ANALYZING ATTITUDES TOWARDS SCIENCE AND RELIGION BETWEEN NATIONAL AND ISLAMIC SCHOOLS IN INDONESIA: A CASE STUDY

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Abstract: Given that Muslims make up the majority in Indonesia, students' perspectives on science are influenced by their religious beliefs. This research aims to analyze the differences in attitudes toward science and religion between national and Islamic schools. This study employed a survey method to look at the views of students in national and Islamic schools. Two groups comprise the 420 Indonesian secondary school students that comprise the research sample: 212 students from national schools and 208 from the renowned "Pesantren" Islamic school in Kota Bandung, West Jawa. The result of this study shows factors with significant differences in general aspects between national school with 3.5 and islamic school with 3.8. The aspect that show significant differences are competitiveness, critical thinking, religiosity, trust in scientists, interest in doing science, extrinsic motivation for science, general value of science, awareness of environmental issues, science self-concept, science removing the need for God, compatibility between science and religion, and perceptions of science lessons. Factors with no significant differences include attitudes toward theistic faith, creationism, the public value of science, and scientism. Additionally, there are some strengths and weaknesses between the national school and Islamic school, such as the time of the science lessons, lab equipment, internet access, etc. It could be concluded that national school and islamic school has strengths and weaknesses that related with science and religion.

Keywords: Science and religion, Student perspective, Islamic school, National School

INTRODUCTION

The Muslims in Indonesia are the majority. They are 86.7% of the total population. Schools in Indonesia have more than 50,000 Islamic orientations and use traditional educational conceptual tools (Tan, 2014). The education system in Indonesia is provided under the Ministry of Education and Culture, also called the

Ministry of Religion. Even though there are different management, the science curriculum in Indonesia is the same. Therefore, the differences are that the Islamic school has objectives in terms of moral character, society, etc. (Munastiwi & Marfuah, 2019).

The student's perspective on science and religion needs to be accommodated in scientific knowledge into their religious perspective (Uecker & Longest, 2017). Also, the perspective of the religions needs to be considered for teaching practice (Billingsley & Abedin, 2019). There is insufficient young adults' religious commitment to scientific attitude because they have a lower religious commitment (Uecker & Longest, 2017). The science teacher could affect the science topic into a religious view that the religion teacher clarifies from a religious perspective (Billingsley et al., 2014). The nature of the argument between the science and religion perspective on secondary teachers and between science and religious educators has similarities and could distinguish between the fields of science and religion (Guilfoyle et al., 2020).

The example of student's perspective on evolution theory in the United States. The students do not believe in evolution theory, though they know the scientists agreed with evolution theory (Rissler et al., 2014). Upper secondary school students in Germany find that constructing a scientific argument is easier than constructing an argumentation on the religious side (Basel et al., 2013). While students in England, the students of Church of England schools do not have enough level to understand science and religion, and they are not to be opposed (Billingsley, 2020). Students in England need teachers to accommodate the clashes between their scientific understanding and religious belief because many teachers do not appreciate the topic to that extent (Hanley et al., 2014). Meanwhile, the science teacher has an important role in developing an understanding of scientific and religious authority (Smith, 2013). However, there is no research to find out about comparing science and religious attitudes between national schools and Islamic schools in Indonesia.

This research finds differences in students' attitudes toward science and religion between National and Islamic Schools based on their opinions and habits in each school. This research can be used to be a reference for all stakeholders involved in science education and Islamic education. Also, this study result could find a strategy to increase the religiosity towards science of the students in Indonesia based on the culture in Indonesia. This research is important to determine the students' perspective on science and religion. Therefore, the educator could evaluate the best way to improve students' attitudes toward science and religion from this finding of this research due to the difference in the curriculum between national schools which follow the standard of the Ministry of Education in Indonesia and Islamic schools, which use their curriculum that has the emphasize

religion value. This research finds out the different attitudes toward science and religious perspectives between Islamic school students and national school students at the secondary school level in Indonesia by using a questionnaire with a Likert scale from one level to five levels with open-ended questions. In this research, we analyze the differences in the attitude of science and religion and describe the strengths and weaknesses between Islamic and national schools based on students' perceptions.

METHOD

1. Research Design

The article will be based on the survey method (Cresswell, 2012). The article then discusses the primary study data. The pilot data confirms that pupils in secondary schools from national schools and Islamic schools (pesantren) comprehend the connection between science and religion. Indonesia has the largest Muslim population, which is why the Islamic school was selected for this study. Additionally, because to the predominance of Muslims in Indonesia, the majority of students at national schools are Muslims.

2. Participant

The sample of this study involved 420 Indonesian secondary school students from Bandung, West Java, Aged 12-13 years old. 212 students from national schools that conduct the national curriculum, and 104 males and 108 females. The 208 students from Islamic schools called "Pesantren" consist of 103 males and 105 females. This research was conducted in 7th-grade students for both schools, and gender is not considered in this research. The participants in this research are shown in Table 1.

Table 1. The comparison of the participants in national schools and Islamic school

	National School	**Islamic school**
Male	104 (49.06 %)	103 (49.52 %)
Female	108 (50.94 %)	105 (50.48 %)
Total	212 (100 %)	208 (100 %)

3. Research Instrument

The data was collected by spreading the Google form to make it easier to spread and convert into Microsoft Excel. Then, analyzing the SPSS tools. To make it easier to fill out the questionnaire, this research instrument is translated from English to Bahasa Indonesia from Mujtaba & Reiss, (2022) with the instrument's

reliability in the main survey sample shown in several factors. The reliability of each aspect is shown in Table 2.

Table 2. The reliability of each aspect of the instrument

Factor	Number of Items	Reliability
Competitiveness	5	0.83
Critical thinking	5	0.85
Religiosity	10	0.96
Attitudes to theistic faith	7	0.81
Creationism	5	0.77
Trust in scientists	8	0.78
The public value of science	5	0.90
Scientism	6	0.85
Interest in doing science	10	0.92
Extrinsic motivation	8	0.96
The general value of science	7	0.95
Awareness of environmental issues	8	0.92
Science self-concept	6	0.94
Science removes the need for God	4	0.89
Compatibility between science and religion	6	0.65
Perceptions of science lessons	4	0.93

The survey was constructed as a questionnaire with 104 questions by Likert-Scale and 3 open-ended questions that were spread to students at the secondary school level. The Likert indicates the level of agreement and disagreement of the statements about the phenomenon (Taherdoost, 2019). The Likert Scale is constructed into five points: strongly disagree (1), disagree (2), neutral (3), agree(4), and strongly agree (5). The Likert Scale makes reading the participants' perspectives easy, but the participants could avoid the extreme perspective and make the tendency biased (Taherdoost, 2019).

The open-ended question has some advantages and disadvantages. The advantages of open-ended are that individuals can give spontaneous answers and resist the bias from the individual's responses. However, open-ended questions have disadvantages. The disadvantage is for the non-responses items that larger (Reja et al., 2003).

A 9-point Likert scale has the maximum validity, according to the report, even if the five to eleven scale meets the same validity requirements. The Likert scale has higher validity if the response category is high (Taherdoost, 2019). The Likert-Scale has a flaw in that researchers should provide an odd or even number of response choices (Kulas & Stachowski, 2013; Nadler et al., 2015; Taherdoost, 2019). The odd numbers in the Likert-Scale are better than even numbers because

the respondent could choose a neutral position and not force the respondent to be part of any side (Colman et al., 1997; Taherdoost, 2019).

RESULTS AND DISCUSSION

DATA ANALYSIS

The result compare the national secondary school in Bandung and the Islamic Boarding School (Pesantren school) at the secondary school level. It analyzes the normality of the spreading test by using SPSS, which is shown as not normal. Then, show the average between the appendix and test items between national and Islamic schools. The Likert scale would be in five aspects: strongly disagree has one score, disagree has two scores, neutral has three scores, agree has four scores, and strongly agree has five scores. To find the result, this research uses a normality test. Then, it uses non-parametric analysis in two independent-sample tests using the Mann-Whitney U test. The Mann-Whitney U test compares two groups and is not normally distributed (Laerd, 2018). To interpret the data, it shows the Asymp. Sig 2-tailed. If the Asymp. Sig 2-tailed scores less than 0.05, meaning the data is significantly different.

The Differences In The Attitude To Science and Religion Between Islamic School and National School

Figure 1 shows the average differences between national and Islamic schools based on the general questionnaire. The questionnaire consists of the religious perspective and science perspective. The comparison of Islamic and national schools in the general Likert-scale average is shown in Figure 1.

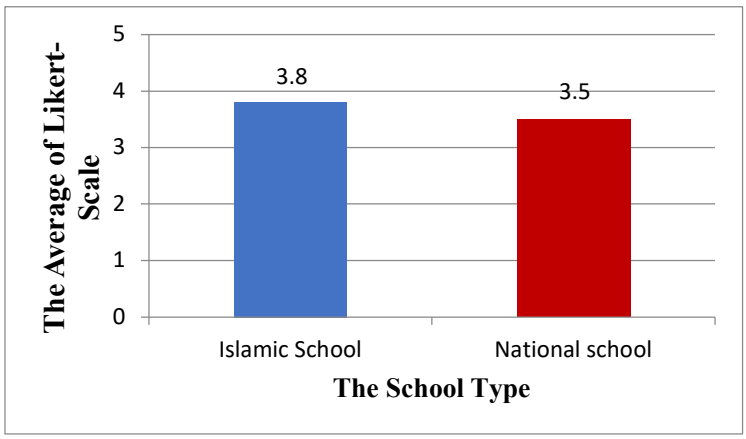

Figure 1. The average score in all aspects between Islamic school and national school

Figure 1 shows the differences between Islamic and national schools in all Likert scale questions. Islamic schools show 3.8 from 5 in general, while the national schools show 3.5 from 5. The difference is 0.3, which is a significant difference. The general aspect of each national and Islamic school that SPSS analyzed will be shown in Table 3.

Table 3. Non-parametric analysis by using SPSS

	Aspect	School	Mean Rank	Sum of Rank	Mann-Whitney U	Asymp. Sig. (2-tailed)
Summary	General	National	243.96	51719.50	14954.500	.000
		Islamic	176.40	36690.50		

Table 3. shows the significant difference between national schools and Islamic schools in general aspect. The second table analyzes each aspect of science and religion. Each topic discusses science, such as the nature of the world, opinions on their thinking skills, etc. In contrast, the religious side discusses each person's religiosity, faith in God, etc. Each aspect of the science and religion perspective between national and Islamic school students is shown in Table 4.

Table 4. All aspects of national school and Islamic school analyses

No	Aspect	School	Mean Rank	Sum of Rank	Mann-Whitney U	Asymp. Sig. (2-tailed)
1	Competitiveness	National School	249.51	52896.50	13777.500	.000
		Islamic School	170.74	25513.50		
2	Critical thinking	National School	268.85	56996.00	9678.000	.000
		Islamic School	151.03	31414.00		
3	Religiosity	National School	230.25	48813.50	17860.500	.001
		Islamic School	190.37	39596.50		
4	Attitudes to theistic faith	National School	208.27	44153.50	21575.500	.686
		Islamic School	212.77	44256.50		
5	Creationism	National School	218.50	46321.50	20352.500	.169
		Islamic School	202.35	42088.50		
6	Trust in scientist	National School	226.82	48085.50	18588.500	.005
		Islamic School	193.87	40324.50		

No	Aspect	School	Mean Rank	Sum of Rank	Mann-Whitney U	Asymp. Sig. (2-tailed)
7	The public value of science	National School	218.44	46309.50	20364.500	.174
		Islamic School	202.41	42100.50		
8	Interest in doing science	National School	242.25	51356.00	15318.000	.000
		Islamic School	178.14	37054.00		
9	Extrinsic motivation for science	National School	235.27	49877.00	16797.000	.000
		Islamic School	185.25	38533.00		
10	The general value of science	National School	230.77	48923.00	17751.000	.000
		Islamic School	189.84	39487.00		
11	Awareness of environmental issues	National School	263.10	55777.00	10897.000	.000
		Islamic School	156.89	32633.00		
12	Science self-concept	National School	231.89	49160.00	17514.000	.000
		Islamic School	188.70	39250.00		
13	Science removes the need for God	National School	230.17	48796.50	17877.500	.000
		Islamic School	190.45	39613.50		
14	Compatibility between science and religion	National School	261.47	55432.50	11241.500	.000
		Islamic School	158.55	32977.50		
15	Perceptions of science lessons	National School	240.55	50996.50	15677.500	.000
		Islamic School	179.87	37413.50		
16	Scientism	National School	222.11	47086.50	19587.500	.053
		Islamic School	198.67	41323.50		

There are 12 of 16 factors that have significant differences. It could be influenced by the school's curriculum chosen, other sources that students took, explanations from the teacher, the environment of the students, which is different between national school and Islamic school, and other factors that could be influenced. Some students also come from cities and villages with different understandings of science. Also, their elementary school influenced their understanding of science. The school's background also influences the students' ideas in each school. Not all students want to be scientists in the future. Then, social media influences the perception of students. The Islamic school has a policy that students should not bring social media, even daily.

The 4 factors have no significant difference. It means there are similiarty on this factos. The factors are attitudes to theistic faith, creationism, public value of science, and scientism. Most of those factors are related to a religious perspective. The reason is that most of the students have the same background and religion. In Indonesia, most people use Syafi'i Mazhab, which is the rules or guidance of life, and faith in God is the same way. While in the public value of science, most students just learn about science because they are just in the first year of secondary school. This means their understanding of the public value of science is still low. The average of the Likert scale in each aspect of the perspective about science and religion between national and Islamic school students is shown in Figure 2.

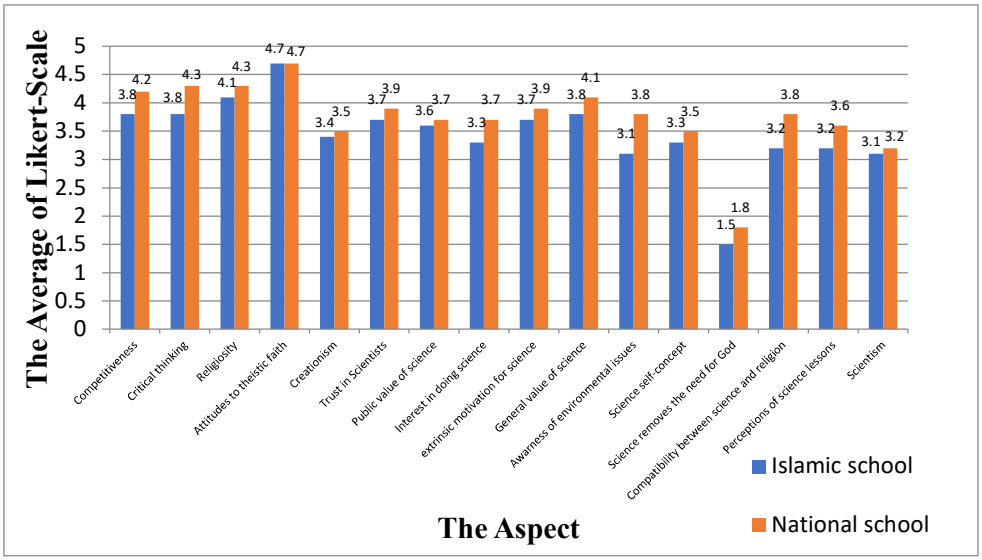

Figure 2. The result of the Likert scale in all aspects of Islamic schools and National schools

Figure 2 shows sixteen indicators of the perspective toward between science and religion at the secondary school level. Based on this result, it has the same result as the previous research. The creationism and scientism show there are There aren't any notable distinctions between pupils attending Islamic and national schools. The result is the same with the creationism perspective in the Christian students in Scotland, which has no significant differences from the science perspective in scientism (Fulljames et al., 1991). The compatibility between science and religion shows the difference between national and Islamic school students with an average neutral perspective. The outcomes run counter to the findings of English students, demonstrating the nature of the link between science and religion (Stones et al., 2020).

In the teacher's perception of the Roman-Catholic religion, the teacher accepts the scientific perspective. However, they limit anything explained by science (Paiva et al., 2020), while in this research, Regarding whether science and religion can coexist, the student is unbiased. Pre-service science instructors in Brazil distinguish between science and religion. They were not ready to conduct the class related to the religious perspective in cosmology topic (Bagdonas & Silva, 2015). In this research, most of the students have neutral perspectives, and some have the agreed perspective about comparing science topics and their religious perspectives.

The religious belief and the scientific concept show the difficulty of the integration and approach because the scientific concept influences their cultural and religious belief (Bretl, 2019), while the attitudes of students in Indonesia toward their theistic faith are high. It also influences their understanding of the scientific perspectives. Learning motivation was strongly impacted by emotional intelligence and religion, and learning achievement was positively impacted by learning motivation. Additionally, Learning motivation acted as a mediating factor in the link between emotional intelligence, religion, and academic accomplishment (Farhan & Rofi'ulmuiz, 2021). Students embrace evolution to a high degree. Females performed worse than males on these tests, yet both are perceived as not being particularly devout. Though not very much, religiosity is adversely connected with acceptance of evolution and can predict nearly ¼ of the variance in acceptance. The acceptance of evolution appeared to be strongly influenced by taking an evolutionary biology course (Mantelas & Mavrikaki, 2020).

From the Islamic university student perspective in Indonesia, the science and religion courses need to be distinguished because the Islamic university states that God is the source of all knowledge. It is related to the factor that is creationism (Nasir et al., 2020). The result significantly differs significantly between secondary school students with a neutral perspective. The Egyptian science teachers' perspective on science and religion, which are the most populated Muslim state

students, state that science itself is not related to their religion and their culture (Mansour, 2011). This result is different from that of observing Indonesian students. Indonesian students from national schools and Islamic schools most likely trust the scientists.

The Strengths and Weaknesses Between Islamic Schools and National Schools Based on Students' Perception

We have analyzed and answer the second research question in the next discussion. Table 5 and Table 6 show the strengths and weaknesses of each school based on students' perspectives. The students' perspective in this research is taken from open-ended questions. The strengths and weaknesses in national schools based on students' perspectives from open-ended questions are shown in Table 5.

Table 5. Strengths and weakness of national school

No.	Strength	Weakness
1	Students could choose another course about science outside the school environment.	Too many hours of courses in the school, so students need to take another course.
2	Students could have a science course three times a week and could have three hours of lessons.	Sometimes, teachers do not conduct lab activities because they lack time.
3	The students could access the internet for further information about science.	The number of students is too high, so not all can pay attention to the teacher.

The national school has followed the recommended regulations from the Ministry of Education and Culture of Indonesia, such as curriculum, books, infrastructure, etc. Table 6 explains the strengths and weaknesses of the Islamic school based on the student's perception from open-ended questions. The strengths and weaknesses in Islamic schools based on students' perspectives are explained in Table 6.

Table 6. Strengths and weakness of Islamic school

No.	Strength	Weakness
1	Students could relate science phenomena to the religious perspective.	The hours of lessons in Islamic school is not as much as National school.
2	Due to the short course duration, students have ample opportunity to gain a thorough understanding of science.	The science course is only twice a week.
3	The number of students is not too high, so there is enough time to conduct the lab activity.	The students cannot access the internet to find further information on one science topic.

The Islamic schools in this research do not take the curriculum like other national schools. The Islamic school's curriculum is based on its vision. However, Islamic schools' infrastructure is better than that of national schools because the funding is not from the government. For example, the laboratory for a science course. The Islamic school could conduct lab activities, but the science lessons are less than the national school's. The creation of science-based project learning methodologies on moral theology involves the incorporation of personal religion and religiosity, identity processes during the teaching process. The application of Islamic concepts and beliefs is the main link between the development of science-based project learning methodologies and the attribution of identity from God-given personality to moral theology education. Students' identity processes, religion, and scientific reasoning all grow when they study moral theology (Tambak et al., 2022). The relationship between religious belief and the respect for science differed significantly between nations. A lower regard for science was correlated with increased religiosity. There is no compatible link between religion and science, and religiosity highlights the ways in which people's views of this relationship are influenced by their social backgrounds (Payir et al., 2021).

Table 5. and Table 6. are obtained from open-ended questions shared with the students in each school. The results are taken from most of the answers in the questionnaire. The strengths and weaknesses are focusing on science topics that their school conducts. There are some differences in strengths and weaknesses between national and Islamic schools. The difference could happen because the curriculum that the school takes is different. The national school takes the curriculum from the Ministry of Education and Culture, while the Islamic school takes the curriculum that is made on its own due to its vision of the school. There are connections between science and religion, culture and science, culture and religion, and the significance of religion and culture in STEM education. The integration of scientific education with RE-STEM instruction can help close the gap that exists between science, religion, and culture. in order for RE-STEM integration to produce a more widely distributed understanding of science, religion, and ethnoscience among students (Sumarni et al., 2020). Religiosity and multiple intelligences have a significant association that falls into the medium category. The correlation has a r value of 0.41 with a confidence interval range of 0.164 to 0.518 (Karbono & Retnawati, 2021).

According to Ikhwan et al. (2020), several factors influence the personality of the primary school in the implementation of the religion, especially in the Islamic religion, and the factors are extracurricular, family environment, etc. The Islamic boarding school found the Three Law Auguste Comte was determined to have significantly improved educational system management (Huda et al., 2020). Islamic

schools find a lack of the weaknesses stated by Nasir., (2020a) in their school such as primary school shows weak curriculum development for independent and self-development tasks, secondary school shows the knowledge, and high school shows weaknesses in the analysis, composition, decision-making, legalization, and completion of curriculum documents by the degree of expertise and the scope of the learning material at the various phases of developing a curriculum. Elementary schools in Aceh (Hanum, 2019) state some advantages and disadvantages shows Islamic schools with integrated curriculum, The benefits include: (1) students get to know the Koran better and explore its complexities; (2) students are exposed to the Koran from a young age; (3) students are more motivated to learn; (4) students develop pride in Islam and the Qur'an; (5) students always love the Koran and grow in their belief in the oneness of Allah. The disadvantages include (1) difficulty in selecting verses from the Koran that correspond with the subject matter; (2) limited ability of the teacher to interpret verses from the Koran or Hadith; (3) lack of time for the daily preparation of Qur'an-based material; and (4) difficulty in implementing the Koran's integration (Fahmul Qur'an) by untrained teachers. In Europe (Faas et al., 2016) state some countries have different approaches to religious education. The confessional approach (e.g., Bulgaria, Greece, Poland, Spain), the non-confessional approach (e.g., Denmark, UK, Estonia), and the lack of Religious Education in public schools (e.g., Albania, France) highlight how complex the overall picture is and how deeply rooted in socio-cultural history the current practices are. A multireligious approach to education appears to be preferred by several European societies (such as the UK and the Netherlands).

CONCLUSION

The discussion that concludes the differences in perspective toward science and religion between Islamic and national school students shows the significant differences in general. Nevertheless, there are attitudes to theistic faith, creationism, public value of science, and scientism show no significant difference. The strengths of the national school are that students can choose another course about science outside the school environment. Students have a longer time for learn science rather than in Islamic school, and The students can access the internet for further information about science, etc. At the same time, the weakness is that there are too many hours of course in school, so students need to take another course. Sometimes, students do not have experience in lab activities. In Islamic schools, students state the strength of their school. Some students could relate science phenomena to the religious perspective. The hours of the course in the school are limited, so that, the islamic school could put the science course as the priority, and the number of

students is not too much. Also, the laboratory tools is better than national school. The weakness is that the students state the science course time is less than national school, and there is no internet connectivity available to students to find further information for one science topic. The implication of this research could ascertain the comprehension level of students' perspectives of science and religion. The suggestion for future research is that the researcher needs to find another sample with different cultures and religions. Also, the sample could be from another country that must have different levels of scientific issues and have the same grade as the school.

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