



# The Influence of Spiritual Value-Based Chemistry Teaching Materials on Student's Learning Outcomes and Spiritual Attitudes with a Problem-Based Learning Model

## Cindi Roma Riana Harahap\*, Ayi Darmana

Departement Chemistry Education, Faculty of Mathematics and Natural Science, Universitas Negeri Medan, Jl. Willem Iskandar, Pasar V, Medan, Indonesia.

\*Corresponding e-mail: ayidarmana2013@gmail.com cindiroma54@gmail.com

## Received: Jan 4<sup>th</sup>, 2025 Accepted: Jan 17<sup>th</sup>, 2025 Online Published: April 25<sup>th</sup>, 2025

Abstract: The Influence of Spiritual Value-Based Chemistry Teaching Materials on Student's Learning Outcomes and Spiritual Attitudes with a **Problem-**Based Learning Model. This study aims to determine the influence of chemistry teaching materials based on spiritual values on students' learning outcomes and spiritual attitudes in the reaction rate topic using the Problem-Based Learning model. These teaching materials systematically integrate spiritual values to enhance students' understanding and attitudes. The research was conducted at SMA Negeri 14 Medan using a purposive sampling method involving two experimental classes, each consisting of 34 students. Experimental Class I used teaching materials based on spiritual values, while Experimental Class II used the standard chemistry textbook for grade XI. The research instruments included a learning outcome test comprising 20 questions to measure students' cognitive abilities and a non-test questionnaire with 15 items to assess students' spiritual attitudes. The research design employed pre-tests and post-tests for both groups. The results showed that: (1) students taught using teaching materials based on spiritual values achieved higher learning outcomes compared to students taught using the standard textbook; (2) there was a significant difference in students' spiritual attitudes before and after learning with teaching materials based on spiritual values; (3) there was a significant relationship between students' spiritual attitudes and learning outcomes, indicating a moderate correlation

**Keywords:** Spiritual value-based chemistry teaching materials, learning outcomes, spiritual attitudes, reaction rates.

Abstrak:Pengaruh Bahan Ajar Kimia Berbasis Nilai Spiritual terhadap Hasil Belajar dan Sikap Spiritual Siswa dengan Model Problem Based Learning. Penelitian ini bertujuan untuk mengetahui pengaruh bahan ajar kimia berbasis nilai spiritual terhadap hasil belajar dan sikap spiritual siswa pada materi laju reaksi dengan model Problem Based Learning. Bahan ajar ini mengintegrasikan nilai-nilai spiritual secara sistematis untuk meningkatkan pemahaman dan sikap siswa. Penelitian dilaksanakan di SMA Negeri 14 Medan dengan metode purposive sampling melibatkan dua kelas eksperimen, masing-masing terdiri dari 34 siswa. Kelas eksperimen I menggunakan bahan ajar berbasis nilai spiritual, sedangkan kelas eksperimen II menggunakan buku paket kimia kelas XI. Instrumen penelitian meliputi tes hasil belajar sebanyak 20 soal untuk mengukur kemampuan kognitif siswa, serta angket non-tes sebanyak 15 item untuk mengukur sikap spiritual siswa.Desain penelitian menggunakan pre-test dan post-test untuk kedua kelompok. Hasil penelitian menunjukkan bahwa: (1) siswa yang diajar menggunakan bahan ajar berbasis nilai spiritual memiliki hasil belajar lebih tinggi dibandingkan siswa yang diajar menggunakan buku paket; (2) terdapat perbedaan signifikan pada sikap spiritual siswa sebelum dan setelah pembelajaran menggunakan bahan ajar berbasis nilai spiritual; (3) terdapat Cindi Roma Riana Harahap et al., The Influence of Spiritual Value-Based ... 31

hubungan signifikan antara sikap spiritual dan hasil belajar siswa, dan menunjukkan korelasi cukup.

Kata kunci : Bahan ajar berbasis nilai spritual, hasil belajar, sikap spritual, laju reaksi

### • INTRODUCTION

Education is a conscious and planned effort to create a learning atmosphere and the learning process so that students actively develop their potential to have spiritual strength, self-control, personality, intelligence, noble character, and skills necessary for themselves and society. Furthermore, it is stated that national education functions to develop abilities and shape the character and civilization of a dignified nation in order to enlighten the life of the nation, with the aim of developing the potential of students to become human beings who are faithful and devoted to God Almighty, have noble character, are healthy, knowledgeable, skilled, creative, independent, and become democratic and responsible citizens (UUSPN Number 20 of 2003).

The curriculum can be defined as a set of steps or arrangements concerning the content, materials, and learning objectives, as well as the methods used as a reference for carrying out educational activities to achieve certain learning objectives. The Merdeka Belajar curriculum is a concept of curriculum that requires independence for both teachers and students. What is meant by independence is that each student and teacher is free to seek knowledge obtained from both formal and non-formal education. In this curriculum, there are no restrictions on learning concepts conducted outside or inside the school, and it also requires creativity from both students and teachers (Rindayati et al., 2022).

The spiritual aspect refers to activities that can address and resolve issues related to values and goals, specifically concerning human life and the surrounding environment as well as its relationship with God. It can be said that spiritual intelligence is a human capability that is developed through educational institutions, and this potential must be trained and developed within the framework of education, in accordance with the curriculum, teachers, and the environment. Spiritual intelligence is very important for students because they see that the challenges of today's era are becoming increasingly complex and cannot be overcome only with intellectual ability (IQ) or emotional intelligence (EQ). However, spiritual intelligence (SQ) is essential. Students who possess spiritual intelligence will generally have greater integrity and always obey God's commands. Thus, students with spiritual intelligence will find it easier to understand school lessons and behave well (Rantesalu, 2020). The delivery of spiritual values in chemistry learning can be done through the preparation of teaching materials that are arranged in such a way that spiritual values are integrated within them. According to Darmana et al. (2013), integrating spiritual values into chemistry materials will not reduce the scientific level of science itself, but is an appropriate effort because it can reunite the relationship between law and truth. Marsonet (2012) stated that integrating spiritual values into a chemistry learning concept can have a positive influence in instilling human values in each student, combining them with knowledge and technology, thus forming a positive attitude in students' daily lives.

Chemistry is one of the core subjects in Senior High School (SMA). The goal of chemistry education is to equip students with logical, systematic, analytical, critical, and creative thinking skills. According to Permendiknas No. 22 of 2006, chemistry is part of the science and technology subjects in SMA, aimed at enabling students to acquire

advanced competencies in science and technology while cultivating scientific thinking in a critical, creative, and independent manner. Essentially, chemistry lessons do not only emphasize theoretical knowledge but must also be accompanied by the ability to apply its concepts (Zakiah, 2017).

The rate of reaction is a complex subject that combines abstract knowledge, such as rate equations, reaction orders that require calculations, factors affecting reaction rates, and collision theory. However, in practical terms, these phenomena are commonly encountered in our daily lives, such as rusting of iron, paper combustion, explosions, and so on. Students often face difficulties in understanding chemistry material, as evidenced by the average scores in each class in the past year, which remain relatively low. Therefore, teachers need to choose effective learning models to be applied in the classroom. The proper selection of learning models will clarify the content being taught, ensuring that students remain enthusiastic about thinking and actively participate in learning (Syaribuddin et al., 2016).

There are many learning models that can be applied to chemistry teaching. One model that can be used for teaching reaction rates is the Problem-Based Learning (PBL) model. This model begins by presenting real-world problems for students to solve. Reaction rate material is closely related to everyday phenomena, such as fruit decomposition, rusting of iron, and many others. One advantage of the Problem-Based Learning (PBL) model is that it makes it easier for students to grasp the concepts they are learning in order to solve real-world problems. Therefore, the application of this model is expected to guide students more effectively during the learning process and improve their learning outcomes. One of the graduation competency standards (SKL) in chemistry is for students to have procedural and metacognitive knowledge in science, technology, arts, and culture, as well as human, national, state, and civilizational awareness related to the causes of phenomena and events (Siwa et al., 2013).

According to Zahrah et al. (2018), problem-based learning models have a positive impact on orientation goals, topic value, and self-efficacy, which are sub-dimensions of motivation toward chemistry. It also helps develop skills such as elaboration, critical thinking, and metacognitive self-regulation, time and work environment regulation, effort regulation, peer learning, and problem-solving. However, it does not affect organizational skills. Nonetheless, problem-based learning allows students to develop their skills in decision-making by linking their prior knowledge with new information while dealing with ambiguity, organizing concepts, and interpreting data to offer alternative solutions in specific problem situations. States that the effectiveness of this model lies in students becoming more active in thinking and understanding material in groups by conducting investigations and inquiries into real-world problems, leading to deep and meaningful learning experiences. By implementing the PBL model in chemistry education, it is hoped that students will be able to use and develop critical thinking skills to solve problems using various problem-solving strategies. Research on "The Implementation of Chemistry Teaching Materials Integrated with Spiritual Values Using the Problem-Based Learning (PBL) Collaborative-Oriented Model to Improve Student Learning Outcomes" shows that in this study, the integration of spiritual values was achieved by incorporating spiritual values into teaching materials aligned with the topic of Chemical Bonds. The results of the study indicate that there is a significant difference between the learning outcomes of students who used chemistry teaching materials integrated with spiritual values and those who were taught using traditional chemistry textbooks. This integration was found to foster the development of spiritual values in students. This was evidenced by the Sig value

obtained, which was smaller than 0.05, specifically 0.000, leading to the conclusion that the hypothesis was accepted. This means there is an impact of using chemistry teaching materials integrated with spiritual values on student learning outcomes through the Problem-Based Learning model on the topic of Chemical Bonds. The learning outcomes of students taught using chemistry materials integrated with spiritual values were higher than those taught using conventional textbooks on the topic of Chemical Bonds (Okmarisa et al., 2016).

Based on interviews conducted by the researcher with chemistry teachers at SMA Negeri 14 Medan, some students face difficulties in understanding the chemistry material on reaction rates. This is because the reaction rate material involves several complex concepts that may be difficult for students to grasp, requiring deeper skills in defining and formulating reaction rates, calculating reaction rates based on concentration data, determining reaction orders, and understanding factors that affect reaction rates. Moreover, the low learning outcomes are due to the use of teaching materials and learning models that are still ineffective, such as the lecture method, where the teacher plays an active role in the learning process, often referred to as teacher-centered learning. According to Wirabumi (2020), the lecture method has disadvantages, such as limited opportunities for discussion, problem-solving, and the development of courage to express opinions. The absorption of knowledge is less effective because it is one-directional, and it provides little room for students to develop their creativity.

Based on the explanation above, this study aims to determine the influence of teaching materials based on spiritual values on students' learning outcomes and spiritual attitudes.

## • METHOD

Jenis penelitian ini adalah penelitian quasy eksperimen. Penelitian ini dilaksanakan di SMAN 14 Medan semester ganjil tahun ajaran 2024/2025. Kuasi-eksperimen adalah jenis desain penelitian yang menyerupai eksperimen namun tidak melibatkan pengacakan (randomization) dalam penempatan peserta ke dalam kelompok eksperimen atau kontrol (Creswell, 2014). Penelitian ini terdiri dari dua validator yaitu seorang dosen kimia FMIPA UNIMED sebagai validator isi, dan siswa kelas XII MIPA 5 SMAN 14 Medan sebagai validator empirik. Penelitian ini menggunakan desain *Pretest-Posttest Control Group Design* dalam kerangka penelitian kuasi-eksperimen. Desain ini memungkinkan penilaian hasil belajar dan sikap spiritual kedua kelompok sebelum dan sesudah penerapan bahan ajar spiritual. Instrumen yang dogunakan dalam penelitian ini yaitu intrumen tes dan non tes. untuk mengukur hasil belajar berupa tes dengan 20 soal pilihan ganda. Untuk mengukur sikap spiritual siswa, digunakan angket yang terdiri dari 15 butir pertanyaan. Sebelum digunakan, soal-soal tes diuji coba terlebih dahulu pada siswa kelas XII IPA 5 untuk memastikan soal memenuhi kriteria seperti tingkat kesulitan, daya pembeda, validitas, efektivitas pengecoh, dan reliabilitas (Silitonga, 2014).

Setelah dilakukannya validasi, selanjutnya yaitu memberikan perlakuan terhada kelas eksperimen I dan kelas eksperimen II. Dimana pada kedua kelas diawali dengan pemberian Pre-test. Lalu pada kelas eksperimen I diberikan angket sikap spiritual dan pembelajaran menggunakan bahan ajar terintegrasi nilai spiritual lalu diberikan dengan angket sikap spiritual dan diakhiri dengan post-test. Sementara untuk kelas eksperimen II menggunakan buku paket kimia SMA kelas XI, dan diakhiri dengan post-test.Selanjutnya dilakukan analisis data hasil penelitian yaitu melalui uji normalitas, uji homogenitas serta uji hipotesis.

## • RESULT AND DISCUSSION

This study involves two instruments, namely a test instrument to measure student learning outcomes and a non-test instrument to measure students' spiritual attitudes. The test instrument consists of 40 questions that will first be validated. The test instrument was validated by a Chemistry lecturer from the University of Medan, and then validated on Class XII IPA 5 students of SMA N 14 Medan. Meanwhile, the non-test instrument, which is a spiritual attitude questionnaire consisting of 15 items, will be validated first by a Chemistry lecturer from University of Medan. The results are as follows:

## **Difficulty Level**

The analysis of the difficulty level of the questions was conducted to assess whether the questions used in the test were categorized as difficult, moderate, or easy. Based on the difficulty level test results for 40 questions, 11 questions were categorized as easy, 21 questions as moderate, and 8 questions as difficult.

## **Discriminatory Power of the Questions**

Discriminatory power refers to the ability of each question to differentiate between students with high ability and those with low ability. Based on the IBM SPSS Statistics 25 for Windows test results of the Corrected Item-Total Correlation, it was found that there were 19 questions with good discriminatory power, 19 with sufficient discriminatory power, and 2 with poor discriminatory power.

## Item Validity

Item validity refers to the accuracy and precision of a measuring instrument, ensuring that the instrument produces consistent results when used. An instrument is considered "valid" if it accurately and precisely measures what it is intended to measure. The item validity test was carried out using IBM SPSS Statistics 25 for Windows on the questions administered to the students in Class XII MIPA 5 at SMA N 14 Medan. For the item validity test criteria, a sig (2-tailed) value < 0.05 means the item is valid. The item validity test results showed that from 40 questions, 37 were valid, and 3 were invalid.

## **Distractor Test**

The distractor test, or "foils," refers to the incorrect answer choices provided in multiplechoice questions. A distractor is considered "functioning well" if it is attractive to test takers. Based on the distractor test data, it was found that from the 37 valid questions, 24 had good distractors, while 13 other questions required revision or were rejected.

# **Test Reliability**

Test reliability is used to determine the stability of the measurement instrument, ensuring consistent results when the instrument is used. The reliability test for this study was conducted using Cronbach's Alpha. If the Cronbach's Alpha value is > 0.60, the instrument is considered reliable. Based on the IBM SPSS Statistics 25 for Windows test results, a sig value of 0.875 was obtained, indicating that the 24 questions used in this study have high reliability, and the test instrument is deemed reliable.

Based on the prerequisite tests, the test instrument meets the requirements, and the test instrument used to collect data in this study consists of 20 questions, specifically questions 1, 2, 3, 5, 6, 8, 10, 13, 14, 15, 16, 17, 19, 20, 21, 29, 30, 33, 34, and 37.

## **Data Analysis of Research Results**

Normality testing was conducted to determine whether the pre-test and post-test data were normally distributed. The normality test was processed using IBM SPSS Statistics 25 for Windows. The normality test in this study used the Shapiro-Wilk test, with the criterion being that data is normally distributed if the significance value is > 0.05. Otherwise, the data is considered not normally distributed if the significance value is < 0.05.

Normality Test Table						
Class	Data	Sig (2-tailed)	Sig	Remarks		
Experiment I	Pre-Test	0.124	0.05	Data is normally distributed		
	Post-Test	0.133	0.05	Data is normally distributed		
Experiment II	Pre-Test	0.488	0.05	Data is normally distributed		
	Post-Test	0.094	0.05	Data is normally distributed		
Experiment I	Pre-Test	0.752	0.05	Data is normally distributed		
	Post-Test	0.256	0.05	Data is normally distributed		

The results of the normality test for student learning outcomes and spiritual attitudes using Shapiro-Wilk indicate values greater than 0.05 (significance level), such as the pretest for Experiment I with a sig value of 0.124 > 0.05, the post-test for Experiment I with a sig value of 0.133 > 0.05, the pre-test for Experiment II with a sig value of 0.094 > 0.05, and the pre-test spiritual attitude for Experiment I with a sig value of 0.752 > 0.05 and the post-test spiritual attitude for Experiment I with a value of 0.356.

This indicates that the pre-test and post-test data for both Experiment I and Experiment II, as well as the pre-test and post-test spiritual attitudes for Experiment I, are all normally distributed.

### **Homogeneity Test**

The homogeneity test was conducted to determine if the data obtained from the two groups had the same variance. This test was performed using IBM SPSS Statistics 25 for Windows, with the criterion that if the significance value > 0.05, the sample variances are homogeneous.

Homogeneity Test Data Table				
Class	Sig Value	Remarks		
Learning Outcomes Pre-test	0.203	Homogen		
Learning Outcomes Post-test	0.433	Homogen		
Spiritual Attitude (Pre and Post)	0.094	Homogen		

Based on the table above, the results of the homogeneity test for learning outcomes and spiritual attitudes in both the Experiment I and Experiment II classes show that the data have sig values greater than 0.05, indicating that the data are homogeneous.

## Hypothesis Test

The first hypothesis test, using the Independent Sample T-Test, was conducted to determine whether the learning outcomes of students taught with the spiritual valuesbased chemistry material were higher than or equal to the learning outcomes of students taught with the standard chemistry textbook for Class XI.

Table of Learning Outcomes					
Class	Mean	Std. Deviation			
Experiment I	81.91	6.096			
Experiment II	75.74	12.859			

Based on the results, the average post-test scores for Experiment I and Experiment II were:

From the table above, it is stated that the average learning outcome for Experiment I is 81.91, while for Experiment II, the average learning outcome is 75.74. Based on the hypothesis test conducted using IBM SPSS Statistics 25 for Windows, it was found that the learning outcomes of the students taught with the spiritual values-based reaction rate material were higher compared to those taught using the standard chemistry textbook. The significance value obtained was 0.003 < 0.05, which indicates that there is a significant difference in learning outcomes.

### Second Hypothesis Test

The second hypothesis test, using the Paired Sample T-Test, was conducted to determine whether there was a significant difference in the students' spiritual attitudes before and after the application of the spiritual values-based chemistry material on reaction rate.

Spiritual Attitude Table				
Class	Mean ± Std. Deviation	Sig		
Before	$67.64 \pm 8.07$	0.00		
After	$84.67\pm5.88$	0.00		

Based on the table above, the average spiritual attitude of students before and after applying the spiritual values-based reaction rate material is as follows:

Before the application of the material, the average spiritual attitude was  $67.64 \pm 8.07$ , while after the application, it was  $84.67 \pm 5.88$ . This shows an increase in the students' spiritual attitudes after being taught with the spiritual values-based reaction rate material. The hypothesis test, using IBM SPSS Statistics 25 for Windows, shows a significant improvement in spiritual attitudes, with a significance value of 0.00 < 0.05.

## **Third Hypothesis Test**

The third hypothesis test, using the Correlation Test, was conducted to determine if there was a significant relationship between students' spiritual attitudes and their learning outcomes.

<b>Correlation Table</b>				
	Spiritual Attitude	Learning Outcome		
Spiritual Attitude	Pearson Correlation 1			
	Sig. (2-tailed)			
	Ν	34		
Learning Outcome Pearson Correlation 0.435*				
	Sig. (2-tailed)	0.011		
	Ν	34		

From the table above, the correlation between students' spiritual attitudes and their learning outcomes is  $0.435^*$ , with a significance value of 0.011 < 0.05, indicating a significant relationship. The Pearson Correlation value of 0.435 falls within the interval range of 0.40 to 0.60, which indicates a moderate correlation between the two variables.

## • DISCUSSION

This research was conducted at SMA Negeri 14 Medan in classes XI-1 and XI-2, using different teaching materials. Class XI-1, as Experiment Group I, used a reaction rate teaching material based on spiritual values, while class XI-2, as Experiment Group II, used the standard chemistry textbook for grade XI SMA/MA. The teaching model used in both classes was Problem-Based Learning with the topic of reaction rates.

This research aimed to determine whether there is an influence of teaching materials based on spiritual values on students' learning outcomes, to assess the difference in students' spiritual attitudes before and after the application of the spiritual value-based teaching materials, and to analyze the relationship between students' spiritual attitudes and their learning outcomes in the topic of reaction rates.

The instruments used in this study included both test and non-test instruments. The test instruments were used for analysis, including question difficulty level, item discrimination, validity testing, distractors, and reliability testing. Initially, there were 40 questions, which were then tested on class XII IPA 5 students at SMA N 14 Medan. From these, 37 questions were deemed valid, and 20 questions were selected, representing each indicator and considering other instrument analyses such as difficulty, discrimination, and distractors.

As designed in the teaching module, the lesson started with a prayer and student attendance. Both classes were given a pre-test to assess their knowledge of reaction rates before teaching. The test consisted of 20 multiple-choice questions with five options, which had previously been analyzed for validity, reliability, difficulty level, question discrimination, and distractors. In the pre-test, the experimental group I had an average score of 42.79, while experimental group II had an average score of 41.02. These scores were relatively low, as the students had not previously studied reaction rates. However, after the intervention with the spiritual-based teaching material for experimental group I, the average score increased to 81.91, which falls into the high category. Meanwhile, the

average post-test score for experimental group II using the standard chemistry textbook was 75.73, which falls into the moderate category. For experimental group I, the average increase in the pre-test and post-test scores was 68.38%, as calculated using the N-Gain.

Based on normality and homogeneity tests, the data from students' learning outcomes were found to be normally and homogeneously distributed at a 95% significance level ( $\alpha = 0.05$ ), as the Si value was < 0.05. An Independent Sample T-Test was then performed to test the first hypothesis. The results of hypothesis testing using IBM SPSS Statistics for Windows showed that the spiritual value-based reaction rate teaching material significantly affected students' learning outcomes. Students taught using this material scored higher than those using the standard SMA chemistry textbook. The Sig. (2-tailed) value was 0.002, which is smaller than 0.05 (significance level). Thus, it can be concluded that the first hypothesis is accepted, meaning that spiritual value-based teaching material has an effect on students' learning outcomes.

From the explanation above, it can be interpreted that there is a difference in learning outcomes between students taught with spiritual value-based reaction rate materials and those taught with the standard SMA chemistry textbook. This difference is influenced by the teaching materials that contain spiritual values and positive principles, which help enhance students' spiritual intelligence, increase their faith, fear of God, foster positive attitudes towards others, and encourage reverence for God and the beauty of creation.

This is in line with Marsonet's (2012) statement that integrating religious values into chemistry learning, such as the concept of chemical bonding, is expected to positively impact the development of students' faith values and combine them with knowledge and technology, forming and fostering positive attitudes in daily life. The combination of science and religion is a suitable approach to understanding nature. This research indicates that spiritual values in learning can improve students' spiritual attitudes, fostering faith and devotion to God and making students more motivated to expand their knowledge. This aligns with Darmana's (2013) view that integrating spiritual aspects into chemistry/science will not reduce its scientific quality, but will complement and strengthen it, becoming a medium to achieve faith and devotion. Okmarisa et al. (2016) stated that the application of teaching materials integrated with spiritual values can enhance students' learning outcomes, as the religious elements in learning add a new dimension that generates positive energy for students. One way to cultivate students as faithful and devout individuals is by incorporating spiritual or religious values into the teaching material.

SMA Negeri 14 Medan has already integrated several spiritual values (religious activities), such as celebrating religious holidays, praying before classes, greeting teachers, and obligatory Zuhr prayers, among others. However, these spiritual values had not been integrated into each subject, especially in chemistry. The learning process still relied on the standard SMA chemistry textbook provided by the teacher.

In this study, spiritual values were embedded into the reaction rate teaching material. The results showed an increase in students' spiritual attitudes before and after using the spiritual value-based teaching material, as seen in the pre-test and post-test averages: the pre-test average was 66.64, and the post-test average was 84.67. This indicates an improvement of 54.05%. This improvement is due to the influence of the spiritual value-based reaction rate teaching material, which connects the science content with the spiritual values within it, encouraging students to enhance their devotion to God.

The Paired Sample Test using IBM SPSS Statistics 25 for Windows showed that if the Sig. (2-tailed) value is < 0.05, Ha is accepted; otherwise, Ho is accepted and Ha is rejected. In this study, the Sig. (2-tailed) value was 0.00, which means Ha is accepted. Therefore, it can be concluded that there is a significant difference in students' spiritual attitudes before and after the application of the spiritual value-based reaction rate teaching material.

This is consistent with Suraji & Sastrodiharjo (2021), who stated that integrating spiritual values into learning plays a significant role in strengthening students' character. Spiritual education helps individuals understand their purpose in life, formulate their life goals, and develop noble traits such as honesty, responsibility, and empathy. Thus, the spiritual values in the teaching material positively influence the development of students' character. Additionally, Aisyah's (2020) research shows an increase in students' spiritual attitudes before and after treatment based on self-assessment questionnaires, with a N-Gain of 26.78%.

Based on the hypothesis testing results using IBM SPSS Statistics for Windows, the Sig. (2-tailed) value was 0.011, which is less than the significance level (0.011 < 0.05), indicating that Ha is accepted and Ho is rejected. This means there is a significant relationship between spiritual attitudes and students' learning outcomes. The Pearson Correlation value of 0.435, falling within the range of 0.40 - 0.60, indicates a moderate relationship.

The results suggest that students with good spiritual attitudes tend to have better learning outcomes, while those with weaker spiritual attitudes tend to perform poorly. This is consistent with Zahara's (2017) research, which suggests that students' attitudes are indicators of their success in learning. Students' attitudes during the learning process can be positive or negative, and these attitudes directly influence their learning outcomes. Therefore, it can be concluded that good spiritual attitudes foster better learning outcomes. Furthermore, stated that religious knowledge can balance science, as unbalanced science may result in physical progress but lack spiritual growth. The combination of science and religion is the right approach to understanding the natural world.

#### • CONCLUSION

Based on the research results and data collected, it can be concluded that the learning outcomes of students taught with spiritual value-based teaching materials are higher compared to students taught using the XI grade chemistry textbook on reaction rates material, as evidenced by the average post-test score in experimental group I using spiritual value-based teaching materials of 81.91, while experimental group II using the XI grade chemistry textbook had an average score of 75.73. Additionally, there is a significant difference between students' spiritual attitudes before and after the application of spiritual value-based reaction rate teaching materials, where the average spiritual attitude before the application was 66.64, and after the application, the average spiritual attitude increased to 84.67. Lastly, a significant relationship was found between students' spiritual attitudes and their learning outcomes in reaction rate lessons, as indicated by a Sig. value of 0.011 < 0.05 and a Pearson correlation of 0.435, which falls within the moderate category.

### • **REFERENCES**

- Aisyah, S., Noviyanti, E., & Triyanto. (2020). Bahan ajar sebagai bagian dalam kajian problematika pembelajaran bahasa Indonesia. *Jurnal Salaka: Jurnal Bahasa, Sastra, dan Budaya Indonesia*, 2(1), 62–65.
- Arifin, Z. (2023). Integrasi nilai-nilai keislaman pada peserta didik melalui pembelajaran pendidikan agama Islam (PAI). Sekolah Tinggi Agama Islam Terpadu Yogyakarta. Diakses dari https://journal.staittd.ac.id/index.php/at/article/download/220/186/66
- Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). Sage Publications
- Darmana, A., Permanasari, A., Sauri, S., & Sunarya, Y. (2013). Pandangan Siswa terhadap Internalisasi Nilai Tauhid Melalui Materi Termokimia. *Semirata FMIPA Universitas Lampung, Vol.1*(No.1), Hal.37-44.
- Hadi. (2022). Peningkatan Nilai Spiritualitas Melalui Praktek Ziarah pada Makam Ulama. Jurnal Pendidikan Profesi Guru Agama Islam, 2(3), 393–404.
- Harahap, Aisah, and Ayi Darmana. 2020. "Pembelajaran PBL Menggunakan Bahan Ajar Terintegrasi Nilai Spiritual Untuk Meningkatkan Hasil Belajar Dan Sikap Spiritual." *Jurnal Inovasi Pembelajaran Kimia* 2(2): 64..
- Holt, C. L., Clark, E. M., & Klem, P. R. (2006). Spiritual health and well-being: Conceptualization and measurement. Journal of Psychology and Theology, 34(2), 202–213.
- Jumini, S., & Wahyudi. (2015). Konsep vektor dan nilai-nilai pendidikan spiritual di dalamnya. *Jurnal PPKM*, 1, 1–10.
- Marsonet, M., (2012), Science and Religion as Conceptual Schemes, Academicus, 5: 17-25
- Okmarisa, H., Darmana, A., & Suyanti, D. (2016). Implementasi Bahan Ajar Kimia Terintegrasi Nilai Spiritual Dengan Model Pembelajaran Problem Based Learning (PBL) Berorientasi Kolaboratif Untuk Meningkatkan Hasil Belajar Siswa. 8(2), 130–135.
- Rantesalu, S. B. (2020). Pemberlakuan Kurikulum Berbasis Nilai dan Karakter dalam Pembelajaran Pendidikan Agama Kristen Terhadap Kecerdasan Spiritual Siswa SMA Negeri Di Tana Toraja. *BIA': Jurnal Teologi Dan Pendidikan KristenKontekstual*, 3(2), 214–229.
- Rina, N. (2022). Peran kecerdasan spiritual dan model pembelajaran terhadap literasi lingkungan mahasiswa. Universitas Cokroaminoto Makassar. Diakses dari <u>https://ejournal.uncm.ac.id/index.php/gm/article/download/258/229/241</u>
- Rindayati, E., Putri, C. A. D., & Damariswara, R. (2022). Kesulitan Calon Pendidik dalam Mengembangkan Perangkat Pembelajaran pada Kurikulum Merdeka. *PTK: Jurnal Tindakan Kelas*, *3*(1), 18–27.
- Silitonga, P.M. 2014. Statistik Teori dan Aplikasi dalam Penelitian. Medan: FMIPAUNIMED
- Siwa, I. B., Muderawan, I. W., & Tika, I. N. (2013). Pengaruh Pembelajaran Berbasis Proyek dalam Pemebalajaran Kimia terhadap Keterampilan Proses Sains ditinjau dari Gaya Kognitif Siswa. *E-Journal Program Pascasarjana Universitas Pendidikan Ganesha*, 3(3), 1–13.
- Wirabumi, R. (2020). Metode Pembelajaran Ceramah. Annual Conference on Islamic Education and Thought, I(I), 105–113.

- Yunita, A. (2022). Integrasi nilai-nilai sikap spiritual dalam pembelajaran tematik. Universitas Islam Negeri Ar-Raniry
- Zahara, A., Harun, M. Y., & Abdi, A. W. (2017). Hubungan sikap spiritual dan sikap sosial dengan hasil belajar IPS Terpadu siswa kelas VIII di SMP Negeri 18 Kota Banda Aceh. Jurnal Ilmiah Mahasiswa Pendidikan Geografi Unsyiah, 2(1), 62–65.
- Zakiah, I. (2017). Mendorong Berpikir Kreatif Mahasiswa Dalam Pembelajaran Mata Kuliah Kajian Teks Kurikulum Kimia Sma. *Lantanida Journal*, 2(2), 137.