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Integration of Science and Religion: Analysis of Physics Teachers' Professional Competence in Strengthening the Islamic Character of Madrasah Aliyah Students in South Kalimantan

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Abstract

This study aimed to analyze the professional competence of physics teachers and its role in strengthening the Islamic character of Madrasah Aliyah (MA) students in South Kalimantan. The study employed a mixed-methods approach, with quantitative and qualitative data collected concurrently through questionnaires, interviews, and documentation involving 12 physics teachers and 357 students from 10 MAs. The quantitative findings indicated that both teachers' professional competence and students' Islamic character were categorized as high, with a very strong positive correlation between the two variables (r = 0.800). The qualitative findings further showed that teachers' professional competence was reflected in their ability to integrate Islamic values, such as fathanah and environmental stewardship, into physics instruction. Nevertheless, several challenges remained, including the limited availability of integrated teaching materials and the presence of teachers whose academic qualifications were not aligned with physics education. The study concluded that the professional competence of physics teachers plays an important role in strengthening students' Islamic character and can be further enhanced through the development of integrated science–Islam lesson plans and the incorporation of local wisdom into physics instruction.

INTRODUCTION

Madrasah are among the most important Islamic educational institutions in Indonesia. Their presence plays a significant role in developing future generations with strong Islamic and national values. One of the distinctive characteristics of madrasah education is the integration of general knowledge and religious knowledge (Nur et al., 2023). Madrasah Aliyah (MA) is a formal upper-secondary education institution in Indonesia administered by the Ministry of Religious Affairs and is equivalent to Sekolah Menengah Atas (SMA) (Darmadi, 2019). The progress of MA as an educational institution is measured not only by student enrollment but also by the quality of the competencies demonstrated by teachers and students (Aminullah et al., 2024; Nurfuadi, 2020). Such quality is reflected not only in academic achievement but also in students' attitudes, behavior, and character.

Madrasah Aliyah (MA) serves as an important setting for strengthening students' Islamic character because education involves not only the transfer of knowledge but also the transmission and internalization of values. Education provides an essential foundation for

shaping individual character and personality, particularly among younger generations who will assume leadership roles in the future (Putri & Hasmiani, 2024). When character development is grounded in religious values, students may develop stronger moral foundations that can contribute positively to society. The primary objective of Islamic character education is therefore to develop students' personalities so that they demonstrate ethical conduct, cultural awareness, and the ability to embody these values in everyday life.

Character education has become an important issue in Indonesian education, including Islamic education, particularly in relation to the moral development of younger generations (Susilo et al., 2022). Character education is expected to provide a foundation for addressing the challenges associated with Indonesia's social and civilizational development. Law No. 20 of 2003 concerning the National Education System, Article 3, states that national education functions to develop capabilities and shape the character and civilization of a dignified nation in order to educate the nation's citizens (Rusydi, 2021). However, Islamic schools may not always be fully effective in internalizing religious values among students. When deviations from religious norms occur, responsibility is often attributed primarily to religious education teachers. In fact, strengthening students' religious values and character is a shared responsibility of the entire school community, including physics teachers, because Islamic education does not separate disciplinary knowledge from ethical values. Important Islamic values related to character formation include akhlaq, adab, and exemplary conduct. Akhlaq refers to moral character and conduct, while adab concerns appropriate attitudes and behavior. Exemplary conduct reflects the personal qualities demonstrated by a good Muslim in accordance with the example of the Prophet Muhammad (Nurhayati et al., 2023).

Physics is a branch of science concerned with matter, energy, motion, interactions, and natural phenomena. In the context of MA education, the demands for both scientific competence and character development require physics teachers to demonstrate strong professional competence in teaching. Such competence includes mastery of subject matter, pedagogical content knowledge, and the ability to support students' intellectual and character development. Therefore, teachers function not only as educators and instructors but also as agents of social change who help shape students' attitudes, character, and behavior toward more responsible, dignified, and independent lives (Lubis et al., 2019).

Physics is a fundamental science that can help develop students' analytical, logical, and systematic thinking. Science may also provide a context for reflecting on religious beliefs, although religious claims themselves are not necessarily subject to scientific verification (Hartono et al., 2022; Mitrevski, 2019). From an Islamic perspective, the study of nature can be understood as part of the effort to comprehend God's creation; therefore, scientific inquiry and religious understanding need not be treated as contradictory. Muslims are encouraged to pursue both religious knowledge and scientific knowledge in order to achieve well-being in this world and the hereafter (Al-Hayali, 2024). Religious values can be integrated into subject matter to support the development of students' character. In Islamic secondary schools, the professional competence of physics teachers can therefore include the ability to design learning that connects physics concepts with Islamic values (Sunaryo, 2011). Through such integration, students may be encouraged to analyze natural phenomena critically and logically while relating them to the Quran. Understanding physical phenomena may also strengthen students'

awareness of the order and complexity of nature and deepen their appreciation of God as the Creator.

Physics is also an important scientific discipline because of its contribution to technological development. A strong understanding of physics can support technological innovation and greater scientific independence, enabling Muslim communities to address both material and social needs. Comprehensive physics education can also foster environmental awareness, as students learn to understand the physical processes occurring in their surroundings. Practical and collaborative learning activities can further strengthen cooperation, respect for others' opinions, tolerance, honesty, and responsibility. Therefore, physics instruction that integrates Islamic values and is delivered by professionally competent teachers is expected to contribute to strengthening the Islamic character of MA students in South Kalimantan, a region with rich natural resources and a strong Islamic cultural context.

Physics can be integrated with Islamic perspectives because the study of natural phenomena may support both scientific understanding and religious reflection. Such integration may encourage logical, critical, creative, and innovative thinking while also connecting scientific knowledge with ethical and spiritual values. Several considerations support this approach: the need to avoid spiritual disengagement in science education; the recognition that natural phenomena on Earth and in the universe can serve as objects of both scientific investigation and reflection on God's creation; the potential for scientific knowledge to be interpreted within a broader ethical and religious framework; and the possibility that an understanding of physics can assist students in interpreting Quranic verses related to natural phenomena. The integration of physics and Islam ultimately aims to deepen students' understanding of both qauliyah and kauniyah verses (Khoiri et al., 2017). Research conducted by (Sunhaji, 2016) and (Alhamuddin et al., 2022) indicates that such integration should not be understood as simply merging science and religious values, but rather as positioning them in ways that allow each to contribute to and complement the other.

To develop future generations with strong character, religious values need to be meaningfully internalized in the learning process. One approach is to integrate religious values into instructional materials and classroom activities (Ningrum et al., 2020). Nurhayati et al. (2023) found that religion can positively influence persistence in science and may contribute to students' academic and character development. Islamic character traits that can be strengthened through learning include tabligh (communicative responsibility), shiddiq (honesty), amanah (trustworthiness), fathanah (intelligence), tawakkal (reliance on God), gratitude, sincerity, responsibility, friendliness, environmental awareness, humility, appreciation of achievement, curiosity, love of knowledge, tolerance, and national spirit. Strengthening Islamic character can therefore be understood as a planned and systematic educational effort to help students recognize, internalize, and practice Islamic values in their daily lives.

The findings of this study may serve as a reference for teachers seeking to strengthen their professional competence in supporting Islamic character development among MA students. In addition, the study may provide relevant input for government policies related to teacher recruitment and professional standards in accordance with Law No. 14 of 2005 concerning Teachers and Lecturers, which emphasizes that professional teachers must possess the competence required to educate, teach, guide, direct, train, assess, and evaluate students in

accordance with established quality standards (Law 14-2005 Teachers and Lecturers, n.d.). Accordingly, examining the relationship between teachers' professional competence and students' Islamic character is important for improving the quality of education in madrasah.

Based on these considerations, this study examined the professional competence of physics teachers in Islamic secondary schools in South Kalimantan, the Islamic character traits that could be strengthened through physics instruction, and the role of physics teachers' professional competence in strengthening students' Islamic character. The urgency of this research is reflected in the dual expectations placed on madrasah education: producing graduates who are academically competent in science while also being firmly grounded in Islamic values. In an era characterized by rapid technological advancement and increasing moral challenges, understanding how physics teachers contribute to character formation is both timely and relevant. Therefore, this study aimed to determine the professional competence of physics teachers in strengthening the Islamic character of MA students in South Kalimantan.

METHOD

This study employed a mixed-methods approach that integrated quantitative and qualitative data to provide a more comprehensive understanding of the professional competence of physics teachers and its relationship with students' Islamic character (Creswell, 2014; Sugiyono, 2021). The research was conducted at MAN 1 Banjarmasin, MAN 2 Banjarmasin, MAN 3 Banjarmasin, MAN 1 Banjarbaru, MAN 3 Banjar Regency, MAN 4 Banjar Regency, MAN Tanah Laut, MAN 1 Hulu Sungai Utara, MAN 2 Hulu Sungai Utara, and MAN 3 Hulu Sungai Utara. The participants consisted of 12 physics teachers and 357 Madrasah Aliyah (MA) students. The independent variable was the professional competence of physics teachers, while the dependent variable was students' Islamic character.

Data were collected through questionnaires, interviews, and documentation of physics lesson plans. Physics teachers completed the professional competence questionnaire and provided the lesson plans used in their teaching, while students completed the Islamic character questionnaire. Quantitative data from the questionnaires were analyzed to identify patterns and test the study hypothesis, while qualitative data from interviews and lesson-plan documentation were used to support and interpret the quantitative findings. The integrated results were then used to draw the study conclusions.

RESULTS AND DISCUSSION

Professional Competence of Physics Teachers

The following is an overview of the respondent profiles for each classification in diagram form.

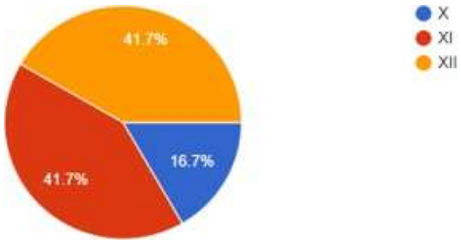


Figure 1. Diagram of the percentage of respondent profiles based on the class taught and their highest level of education

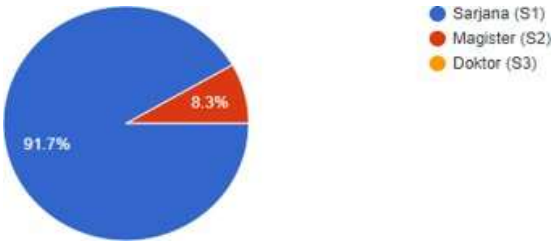


Figure 2. Diagram showing the percentage profile of respondents based on their highest level of education: Alumni

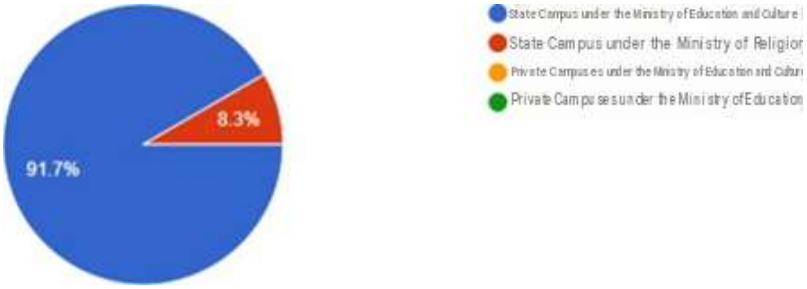


Figure 3. Diagram showing the percentage profile of respondents based on their academic background at the time of study

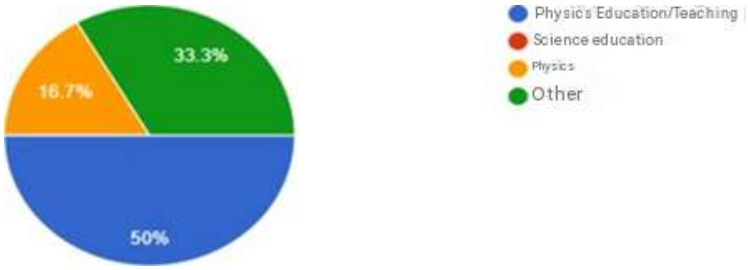


Figure 4. Percentage diagram of respondent profiles based on their major during college

These results conclude that most of the respondents who were physics teachers were graduates of universities under the Ministry of Education and Culture, and that not all physics teachers had a physics education background.

1. Analysis of Physics Teachers' Professional Competence

The variables of physics teachers' professional competence were analyzed descriptively and then analyzed using the Likert scale equation. The data obtained based on the analysis results were a highest score of 52 and a lowest score of 18. The average score was 39.8, the median was 46, the mode was 46, and the standard deviation was 11.4. The number of classes was determined using the equation K = 1 + 3.3 Log N, where N is the number of respondents, yielding 5 classes with a class length of 7, as shown in the following table.

Table 1. Frequency Distribution of the Variable of Physics Teachers' Professional Competence in Strengthening the Islamic Character of MA Students

No.	Interval	Frekuensi	Persentase (%)
1	18–24	3	20
2	25–31	2	13,3
3	32–38	0	0
4	39–45	2	13,3
5	46–52	8	53,3
Jumlah		**15**	**100**

Source: Primary data from field analysis

The frequency distribution of the data on the professional competence of physics teachers, presented in the table above, can be illustrated by the histogram below.

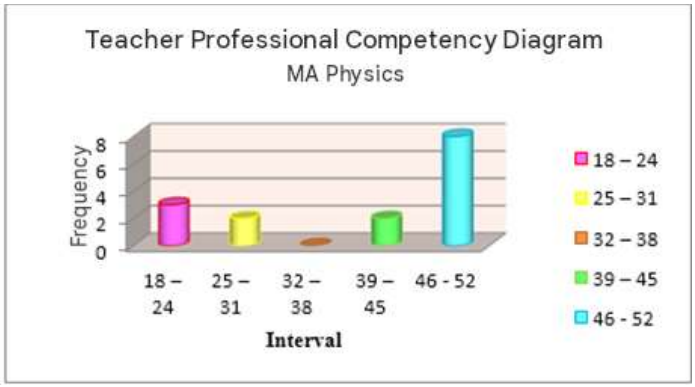


Figure 5. Diagram of the Professional Competence of Physics Teachers at MA

The identification of categories of tendencies or levels of professional competence of physics teachers in this study was based on four categories, as shown in Table 2. Based on normal references, the calculation of tendency categories is as follows.

Table 2. Distribution of Physics Teachers' Professional Competency Tendencies at MA

Kategori	Interval	Frekuensi	Persentase (%)
Sangat Tinggi	> 51,2	1	7
Tinggi	39,8–51,2	9	60
Rendah	28,4–39,8	2	13
Sangat Rendah	< 28,4	3	20
Jumlah		**15**	**100**

Source: Primary data from field analysis

The distribution of the tendency of the professional competency variable data presented in the table above can be illustrated in a pie chart as follows.

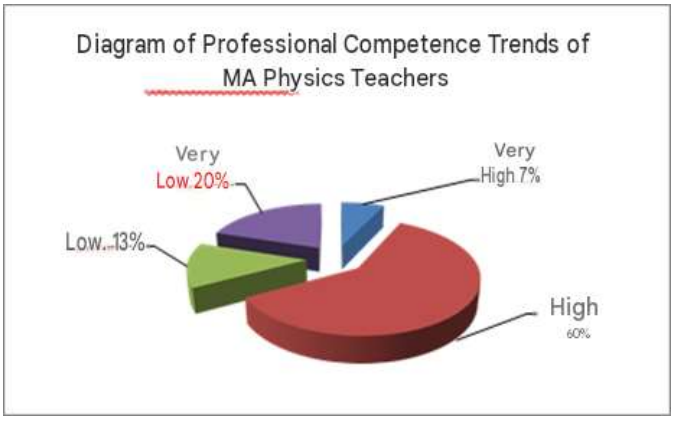


Figure 6. Diagram of the Professional Competence Tendencies of Physics Teachers at MA

The results above show that the professional competence of physics teachers in improving students' Islamic character is very high at 7%, with 60% of teachers having high professional competence, 13% having low professional competence, and 20% having very low professional competence. Based on the results described above, it can be concluded that the professional competence of MA physics teachers is relatively high.

2. Analysis of Physics Teachers' Professional Competence in Improving Students' Islamic Character

This variable was measured using a questionnaire distributed to MA physics teachers. Based on the data obtained from the questionnaire distributed to 12 respondents, the highest score was 52, the lowest score was 24, the average was 42, the median was 46, the mode was 46, and the standard deviation was 9.93. The number of classes was determined using the equation K = 1 + 3.3 Log N, where N is the number of respondents, yielding 5 classes with a class length of 6, as shown in the following table.

Table 3. Frequency Distribution of the Variable of Physics Teachers' Professional Competence in Strengthening Students' Islamic Character at MA

No.	Interval	Frekuensi	Persentase (%)
1	24–29	2	15,4
2	30–35	1	7,7
3	36–41	1	7,7
4	42–47	4	30,8
5	48–53	5	38,4
Jumlah		**13**	**100**

Source: Primary data from field analysis

The frequency distribution of the data on the professional competence of physics teachers in strengthening the Islamic character of MA students, as presented in the table above, can be illustrated in a histogram as follows.

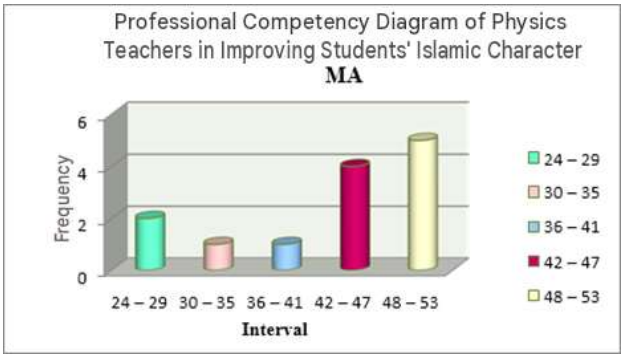


Figure 7. Histogram of Frequency Distribution of the Variable of Physics Teachers' Professional Competence in Strengthening the Islamic Character of MA Students

The identification of categories of tendencies or levels of professional competence of physics teachers in enhancing the Islamic character of MA students in this study is based on four categories, with provisions as shown in Table 4. Based on normal references, the calculation of tendency categories is as follows.

Table 4. Distribution of Physics Teachers' Professional Competence Tendencies in Strengthening MA Students' Islamic Character

Kategori	Interval	Frekuensi	Persentase (%)
Sangat Tinggi	> 51,93	1	8
Tinggi	42–51,93	8	61
Rendah	32,07–42	1	8
Sangat Rendah	< 32,07	3	23
Jumlah		**13**	**100**

Source: Primary data from field analysis

The results of the distribution of tendencies of the variable data on the professional competence of physics teachers in enhancing the Islamic character of MA students, presented in the table above, can be illustrated in the following pie chart.

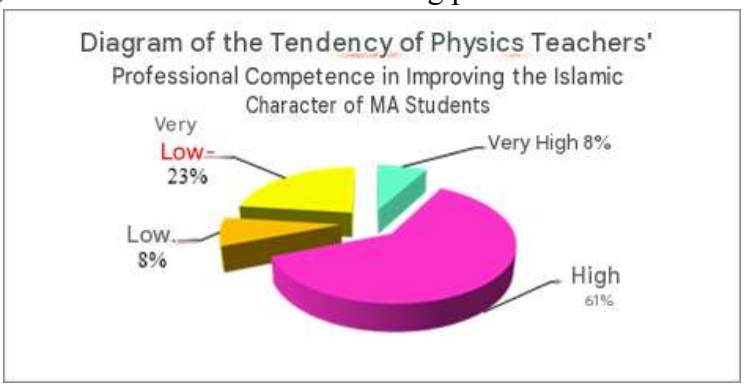


Figure 8. Diagram of the Professional Competence of Physics Teachers in Enhancing the Islamic Character of MA Students

The above results show that the professional competence of physics teachers in enhancing the Islamic character of students is very high at 8%, high at 61%, low at 8%, and very low at 23%. Based on the results described above, it can be concluded that the professional competence of physics teachers in enhancing the Islamic character of MA students is relatively high.

3. Analysis of Interview Results on the Professional Competence of Physics Teachers in Strengthening the Islamic Character of MA Students

The results of interviews with physics teachers regarding their professional competence in strengthening students' Islamic character show that the curriculum currently used in schools is the revised 2013 Curriculum. One of the learning objectives applied by teachers at Islamic high schools under the Ministry of Religious Affairs is to strengthen students' Islamic character, grounded in the Quran and the Sunnah of the Prophet. Respondents understood that students' Islamic character is a set of principles and foundations taught by divine revelation to regulate human behavior, including morals (referring to the morals of actions/behavior

exemplified by the Prophet).

The respondents understood that science and Islam are not two separate entities by linking physics learning to Islamic teachings to improve students' Islamic character and emulate the morals of the Prophet. However, there are also obstacles to integrating Islamic values into physics learning, including that physics teachers often have educational backgrounds outside physics but teach physics in the schools where they work.

MA Student Islamic Character Sheet

The following is an overview of the MA student respondent profile for each classification, presented as a diagram.

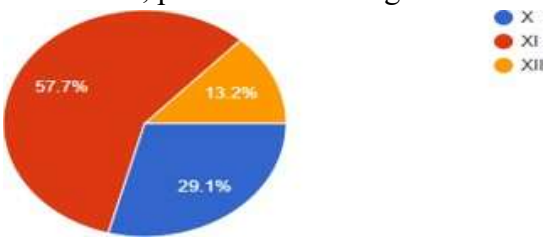


Figure 9. Percentage of Respondents from Public Madrasah Aliyah (MA) Schools in the Research Sample

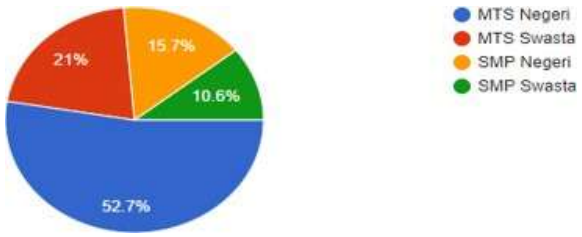


Figure 10. Percentage of junior high school origins of State Madrasah Aliyah (MA) students who were sampled in the study

Based on the analysis of the general profile of MA student respondents sampled in the study, most respondents were in grade XI and had a background in State MTS Junior High Schools.

1. Analysis of Islamic Character Sheets of MA Students

The variable of physics teachers' professional competence was analyzed descriptively and then analyzed using the Likert scale equation. The data obtained from the analysis results were: a maximum score of 1359, a minimum score of 1012, an average score of 1177.6, a median of 1179, a mode of 1190, and a standard deviation of 105.5. The number of classes was determined using the equation K = 1 + 3.3 Log N, where N is the number of respondents, yielding 9 classes with a class length of 39, as shown in the following table.

Table 5. Frequency Distribution of Islamic Character Variables of MA Students

No.	Kode Interval	Interval	Frekuensi	Persentase (%)
1	A	1012–1050	4	20
2	B	1051–1089	1	5
3	C	1090–1128	8	40
4	D	1129–1167	3	15
5	E	1168–1206	0	0
6	F	1207–1245	0	0
7	G	1246–1284	1	5
8	H	1285–1323	2	10
9	I	1324–1362	1	5
Jumlah			**20**	**100**

Source: Primary data from field analysis

The frequency distribution of the data for the professional competence variable of physics teachers, presented in the table above, can be illustrated by a histogram, as shown in the diagram below.

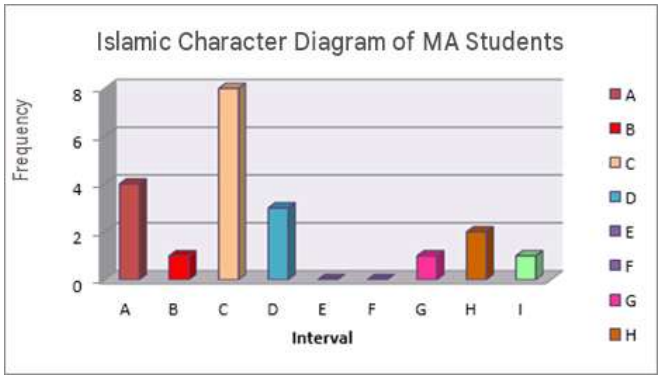


Figure 11. Diagram of the Islamic Character of MA Students

The identification of categories of Islamic character tendencies or levels among MA students in this study was based on four categories, as described in Table 6. Based on normal references, the calculation of their tendency categories is as follows.

Table 6. Distribution of Professional Competency Tendencies of MA Physics Teachers

Kategori	Interval	Frekuensi	Persentase (%)
Sangat Tinggi	> 1283,1	3	15
Tinggi	1177,6–1283,1	7	35
Rendah	1072,1–1177,6	6	30
Sangat Rendah	< 1072,1	4	20
Jumlah		**20**	**100**

Source: Primary data from field analysis

The distribution of Islamic character tendency data for MA students presented in the table above shows that the interval > 1283.1 has a frequency of 3, the interval 1177.6 – 1283.1 has a frequency of 7, the interval 1072.1 – 1177.6 has a frequency of 6, and the interval < 1072.1 has a frequency of 4. The tendency categories can be illustrated in a pie chart as follows.

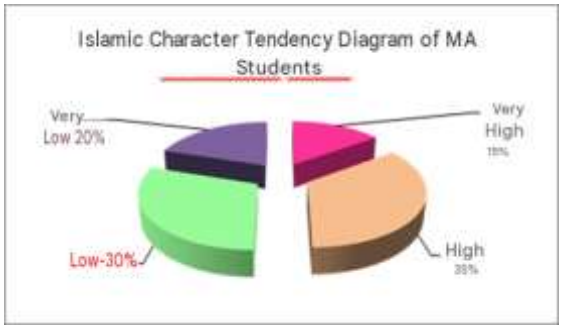


Figure 12. Diagram of Islamic Character Trends among MA Students

The above results show that MA students with very high Islamic character make up 15%, students with high Islamic character make up 35%, students with very low Islamic character make up 20%, and students with low Islamic character make up 30%. Based on the results described above, it can be concluded that the Islamic character of MA students is relatively high.

2. Analysis of Interview Results on the Islamic Character of MA Students

Analysis of the interview results regarding Islamic character among MA student respondents shows that they understand that physics is a science that studies the properties and phenomena of nature and the interactions that occur within it. Almost all respondents knew that physics learning is related to Islamic values, citing examples of the integration of material in physics with Islamic values, as well as the learning process related to Islamic values, so that students realize that by learning physics, they can strengthen their Islamic character. However, students also face obstacles in integrating physics with Islamic values, including a lack of physics textbooks that incorporate Islamic values.

Correlation between Physics Teachers' Professional Competence and Improving Islamic Character in Physics at Islamic Senior High Schools

The results of the correlation analysis between the professional competence of physics teachers in improving the Islamic character of students at State Madrasah Aliyah (MA) in South Kalimantan, using Spearman's correlation analysis with SPSS, are as follows. Correlation analysis is a statistical analysis technique used to find the relationship between two quantitative variables. The relationship between these two variables may be causal. Two variables are said to be correlated if a change in one variable is followed by a change in the other variable in a regular manner in the same direction (positive correlation) or in the opposite direction (negative correlation). The independent variable, MA physics teachers' professional competence, is positively correlated with the strengthening of Islamic character in MA students, the dependent variable. Based on the results of the data analysis, the correlation test of physics teachers' professional competence in improving the Islamic character of students in Table 7 showed a very strong correlation coefficient, with a category of 0.800 and a significance level of 80%. This positive relationship statistically indicates that the higher the teachers' professional competence, the stronger the Islamic character formed in Sugianto's students.

Table 7. Results of the Correlation Test of Physics Teachers' Professional Competence in Improving Students' Islamic Character

			Teachers' Professional Competence	Islamic Character of Students
Spearman's rho	Professional Competence Physics Teachers	Correlation Coefficient	1.000	.800
		Sig. (2-tailed)	.	.200
		N	4	4
	Islamic Character of Students	Correlation Coefficient	.800	1.00
		Sig. (2-tailed)	.200	.
		N	4	4

Education is dynamic, shaped by the realities of the field and by rapid societal development and change. An educated society, believed to be an agent of change, is the output of the education system. As agents of change, they are expected to create a society with a high level of intellectual development and noble character. However, in reality, there has been a significant decline in the quality of human life in Indonesia ( ), not in science and technology, but in Islamic character. In fact, humans were created by Allah as caliphs because they have many gifts that other creatures do not have, which makes them special and leads them to glory and happiness. The privilege that Allah has given to humans is reason. With reason, humans can control their feelings and will, and fantasize, thereby forming a strong character within themselves to control what they face. The concept of character education has existed since the time of the Prophet Muhammad SAW. This is evident from Allah's command to the Prophet to perfect the morals of His people (Shobirin, 2018). Knowledge without faith is fragile, faith without knowledge is blind. Therefore, the balance between knowledge and faith must be a complete unity. This is the gateway to integrating knowledge and religious values today.

(Warni, 2021) in his research stated that there is a significant majority in favor of integration between religious values and science. Physics is a natural science (science) whose subject matter is related to Islamic religious values. Learning physics can open students' eyes to the fact that what they learn in physics is actually based on the Quran, on the religious knowledge they believe in and study. Therefore, their gratitude and Islamic character can be strengthened in physics learning. Of course, it is not easy to deliver physics material that integrates religious values if a teacher's competence is inadequate.

This is what concerns researchers, so in this study, they want to see how the professional competence of a physics teacher, especially one who teaches at a school under the Ministry of Religious Affairs, can improve the Islamic character of their students. Through several State Madrasah Aliyah (MA) schools in South Kalimantan that were selected as research samples, namely MAN 1 Banjarmasin, MAN 2 Banjarmasin, MAN 3 Banjarmasin, MAN 1 Banjarbaru, MAN 3 Banjar Regency, MAN 4 Banjar Regency, MAN Tanah Laut, MAN 1 Hulu Sungai Utara, MAN 2 Hulu Sungai Utara, and MAN 3 Hulu Sungai Utara, the researchers collected data on the professional competence of physics teachers.

Based on the results of the study, the professional competence of physics teachers in senior high schools was high. This result is supported by research conducted by Juandi et al. (2016), which found that, based on the analysis, the professionalism of physics teachers increased in each learning cycle. The improvement in learning tools demonstrates this before the discussion plan, learning process, and learning evaluation were carried out (Juandi &

Sapiruddin, 2016). The physics teacher respondents sampled in this study were able to develop their students' intellectual abilities and Islamic character through integrated learning planning. The respondents were able to develop physics learning programs, had extensive knowledge and understanding of Islamic character, and integrated physics learning with Islamic values to strengthen students' Islamic character. Teachers who apply character values in the learning process can improve students' learning achievement. This result is also reinforced by Law No. 14 of 2005 concerning Teachers and Lecturers, which states that professional competence is "the ability to master subject matter broadly and deeply." The quality of a teacher's profession is referred to as professionalism or a tendency toward certain attitudes, actions, and commitment in carrying out their profession (Wulandari & Mundilarto, 2016). Teacher professionalism can be seen from their academic qualifications and teaching experience. If a teacher's academic qualifications meet existing requirements and standards, then they will have the appropriate competencies needed to manage learning in schools (Warni, 2021). Good and professional teachers align their functions and objectives with schools' educational goals, which are in line with society's needs and the demands of the times (Mulyasa, 2009).

Students' high Islamic character scores also support teachers' high professional competence. So far, 18 characters are targeted as indicators of success in character education, including one that reflects religious or Islamic character. Islamic character education in schools can be achieved by instilling Islamic values in students (Permatasari & Sukartono, 2022). In addition, it is necessary to instill habits in students. Habituation is an effective way that can directly or indirectly shape students' character, helping them accustom themselves to behaving in accordance with religious teachings (Ningrum et al., 2020). Character is disposition, nature, or temperament. According to Zubaedi, character is the soul, heart, nature, personal behavior, and morals (Zubaedi, 2011). Character, which is personality, is formed from the internalization of various types of goodness that are believed and used as the basis for perspectives, thinking, attitudes, and actions in life. In Islam, character is synonymous with the morals or traits embedded in the soul that encourage one to act without thought or consideration. This is the basis for why Islamic character in a person must be strengthened, so that a person, in this case a student, has good morals, namely a personality based on Islamic values sourced from the Quran and Hadith (Yuliharti, 2019).

Islamic character traits that can be strengthened in learning include tabligh (conveying), shiddiq (honesty), amanah (trustworthiness), and fathanah (intelligence), tawakkal, gratitude, sincerity, responsibility, friendliness, environmental awareness, humility, respect, achievement, curiosity, love of knowledge, tolerance, and national spirit. Therefore, strengthening Islamic character is a planned and systematic effort in learning to make students recognize, care about, and internalize Islamic values. Character is very important in life because the quality of a person's life is largely determined by their character, which reflects the characteristics of a Muslim as seen in their actions and words. The key to a Muslim's success lies in their character and morals (Darwis et al., 2022). Strengthening Islamic character enables students to develop habits that help them feel and do good in their daily lives. To overcome the constraints of limited integrated textbooks, teachers are required to demonstrate their professional competence through Lesson Plans (RPP) that specifically include an Islam-Science integration matrix. As an operational example, in the sub-material on the Solar System or Thermodynamics, teachers can relate the physical processes of the universe to verses of

Kauniyah such as Q.S. Al-Anbiya: 30. Through this approach, learning is not merely a transfer of physics formulas, but serves as a means of incubation to foster the character of tafakkur (critical thinking about Allah's creation), care for the environment, and strengthen gratitude (Purwanto, 2015). This kind of empirical learning experience will directly train students to apply the characteristics of fathanah and amanah.

The ability of physics teachers in South Kalimantan to deliver teaching materials and manage learning makes it easier for students to understand physics lessons that are integrated with Islamic values. This is consistent with Khoiri's research, which found that South Kalimantan is known for its high level of religiosity. The large number of Islamic high schools scattered throughout South Kalimantan can serve as a platform for improving students' character, as education aims to instill good, noble, appropriate, and beautiful values for life (Khoiri et al., 2017). The uniqueness of the research location in South Kalimantan provides significant added value to character-building efforts. Strengthening Islamic character through science in this region actually synergizes strongly with the local wisdom of the Banjar people, especially the fundamental philosophy of 'Baiman, Bauntung, Batuah' (faithful, fortunate, and useful). When MA physics teachers contextualize natural physical phenomena in light of tauhid, students are not only encouraged to be intellectually intelligent (fathanah) to become batuah (beneficial to the community through technology), but also to strengthen their foundation of faith (baiman) (Daud, 1997). The integration of local philosophy into science literacy makes the process of internalizing religious values more relevant and deeply rooted in the cultural identity of madrasah students.

Physics is a branch of science that is difficult for most students to understand if taught by an incompetent teacher. Teachers with professional competence have the basic ability to master teaching materials, manage learning programs, manage classrooms, master learning media and resources, master educational foundations, manage teaching and learning interactions, assess student achievement, understand the function of guidance, understand and carry out school administration, and understand the principles and interpret research results in the field of physics for educational and teaching purposes.

Teachers' professional competence in strengthening Islamic character is also supported by correlation test results, which yield a very strong correlation coefficient. The professionalism of an MA teacher can help students become intellectuals with Islamic character, in accordance with the objectives of Indonesian education, namely to organize a national education system that strengthens faith and piety, as well as noble character, to educate the nation and advance civilization.

The pattern of strengthening Islamic character in physics learning is as follows.

Table 8. Pattern of Strengthening Islamic Character in Physics Learning

	Pattern	Description
1	Starting from the role of physics teachers who have professional competence	Physics teachers who have professional competence can certainly be categorized as educators with character. As educators, teachers impart knowledge, skills, and experience to students. From an Islamic perspective, teachers as educators occupy a very important position in the process of education, learning, and the formation of Islamic character in their students. Teachers are responsible for the development of their students. The cognitive, affective, and psychomotor potential of students must be taken into account so that the goal of strengthening Islamic character in students can be achieved as expected. Strengthening Islamic character in students is a fundamental factor in learning. Therefore, teachers who have good character can be role models for their students. Professional teachers with Islamic character will produce students with Islamic character.
2	Physics learning integrated with Islam	Strengthening Islamic character cannot be separated from the educational process, because the essence of education is to instill and strengthen the Islamic character of students. Physics is one of the subjects in natural sciences used to develop students' knowledge, understanding, and analytical skills regarding the natural environment and their surroundings. The integration of physics and Islam in learning will certainly broaden students' horizons, showing them that the exact sciences they are learning are in fact related to Islam. This integration creates a perfect balance in personality because it combines faith, morals, knowledge, and deeds. Without these elements, education would be meaningless. The integration of physics and Islam in learning educates students to be civilized. Without integration, students will only be skilled, whereas with integration, students will have strong faith, noble morals, broad knowledge, and many good deeds. In strengthening Islamic character in student learning: a. Mastering knowledge b. Developing knowledge c. Emphasizing moral values in the mastery and development of knowledge d. Mastering and developing knowledge is solely for the sake of serving Allah and the greater good. e. Adjusting the material and methods learning to strengthen character f. Developing personality g. Emphasizing righteous deeds and responsibility Integrated learning is directly linked to Islamic values and teachings that govern all aspects of life or are based on Islam, thereby strengthening the Islamic character of the students' identity.

Based on the above description, students' Islamic character can be influenced by physics teachers' professional competence. The learning process carried out by teachers can shape students' character if the learning experience is designed with clear stages in terms of mechanism and content, develops a strong character, and consistently develops students' potential. Character education needs to be realized through the learning process by providing several exercises as learning experiences, whose learning materials are designed to develop students' noble character.

CONCLUSION

Based on the findings, the professional competence of physics teachers in Madrasah Aliyah (MA) across South Kalimantan was generally categorized as high and was closely associated with the high level of students' Islamic character. Quantitative analysis revealed a very strong positive correlation between the two variables (r = 0.800). The qualitative findings supported this relationship by showing that teachers integrated kauniyah verses and Islamic values into physics instruction, which contributed to strengthening students' fathanah, amanah, and environmental awareness.

However, efforts to optimize character development still faced several challenges, including the limited availability of physics literature and textbooks that explicitly integrate Islamic values, as well as mismatches between some teachers' academic qualifications and the subjects they taught. As an implication of these findings, weaknesses in teachers' pedagogical content knowledge (PCK) should be addressed through targeted professional development and stronger support from the Subject Teacher Working Group (Musyawarah Guru Mata Pelajaran [MGMP]). In addition, the development of lesson plans (Rencana Pelaksanaan Pembelajaran [RPP]) and physics modules that incorporate the religious and cultural values of the Banjar community, such as the philosophy of baiman, bauntung, batuah, is recommended. Overall, the professional competence of physics teachers in madrasah plays an important role not only in facilitating knowledge acquisition but also in supporting the internalization of Islamic values and the development of scientifically literate students with strong character.

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