraging student participation*.
- Kurnia, N. N., & Yulianengsih, N. L. (2024). The Use of Puzzle Media to Improve Student Learning Outcomes in Social Studies at Grade 5 of State Elementary School 2 Koreak. *JOURNAL KOULUTUS*, 7(1), 33–44.
- Kusuma, Y. Y., & Ananda, R. (2025). THE USE OF PUZZLE MEDIA TO IMPROVE STUDENTS’ COLLABORATIVE SKILLS IN “Pendas: Scientific Journal of Elementary Education, 10(3), 94–104.
- Maharani, A. H., & Avana, N. (2025). *The Effect of the Jigsaw Cooperative Learning Model Assisted by Puzzle Media on Students’ Mathematics Learning Outcomes in Elementary School*. 14(3), 3997–4008.
- Muallifatul, L., & Filasofa, K. (2025). *The Use of In-Group Puzzle Media for Fostering Cooperative Character in Children at RA Al-Hidayah, UIN Walisongo*. 10(1), 17–30.
- MUKHAFIDOH, N., Mu’amalah, H., & MAULIDIN, S. (2024). Implementation of the Talaqqi and Takrir Methods in the Qur’an and Hadith Subjects: A Study at MTs Tri Bakti Al Ikhlas Anak Tuha. *ACADEMIA: Journal of Academic Research Innovation*, 4(4), 161–168.
- Nurpratiwiningsih, L., & Mumpuni, A. (2019). The Effect of Puzzle Media on Learning Outcomes in Social Studies Instruction in Elementary Schools. *KONTEKSTUAL Scientific Journal*, 1(01), 1–6.
- Permadani, R., Kusuma, Y. Y., Zulfah, Z., Alim, M. L., & Hardi, V. A. (2023). The Use of Puzzle Media to Enhance Student Engagement at State Elementary School 192 in Pekanbaru. *MODELING: Journal of the PGMI Study Program*, 10(4), 325–335.
- PURBA, S., & BR, M. (2025). *THE EFFECT OF USING PUZZLE MEDIA ON STUDENT LEARNING OUTCOMES IN NATURAL SCIENCES FOR FOURTH-GRADE STUDENTS AT STATE ELEMENTARY*

SCHOOL 064023 KEMENANGAN TANI. QUALITY UNIVERSITY.

- Rahman, S. (2022). The importance of learning motivation in improving learning outcomes. *Proceedings of*.
- Sari, M., Mukmin, B. A., Setya, A., & Putra, G. (2025). *The Use of Puzzle Media to Improve Students' Understanding of the Concept of the Combined Area of Two-Dimensional Shapes in Grade 5*. 5(2), 562–572.
- Shabrina, A., Putri, R., & Khairi, A. (2025). The Importance of Selecting Appropriate Instructional Media to Improve Student Learning Outcomes. *Zaheen: Journal of Education, Religion, and Culture*, 1(2), 120–131.
- Soleha, A., Firdaus, M., & Arni, Y. (2025). THE EFFECT OF PUZZLE-BASED EDUCATION ON MATHEMATICS LEARNING INTEREST AMONG THIRD-GRADE STUDENTS AT STATE ELEMENTARY SCHOOL 36 IN PALEMBANG. *Pendas: Scientific Journal of Elementary Education*, 10(3), 613–626.
- Uno, H. B., & Mohamad, N. (2022). *Learning with the PAILKEM Approach: Active, Innovative, Environmental, Creative, Effective, and Engaging*. Bumi Aksara.
- Yusriyah, Y. (2023). TEACHING THE QUR'AN AND HADITH USING THE PROGRESSIVE MODEL AS A TOOL FOR INSTILLING THE CHARACTER VALUE OF TOLERANCE IN STUDENTS [LEARNING THE QUR'AN AND HADITH USING THE PROGRESSIVE MODEL AS AN INSTRUMENT FOR INSTILLING THE CHARACTER VALUE OF TOLERANCE IN STUDENTS]. *Acta Islamica Counsenesia: Counseling Research and Applications*, 3(2), 57–78.
- Zain, S. H. W., Wilis, E., & Sari, H. P. (2024). The Role of Islamic Education in Shaping Society's Character Based on the Values of the Qur'an and Hadith. *IHSAN: Journal of Islamic Education*, 2(4), 199–215.