Study Reports

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Religious Belief in Teaching Mathematics among Indonesian and Malaysian Lecturers

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INTRODUCTION

A. Introduction

The Islamic campus known as PTKIN is an institution that is full of Islamic aspects, as stated in its curriculum document. PTKIN wishes to improve the order of community life; therefore, serious attention from various parties is required in implementing this curriculum. To realise this desire, the main factor that will have a direct impact on transformation is to focus on the Islamic aspect. The Islamic aspect refers to the Islamic valuesthat integrated in mathematics learning together with spiritual values possessed by lecturers and the preservice teacher. In some literature, it is known as 'religious beliefs'.

Cooling in (Topidi, 2021) interprets post-secular religious educationas a matter of faith rather than knowledge, despite religious belief. Religion has a long history in human culture. However, there are subtle distinctions between religion and spirituality (Zinnbauer, B. J., & Pargament, 2005). From an educational standpoint, spiritual education can be viewed as a broader educational goal that may or may not be achieved through religious education. However, religious education is usually one of the compulsory subjects at almost all levels of education in most countries that adhere to a national religion, including education for student teacher candidates. Spiritual development is also explicitly mentioned in the curriculum documents of some of these countries (see, for example:(Department for Education, 2013), ; (The Royal Ministry of Education, 2005), spiritual education can be addressed in avariety of ways in other countries, including value/moral education, cross- curricular values, and so on.

This research was conducted at PTKIN Aceh, specifically IAIN Lhokseumawe, UIN Banda Aceh, IAIN Cot Kala Langsa, and IAIN Gajah Putih Takengon, where these institutions are dedicated to realising the integration of religious sciences and general sciences. As a result, conducting research on this study is critical. Religious education is included in the national curriculum and is required at all levels of education. Religious educational institutions even

implement religious education moredeeply and completely than secular educational institutions, both public and private. Islamic universities under the Ministry of Religion (Kemenag), for example, offer a variety of religious courses (MK), including Hadith Science, Al-Quran Studies, Islamic History, and other religious studies MKs. In addition to these courses, university leaders.

Research on the integration of mathematics education and religious education, particularly in education programmes for student teachers, has not been widely conducted. Among the few studies is the work of (Chan & Wong, 2016), who raised the issue of integrating religious or spiritual education and mathematics education at the school level (primary and secondary). There are two significant studies in the context of education forstudent teacher candidates. Woolley (2008) discusses religious education for prospective citizenship teachers in the United Kingdom. Stolberg (2008) emphasised the integration of spiritual education and science education in aprimary school teacher education programme in the United Kingdom. Although the integration of religious education across disciplines is frequently echoed, research on this topic and gender aspects in the context of mathematics is still insufficient.

The researcher arranged a meeting in the student class to gain an overview of their understanding of how religious beliefs and mathematical education relate to each other before gathering data from mathematics lecturers. Researchers gave students a preliminary introduction to this concept. Scholars offer models of mathematical lesson plans that incorporate religion for examination. Within the allotted time, they were then required to work in groups to create a lesson plan on a mathematics topic of their choice, which they would then practice in class. Three groups from IAIN Lhokseumawe conduct middle school and primary school practices. The SPLDV topic was raised by the three schools, specifically Tsanawiyah Dayah Darul Ulum Lhokseumawe, and it was related to the question's context about alms. Fragmentary material related to the tahajjud is carried out on one-third of the night, as Allah has explained in the Alquran, Al Muzammil verse 3. This is carried out at SDN 1 Blang Mangat, North Aceh. In between, MtsN 1 North Aceh uses a historical perspective to provide information on the Pythagorean

theorem by highlighting the role of the Muslim scholar who discovered it, Thabit Bin Qurra.

Lesson plans are the only thing that IAIN Cot Kala Langsa, Gajah Putih, and UIN Arraniry do in place of actual teaching methods in the classroom. It is evident that they were unable to make any reference to religion in the lesson plan. Even while it seemed a little uncomfortable at first because they weren't used to it, there was a more insightful explanation for this integration based on interviews with a number of students. The author contends that students can teach religion-integrated mathematics more easily and thoroughly thanks to this approach, despite the fact that this is hard to defend. They claim that because religion-integrated mathematics instruction must focus on relevant subjects, it might be challenging to plan. However, this process is also not very evident when learning is taking place. despite having completed their religious education. From this vantage point, the author wishes to highlight how important it is for instructors to consistently use integrated religious teaching methods. This attempts to guarantee that students will use integrated religious mathematics instruction to develop moral character while they are being taught. Consequently, religious beliefs serve as the main variable under examination in this context. In this instance, the practice of teaching mathematics with a religious component is understood to refer to the lecturers' beliefs in religion.

The results of preliminary observations indicated that students at UIN Ar Raniry Banda Aceh, IAIN Lhokseumawe, Takengon, and Cot Kala, did not comprehend the relationship between knowing religion and the practice of teaching mathematics, and neither did lecturers. To be precise, this needs to be confirmed in order for students to become teachers who plan and implement rigorously integrated mathematics instruction. In addition, every faculty member offers courses on religion that will aid in this process of integration. The only thing holding action back is the requirement for official directions.

B. Research of Questions

In order to achieve the aim of this study, the following research qustions we proposed: How do mathematics lecturers' religious beliefs influence the learning process of prospective mathematics education teachers on campuses in Indonesia and Malaysia?

C. Research Objectives

Investigating the religious beliefs of lecturers that influence the learning processfor prospective mathematics education teachers on campuses in Indonesia and Malaysia.

Chapter II
Theoretical Framework

A. Religious Education and Indoctrination

Religious education is complicated (and its integration with other scientific disciplines). Since the 1970s, there has been debate about whether the expression of religious beliefs in learning is the same as religious education (see for example, (Chazan, 1972). This implies that subject domains such as religious, moral, and political education may be at risk of indoctrination, making the preceding assumptions problematic. (Thiessen, 1984), on the other hand, contends that religion may provide the same opportunities for indoctrination as other subject domains such as science and mathematics. (Tan, 2008) claims that teaching commitment is the best approach to religious education when introducing a specific religion to children. (Tan, 2008) asserts that the teaching of commitment is the appropriate approach to religious education in which a specific religion is introduced to learners while their rational autonomy is maintained.

It is beyond the scope of this paper to engage in philosophical debates about whether and how indoctrination can be avoided in religious education. It should be noted that on such issues, at least from the perspective of some scientists, and this is also agreed upon. It seems natural for a teacher, including a prospective teacher educator, who practises a particular religion to want to share his religious beliefs with his students. Teacher communication about religious beliefs to students can have educational value to the extent that they are not regulated to follow religion non-rationally but are encouraged to "exercise their autonomy in making personal decisions about faith" (Tan, 2008). The purpose of this paper, as an empiricalstudy report, is to investigate how teacher-teacher educators communicate their personal religious beliefs in their own teaching. The authors of this paper do not assume that their communication qualifies or does not qualify as religious education. The goal of this paper is not to propose a method for incorporating religious beliefs into the education of prospective teachers. fully aware that education (not just religious education) is a complicated matter and do not wish to draw overly simplistic conclusions Our task is simply to deduce phenomena from empirical data.

B. The Relationship Between Religious Beliefs and Mathematics Education.

No one is immune to belief, and teacher educators are no exception. When a teacher educator interacts with his students in the classroom, he will try to act in accordance with his beliefs. It is more than reasonable to assume that a teacher educator's teaching behaviour is influenced by his beliefs, whether intentionally or unintentionally. This type of communication is referred to as "belief enforcement" (Skott, 2009a). The purpose of this study is to investigate how teacher educators put their religious beliefs into practise when preparing and implementing mathematics lessons. There are several reasons for choosing mathematics. To begin,mathematics is one of several subjects that must be studied in school. As a result, understanding the importance of religious belief preservice teacher will teach the subjek in school is critical. From an Islamic perspective, mathematics is a tool for learning the language. Further, from a scholarly standpoint, mathematical advancement, and religious belief interact in a friendly manner (Snezana Lawrence, 2015). According to history, many classical Muslim scientists inventedmathematics first, such as algebra, which was invented by Al Khwarizmi. (Berggren, 2013).

C. Teachers' Worldviews and Beliefs about Mathematics and Mathematics Education

In recent decades, educational research has focused on how instructors' worldviews, beliefs1, and values may affect their students (Zhang, Q. P., & Wong, 2014). We reference (Philipp, 2007) definitions of "beliefs" and "value" in this essay. Accordingly, beliefs are "psychologically held understandings, axioms, or statements about the universe that are regarded to be true.... According to Philipp, beliefs can be viewed as inclinations toward action or as lenses that shape how one sees certain aspects of the world. A person's beliefs might come in several groups and are rather complex. One's collection of values is made up of belief clusters, some of which are held more firmly than others. Value is "the worth of something [and] a belief one views deeply, even to the degree of cherishing, and acts upon". It is generally known that instructors' attitudes on mathematics and the teaching and learning of mathematics have a big impact on how they teach (Philipp, 2007); (Thompson, 1984); (Zhang, Q. P., & Wong, 2014).

However, the relationship between a belief and practice is somewhat nuanced. In particular, the interactions need to be understood in terms of contextual elements including school settings and cultural norms (for examples, see (Skott, 2009b); (Speer, 2005). The ways in which arithmetic is taught by teachers affects how students learn, which in turn affects how they learn cognitively and emotionally. The learning outcomes cover their proficiency in mathematics, problem-solving techniques, and attitudes toward mathematics and math learning. Fig. 1 shows the entire procedure. Although we are fully aware that there are other factors (such as teachers' professional knowledge and school contexts) at play, teachers' beliefs about mathematics education are one that cannot be ignored when determining how students' learning experiences are formed (Wong, N. Y., Marton, F., Wong, K. M., & Lam, 2022).

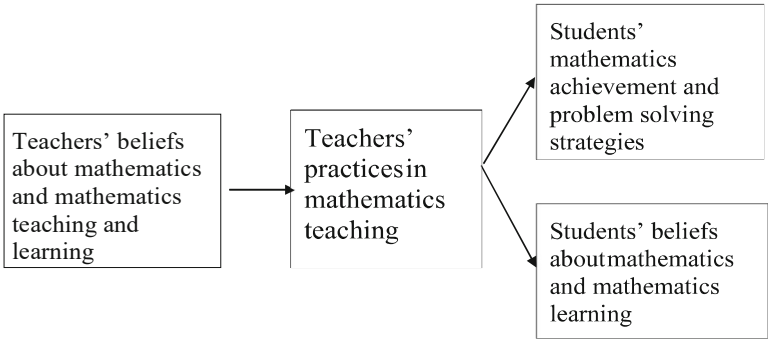


Fig. 1 Teachers' beliefs and practices and students' learning

Studies on attitudes about mathematics and mathematics teaching and learning have been undertaken among students and teachers in the Chinese areas of the Chinese mainland, Taiwan, and Hong Kong based on the aforementioned conceptualization. It was discovered that the perceptions of students and teachers were largely congruent: both groups held the views that mathematics is a subject of "calculables" and requires thinking. Additionally, it has been discovered that memorization, practice, and operating processes are crucial to both the teaching and learning of mathematics. According to the findings of these studies, both students and teachers could learn mathematics effectively in a classroom setting in China (Zhang, Q. P., & Wong, 2014).

Further research revealed a variety of elements that influence how instructors build their ideas about mathematics, mathematics instruction, and mathematics learning. One such crucial element is the teaching staff's viewpoint. For instance, teachers' worldviews may affect how they address a situation in which the goal of helping students achieve high results on public exams may conflict with students' true comprehension of mathematical ideas. "One's comprehensive set of beliefs about the nature of reality and how one should live in the light of those beliefs" is referred to as a worldview (Heie, 2002). An individual's worldview is an integrated "product" of many different sources, including their religious convictions, general knowledge and academic knowledge, personal experiences in their educational and professional environments, and political ideologies. No matter how powerful or subtle they may be, a teacher's religious beliefs will have an effect as a non-negligible aspect of a student's worldview. The religious roots of worldview are the main topic of this essay, as well as any potential links to teachers' perspectives on mathematics, mathematics teaching, and mathematics learning (Fig. 2). This experimental research is not intended to address teacher practices in math instruction.

It is important to remind readers that it is very simplistic to presume that people who practice a particular religion share a common set of beliefs and behave in a similar way. As a single religion develops over time, different ideological branches do as well, for example, (Wong, N. Y., Wong, W. Y., & Wong, 2012) discuss traditional Chinese faiths, and (Kanitz, 2005) discusses the various worldviews of Christianity.) At the individual level, one's perception of religion is a "social construct based broadly on the various experiences (and more particularly on the religious experiences) that a person lives through" (Mansour, 2008a). Religious beliefs contain so much information that teachers can only use a small percentage of it when teaching mathematics. We concur with Mansour that a religious follower's personal religious beliefs (PRB) are their interpretation of their religion. The phrase is officially defined as "the views, opinions, attitudes, and knowledge constructed by a person through

interaction with his/her sociocultural context through his/her life history and interpreted as having their origins in religion".

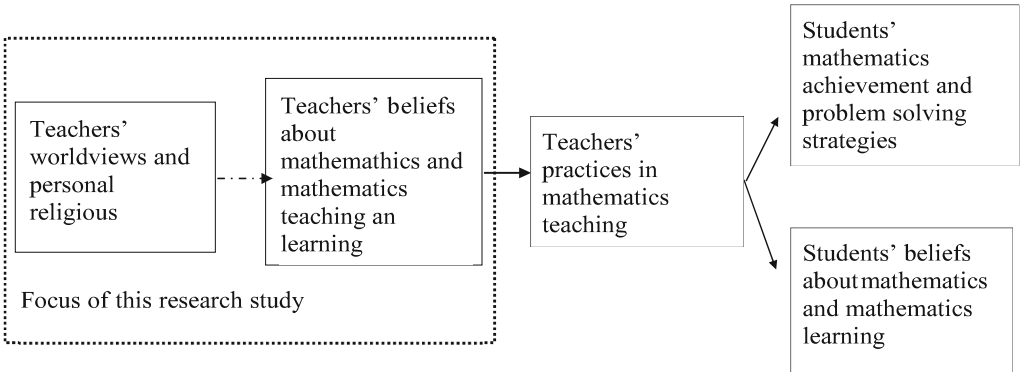


Fig. 2 Teachers' worldview, belief and practices, and students' learning

D. Religions and Education

The concept that religious convictions affect teaching and learning has been mentioned in literature since the 1990s. The effort-ability dichotomy, which specifically mentions Confucianism, was the cause of the east-west divide, in accordance to the Stevenson team (Chen, C., Stevenson, H. W., Hayward, G., & Burgess, 1995). Later, (Wong, N. Y., Wong, W. Y., & Wong, 2012) went into deeply into the traditional Chinese religious ideas of Confucianism, Buddhism and Daoism have had an effect on education broadly and the teaching of mathematics specifically. Also extensively discussed is the impact of Western religious ideas on education (see, for example, (Heie, 2002); (Howell, R. W., & Bradley, 2001), (Howell, R. W., & Bradley, 2011); (Sutcliffe, 2009). A Christian viewpoint may especially imply that God provided some people with the capacity and desire to study mathematics, which "is intended to enable us to serve God and other human beings" (Howell, R. W., & Bradley, 2001). The effects of religious beliefs on schooling have also been the subject of several scientific research. These studies explore a wide range of topics, including religious education, the tension between religious ideals and school culture, and the influence of religion on teachers' identities. For instance, a new book edited by (Wong, M. S., Kristjánsson, C., & Dörnyei, 2013), compiles a number of research findings on how teaching English

as a second language and practicing Christianity interact. (Cobern, 1991), who pioneered the use of a worldview—including religious convictions—as an interpretive framework for studies of scientific teaching and learning, did so as early as the 1990s. Based to a recent questionnaire study by (Aflalo, 2013), national culture and existing scientific knowledge had little to no influence on preservice teachers' ideas about the nature of science. In contrast, religious beliefs had a considerable impact. One of the hottest topics in science education research is the impact of creationism in the Christian and Islamic faiths on students' and instructors' ideas of the nature of science in general and evolution in particular. Publications by (BoudJaoude, S., Asghar, A., Wiles, J., Jaber, L., Sarieddine, D., & Alters, 2010), (BouJaoude, S., Wiles, J. R., Asghar, A., & Alters, 2011), (Brem, S. K., Banney, M., & Schindel, 2003), (Clément, P., Quessada, M. P., Munoz, F., Laurent, C., Valente, A., & Carvalho, 2010), (Mansour, 2008b), and (Martin-Hansen, 2008) are just a few cases of this kind of matter. In reality the problem has no connection to specific faiths like Christianity or Islam. The studies described above offer evidence to back up the claim that students' and teachers' ideas concerning religious instruction and learning have an important effect on those beliefs.

Education in mathematics is getting less attention in studies. Faith is a determining influence on some students' probability thinking, according to research by (Amir, G. S., & Williams, 1999) and (Sharma, 2005). Regarding the religious affiliations of instructors, (Norton, 2002) determined that there were very different links between the religious affiliations of university math teachers who practiced various religions and the mathematics they conducted and taught. The research by Leu and her associates (Leu, Y. C., & Wu, 2004) showed that there may be subtle variances between the perspectives on learning and teaching mathematics held by mathematicians who adhere to Confucian and Buddhist views. Even if the findings were preliminary, they were encouraging since they suggested that teachers' teaching of mathematics is influenced by their religious beliefs, which in turn affects their ability to help learners learn mathematics.

E. Relevant Research

A number of empirical studies have demonstrated the close relationship between mathematics education and its teachers' religious beliefs, particularly in the context of schools (primary and secondary). (Leu, Y. C., Chan, Y. C., & Wong, 2015)Leu, present the results of a questionnaire study on the relationship between religious beliefs and mathematics performance in teachers. Subtle differences in beliefs aboutmathematics education were discovered across religious groups. The most striking finding is that respondents who identify as Christian have a less constructivist viewof mathematics education than their peers.

In a subsequent study, (Chan, Y. C., & Wong, 2014) used in-depth interviews to conduct a dual case study on the relationship between teachers' religious worldviews and their beliefs about mathematics teaching. It is clear that teachers' beliefs about teaching and learning mathematics are consistent with their personal religious beliefs. All of the preceding studies show that teachers' religious beliefs influence their beliefs about mathematics teaching.

If research on the relationship between religion and mathematics education has been conducted at the secondary level, research on the relationship between religion and mathematics education has yet to be conducted. This is the result of the investigation. The purpose of this study is to learn about the effects of religious beliefs and guru agama on preservice math teachers' learning.

Mathematics, as defined by (Wan, 2011) in her paper "Mathematics in the Holy Quran," is an understanding of numbers, shapes, and connections. The research is seen from the version of the Koran in explaining mathematical concepts such as numbers, shapes, and connections. This version not only builds on mathematical concepts, but also leads to the application of mathematics to any situation that is useful to humans.

Chapter III
METHOD

A multi-case study with a grounded theory was used to investigate the use of religious beliefs in mathematics education at PTKIN Aceh and Malaysian Universities, specifically the mathematics education departments at IAIN Lhokseumawe, IAIN Cot Kala Langsa, IAIN Takengon, UIN Arraniry Banda Aceh, Albukhari International University (AIU) Kedah and International Islamic University Malasyia (IIUM) Kuala Lumpur. Four PTKIN Aceh universities and three Malaysian institutions are inviting mathematics lecturers to participate in this study. The location of this study was chosen using convenience sampling, which collects data from samples that are easily accessible to researchers. A stratified objective sampling method was used to select lecturers to be interviewed. This means that the data source consists of 10 lecturers of the mathematics education study programme who are registered in four PTKIN in Aceh and two campus, namely AIU, IIUM who participated in this study.

A. Data Collection

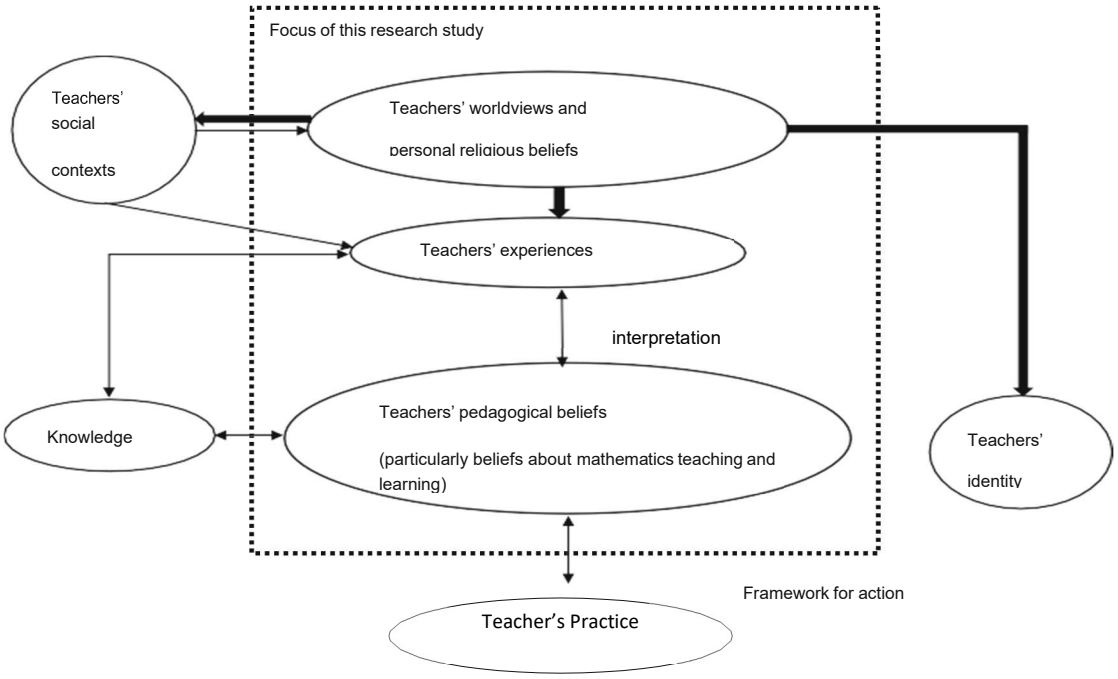
Participants were asked to create and implement mathematics lessons based on their religious beliefs about teaching mathematics. They are reminded that the teaching content does not have to be directly related to their religion, but that the learning design and teaching approach must be in accordance with their personal religious beliefs. The lesson plan, as well asa short paragraph explaining why lessons referring to participants' personal religious beliefs, were collected. The lesson was then carried out, observed, and video taped by the researcher. Following learning observations, semi structured interviews were conducted to clarify the reasons for the lesson design. To support this study, a questionnaire was also given out, followed by an interview, which was adapted from (Cai, J., Perry, B., Wong, N. Y., & Wang, 2009). Two Q1 publications used the research data collection instrument. In the first paper, the author applied Heie's framework and required participants to create a lesson plan and implement it in the classroom. Subsequently, a series of questions that were included in the paper were used during the participant interview process. In the meantime, the author used Mansour's suggested interview questions and procedures in the second study. Before to the interview,

participants were required to complete a set of questions on a questionnaire (https://forms.gle/q7dvdUvQqiFtHENSA). In this case, the first paper's suggested interview guide relates to the beliefs of math teachers who teach in diverse educational environments. As such, the writer takes it on and modified it to fit the lecturers' Muslim religious views. The author also does this in the interview guide for the second article, where there is one question that is signed removed.

B. Data Analysis

The data was analysed in two stages. In the first stage, a grounded theory approach was used. The learning process and interviews were transcribed verbatim. Different lesson teaching approaches are compared and contrasted. Interview scripts were coded with an emphasis on the rationale for the instructional design. The theme of the resulting teaching approach coherence. The resulting approaches are then compared to the existing classification schemes in the literature in the second stage. Until our awareness, there has been no framework to classify teaching approaches associating religious beliefs, particularly Islam, with mathematics in the context of teacher education, on the other hand, proposed a classification scheme for integrating Christian religious beliefs and mathematics learning, but only at the university level. His classification scheme is based on the Christian premise that all knowledge comes from God. According to, mathematics should be taught in conjunction with other knowledge, including religious knowledge. Thus, describes three integrative approaches: the incarnation approach, coexistence, and coherence. The incarnation approach focuses on prospective teachers' well-being and spiritual growth. The coexistence approach juxtaposes mathematical facts and religious statements with no explicit relationship. According to (Heie, 2002), the third approach, namely the coherence worldview approach, is true integration. He defines a worldviewas "one's comprehensive set of beliefs about the nature of reality and how one should live in light of those beliefs". As an example, he explains how he guides his students through integrative questions to investigate the nature of mathematics from a Christian perspective. Combined with the Heie-adopted scheme, this study also employed what are known as personal religious beliefs (PRB) in its analysis of data. This model “begins with the relationship between teachers’ personal religious beliefs, and their experiences and ends

with the relationship between teachers' personal religious beliefs and their practices" (Mansour, 2008).



eight mathematics lecturers, who teach at universities in Indonesia and Malaysia, were invited to take part in the study. To begin, they were asked to complete a questionnaire that included seven open-ended questions. These questions focused on topics such as how they entered the teaching profession, the qualities they aim to in still in their students, and the potential influence of their religious beliefs on their teaching.

The question on how they entered the profession (question 1) attempts to uncover how their worldviews, whether they are related to religion or not, may have influenced their choice to become a teacher. Questions concerning the qualities teachers aim to in still in their students (questions 2 to 4) seek to unveil their fundamental beliefs, or as described by (Philipp, 2007), their values, regarding education as a whole and mathematics education specifically. The final set of questions (questions 5 to 7) concentrates on their perceptions of the connection between religious beliefs and the teaching of mathematics.

The questionnaire served two primary purposes. Firstly, it allowed the participants to contemplate their beliefs regarding mathematics education and the potential relationship with their respective religions. Secondly, it provided the researchers with an initial understanding of the participants' perspectives on the subject. These initial insights

were used as contextual examples to guide individual semi-structured interviews conducted one week after the questionnaires were collected. These individual interviews centered on the participants' opinions regarding mathematics, education, and religion. The interview questions were adapted from those used by (Cai, J., Perry, B., Wong, N. Y., & Wang, 2009), with additional inquiries about religious beliefs and their potential influence on mathematics instruction. The primary interview questions were as follows:

1. What is the essence of mathematics?
2. What can a teacher do to help students learn mathematics well?
3. What are the features of an effective mathematics lesson?
4. Are there any similarities or differences between mathematics and religion?
5. Does your religious belief have any impact on how you think about mathematics education?

The questions aimed to ascertain the individual beliefs of each participant on various aspects: their beliefs about the nature of mathematics (question 1), their beliefs regarding the teaching and learning of mathematics (questions 2 and 3), their worldview, and how that worldview impacts their beliefs about mathematics education, as well as their global ideology of teaching (questions 4 and 5). A content analysis of the interviews was carried out. The interviews were recorded in audio and transcribed verbatim. The transcripts were then coded, and coherent themes were derived. Mansour's PRB (Personal, Rational, and Social) model served as the analytical framework. We endeavored to classify different types of PRB and various forms of pedagogical beliefs, encompassing both mathematical and general beliefs. Subsequently, we explored how the participants' personal experiences influenced the interplay between these beliefs. Finally, the interview data were cross-referenced with the questionnaire data to ensure stability and reliability.

C. Plan of Discussion

The planned discussion in this research begins with the selection of a theme that is not yet widely studied, as determined by a review of international journal sources. In this case, the theme raised is about the Islamic aspect, specifically how Islamic values are integrated in learning mathematics and how the religious identity or religious beliefs of the lecturers attached to them can have an impact on the learning process of mathematics education. By involving 10 lecturers from PTKIN Aceh and Malaysian Universities,

namely UIN Ar Raniry Banda Aceh, IAIN Lhokseumawe, Langsa, Takengon, Albukhari International University (AIU) Kedah and International Islamic University Malasyia (IIUM) Kuala Lumpur. The lecturer participants will be given flexibility in carrying out the learning process to integrate mathematics and Islamic values according to the lecturer's religious beliefs. Meanwhile, eight lecturers will be given a Google Form related to their perceptions of the integration of Islamic aspects and mathematics education. In depth interviews were also conducted with eight lecturers. Two lecturers served as sources of information on their opinions and the way the academic framework is being used on college.

In addition, group discussion forums, or FGDs, will be held to gather information on the description of lecturers' religious beliefs in integrating Islamic values and mathematics education. The obtained data will be analysed in accordance with the flow of two of the Q1 international articles, which, according to the author of this article, clearly directs the work steps that are in accordance with the theme in this study; of course, it will be adjusted to the context of the theme of this research. Thus, it is hoped that new findings in the form of grounded theory regarding religious beliefs and mathematics education in learning mathematics will emerge.

Chapter IV
Results and Discussion of the Research

The research findings and discussion will be presented in this chapter, along with data analysis using the framework of personal religious belief (PRB) put forth by Heie and Mansour. The study's findings and discussion are described in the paragraphs that follow.

Lecturer (pseudo-nyms)	Age	Lecturer's Religiosity	University level	No. of years of Teaching mathematics
Riki	33 years	Religious	IAIN Lhokseumawe	3 years
Abdul	37 years	Religious	IAINCot kala	12 years
Aini	45 years	Tidak Religius	IAIN Lhokseumawe	20years
Ana	32 years	Religious	IAIN Lhokseumawe	5 years
Dina	38 years	Less Religious	IAIN Takengon	10 years
Evi	32 years	Religious	IAIN Takengon	10 years
Ira	34 years	Religious	UIN Arraniry	3 years
Rani	62 years	Very religious	AIU Kedah	38 years

Results

A. Heie's framework-based data and discussion

The collected data of the five lessons (Riki, Abdul, Aini, Ana, Evi) were compared in terms of content, presentation method, the way the referring lecture's

religious beliefs in teaching and the rationale behind. The following three approaches were identified.

Thematic Approach: Riki

The teaching materials are centered on a particular theme in lessons using a thematic approach. The lesson includes supplementary resources from other subject areas (including but not limited to religion) in addition to the necessary mathematical information so that the relationship between mathematics and religion may be clearly demonstrated. Riki oversees the teaching of two-credit courses in elementary mathematics. System of linear equations (SPLSV) was the subject he brought up. Following is a description of the lesson's flow:

Riki introduced herself and read a prayer before the lesson began. He conducted an assessment to see if those present were ready to learn, and then announced that they would be studying the SPLSV topic today. He began by defining SPLSV and outlining the differences between open and closed statements. In one instance, he wrote: There are five pillars of Islam; X is the third pillar; the Kaaba is a cube with eight sides; and the Nabawi Mosque is in Medina.

When responding, students appeared to be quite motivated. He then wrote, "X is the book of Muslims," after that. He was given the definition of open and closed sentences by Riki after he was given these instances. The third pillar of Islam, according to one of the students, is zakat rather than fasting.

> *This demonstrates how teaching mathematics in an Islamic environment improves students' sensitivity to the subject. Furthermore, it can deepen the scientific knowledge of religion, which was previously just considered to be mere cognition. In addition, it gives students a forum in class to debate the proper placement of the five pillars of Islam in light of the references they are familiar with.*

Riki then continued by using one-variable linear equations to address the following issue:

During the Friday alms program this week, Maryam intends to give pomegranate juice to one of the Dayah. It costs Rp. 4500.00 per unit. It cost Maryam Rp 100,000.00 to purchase. Maryam was given Rp 10,000.00 back. Maryam purchased how many juice bottles?

For instance, x = several juice bottles

So the mathematical model for a linear equation with one variable is

4500 x + 1,000 = 100,000 Next, complete the mathematical model

4500 x + 1.000 = 100.000

4500 x + 1.000 – 1000 = 100.000 – 1000

4500 x = 99.000 (solve), so

x = 22 So, the number of bottles of juice that Maryam bought was 22, meaning that this Friday, Maryam gave alms for 22 bottles of pomegranate juice.

"Is there anyone following in Maryam's footsteps who wants to donate every Friday?" Riki asked the students. The students responded with a smile, "I want to do it." After greeting everyone, Riki concluded the session.

Add-on approach: Abdul

Both mathematical goals and religious themes are meant to be made plain in add-on approach lessons. One of these, however, is more important than the other; it is an addition. The connection between the religious and mathematical components is made suddenly; their relationship is not particularly clear. Abdul adopted the ad-on approach. He taught at IAIN Cot Kala Langsa with religious level. The university has performance good Islamic and encourages the lectures to spread message of Islamic values and talk about Islamic faith in regular subject teaching.

In the lesson, the mathematics objectives and the religious messages were just linked up in class exercises or worked examples. In terms of lesson organisation

and religious focus, the two lessons had some minor differences. Abdul's was a religious lesson with mathematics added-on. Just class exercises or worked examples were used in both lessons to connect the mathematical goals with the religious ideas. The two lessons differed slightly in terms of how they were organized and their religious emphasis. Abdul' presentation combined a lesson on religion with maths.

The students were welcomed by Abdul. He reminded him of the lesson from the previous week, which was to enroll in university on time and finish in 3.5 or 4 years, as he went through the material from the previous week. He advised students to "decorate your classroom lessons with good deeds," "don't forget your duties and responsibilities," "read the Qur'an diligently," "if you want to change, start now, starting with the smallest things," and "each semester, finish reading the Qur'an, which includes eight times."

Abdul cited verse 2 of Surah Albaqarah, which reads, This is the Book; in it is guidance sure, without doubt, to those who fear Allah. He highlighted that reading the Qur'an is a habit that should not be discontinued by math students since it serves as the foundation of one's quest for knowledge. He also cited verse 38 of the Albaqarah. *We said: "Get ye down all from here; and if, as is sure, there comes to you Guidance from me, whosoever follows My guidance, on them shall be no fear, nor shall they grieve.* Abdul highlighted that reading the Qur'an will help you overcome anxiety and sadness related to a variety of issues, particularly when learning mathematics. The teaching system was then outlined by him.

Abdul began with outlining the definition of trigonometry, which is the measurement of three angles, and then went on to discuss measures of a triangle's sides, such as its area, side length, height, and bisector. He used examples like our position in reference to the sun, the falaq system of believed, the Qibla direction, and the distance of planets from one another to illustrate the concept of trigonometry. He introduced verse 5 of Yunus' letter, which reads, " He it is Who appointed the sun a splendour and the moon a light, and measured for her stages, that ye might know the number of the years, and the reckoning. Allah created not

(all) that save in truth. He detaileth the revelations for people who have knowledge. People who are aware are given a description of His greatness by Him.

We can find out how many days there are in a month using trigonometric principles; there are 28 in a month. Since the sun spins every 365 days, the Qur'an contains mathematical ideas. How would one determine the height of a building in the actual world, for instance? Abdul claimed that it is difficult to utilize meters for towering buildings. Trigonometry, however, offers a solution to this issue. He then created a right triangle to represent the issue and demonstrated how to use the tangent method to get the building's high. Based on the narrative Abdul taught, it can be affirmed that the story made up the most of the lesson and took up virtually the entire class period. To achieve the learning purpose for mathematics, he inserted some mathematics questions in the story plots. For instance, after explaining to students that Yunus verse 5 of the Qur'an contains the idea of counting years and calculating time, he asked as to how many days there are in a month. In a year, how many days are there? He argued that verse 5 of Surah Yunus does not explicitly answer the question but rather explicitly explains it. To demonstrate that there are 28 days in a month and 365 days in a year, mathematical computations are required.

Before telling the story, Charles opened the lesson with the religious message. He proposed a 6-step method for solving daily life problems: (1) pray to God; (2) read the Qur'an (minimum 8 semesters, 8 times to finish the Qur'an); (3) practice organizing your time; (4) recognize responsibilities; (5) enrich courses with good performs; (6) be thankful; (7) pursue study passionately.

The transcripts of the post-lesson interviews that followed provided insight into how they conceptualized the integration of religion and mathematics during the lesson planning process.

> *The story needs to be appropriate for the [mathematical] lesson being taught. Surah Albaqarah from the Alquran was the passage I read during the senior grade assembly the previous year. I changed my previous communicate in this lesson. Since it was a math lesson, I included mathematic elements to the narrative. The religious message of this narrative matched with the university's daily religious message.* **(Abdul, Post-lesson interview)**

Implicit approach: Aini, Ana, Dina and Evi

Aini

Religious topics were not specifically covered in lessons using the implicit approach. On the surface, it appears to be typical mathematical instruction without any religious overtones, yet the rationale of the lesson design is based on the lecturer's religious beliefs. Aini thinks that his educational beliefs regarding his religion are in harmony with the objective of his campus. Aini, a lecturer at IAIN Lhokseumawe, teaches number structure content in a number theory course that has a weighted average of 2 credits.

Aini opened the session by having everyone read the study prayer. He summarizes earlier material before introducing new material and outlining learning goals. It seems that Aini is very humble as she slowly begins her talk by utilizing words that offer those listening a sense of calmness.

Aini presented reading material on logical operators and then described the assertions as needed for learning them. He then invited students to contribute their ideas while he defined logical concepts and gave examples. The lesson was silent, and the explanation was quite thorough. Students are given the chance to respond by Aini. Students appeared to respond that it was inaccurate when he explained and wrote in error. Aini smile at the moment and replied, "Thank you for the clarification," before stating that "Yes, mother was incorrect."

Aini has an optimistic perspective on her students, which she uses in her teaching style. Each student has the ability to succeed. His use of words, his positive attitude, and his interactions with them while using peer tutoring techniques all demonstrate how much he values his students. Aini's teaching style is influenced by her commitment to her beliefs.

Recognize the true nature of mathematics in order to provide educational initiatives on mathematical topics in ways that are simple to comprehend, practical to apply, and that encourage mindsets and attitudes that are suitable for the acquisition of mathematics. The influence includes making learning enjoyable and instilling a sense of necessity in students to understand mathematics.

Ana

The topic of on number structure is covered in a two-credit number theory course presented by Ana, a lecturer at IAIN Lhokseumawe. There are many parts to the instructional flow:

Greetings and pleasure. Ana began the lesson by introducing herself, inquiring about recent events, and introducing that the topic of study was the number system. Describe the markers of learning. According to Ana, learning indicators include the ability for students to recognize and comprehend the number system, recognize and solve problems using various whole number system concepts, and recognize and handle difficulties using various fractional number system concepts.

Materials for introduction and perception Ana uses infocus to display the material number structure. Capture the interest of students. What are the numbers found in the bin's structural layout, questioned Ana? He emphasized that it might be examined afterwards and discussed in groups. Separate the class into smaller groups. These groups were overseen by Ana, who also gave the students' worksheets (LKM).

Group discussions with two questions from each group are required of the students. They discuss developing numerical structural inquiries. Ana advises creating higher-order thinking skills (HOTS) questions and facilitates and supports the group discussion process. The students are then instructed to conduct group presentations and share work results amongst groups. Ana asked, "The presentation has been made; are there any questions?" during the reflection phase. It seems out that there are none.

Ana emphasized that it is essential to comprehend the definitions and characteristics of these numbers in relation to the topics that have been studied because certain whole-number characteristics do not apply to fractional numbers, and similarly, certain characteristics of negative numbers do not apply to positive numbers (reinforcement of learning material). Adding two numbers, for example, will result in larger numbers. If a > 0, for instance, b > 0. Is a+b > 0? Because the sorts of numbers a and b were not yet determined, Ana noted that this was not certain. However, this unquestionably holds true if a and b are components of positive numbers. This definitely does not apply if a and b are negative integers. Then he provided the meeting material for the following week, which included fractional numbers, as well as assignments and homework via the link https://drive.google.com/file/d/1- KJbsOyJ6PbOZdy_NnOpCxODslbeVCG/view). Ana wished everyone a good day as she concluded the lesson.

Evi

Evi uses an implicit strategy. Quadratic functions are covered in the elementary algebra course, which carries a 2 credit maximum, by lecturer Evi at IAIN Takengon. He believes that his religious education ideas are in line with the objective of his campus. There are many parts to the instructional flow:

Evi greeted everyone as she entered the classroom and informed them that they must read a prayer before learning can begin. Together with the students, he reads prayers. Before showing the PPT content, the instructor presents the subject's learning objectives (CPMK) on the topic of quadratic functions to the students. The three CPMKs mentioned are: (1) understanding theoretical ideas from basic algebra material; (2) applying algebra material in daily life; and (3) integrating algebraic mathematics into technology and information.

Evi brought up the information they had covered last week, specifically the definition of a quadratic function, and reminded the class of it. In the meanwhile, at this meeting, we'll practice using the Geogebra application to graph quadratic functions. There were no clues that the lessons were religious in nature. The profundity of the story was only made clear by the lesson plans and post-lesson

interviews, though. According to Evi, education is a goal in and of itself, not a tool to accomplish something else. In order to incorporate one's religious views with mathematics, one must adhere to Islamic teachings rather than promoting them through education.

Evi also explained the sub-CPMK he aimed to accomplish, which was for students to be able to understand the principles of quadratic functions, function graphs, and their applications. He underlined that the primary subject of this conference was the graphing of quadratic functions. What have you learned in the past week? he continued to question the students. and indicated what was happening by pointing. The student's response is the quadratic function's general form. The general shape of a quadratic function and the value of a function by substituting were the students' answers to this question, which was also raised in class. Evi kept asking questions about how quadratic functions were used in daily life. The student raised his hand in response and said that the quadratic function might be utilized for artillery produces from one ship to another, road barriers on bridges, and motor cross-race routes.

The jigsaw technique of learning is employed, according to Evi. Different concepts are presented to the students, and they participate in group debates and exchanges. With the topics covered in the preceding group's conversation, each group picks off where they left off. He sent out worksheets for the students (LKM), which they had to discuss in groups before answering and presenting.

Students give presentations, and Evi verifies the information presented. Is the response accurate? he inquired. Does this procedure resemble what other students have done before? They all concurred that the response was the same. Give applause to the students who have presented, Evi said in response to the students' conversation. Has anyone got a question they'd want to ask, he said in his query. There are some students who wonder, "What if it's negative?" Evi retorted that bad scores were either disregarded or not used while purchasing things.

Students were given arbitrary quadratic function questions by Evi. It is evident that some students correctly answered while others did not. He recalled that in the past he had drawn quadratic functions by hand and that this meeting would

generate quadratic function graphs using the Geogebra program. He practiced geometry in class. In order to understand more, provide a geogebra tutorial on the subject of quadratic functions.

Quadratic function tests were randomly given to the class by Evi. As can be observed, some students provided accurate responses while others provided inaccurate ones. He recalled that in the past he had drawn quadratic functions by hand and that this meeting would use the Geogebra application to generate graphs of quadratic functions. In class, he practiced geometries. Share a geogebra tutorial on quadratic functions after that so you may learn more.

Revisiting the three approaches

The six stated scenarios showed that various participant lecturers implemented their religious convictions in mathematics education in a variety of ways. Two distinct methods of enactments, in particular, have been revealed. On the one hand, Dina has a broad conception of enactment and regards giving engaging lectures as his moral duty when it comes to teaching (mathematics). The other extreme is Mila, who attempted to directly link the contents of mathematics and religion in her mathematics instruction. Mila has a limited understanding of what constitutes enactment. Nevertheless, the three methods of referencing religious ideas in mathematics education can be used to the six situations in this study. We shall review these strategies in light of Heie's classification (2002) in the sections that follow.

These methods illustrate the relationship between the subject discipline (mathematics) and faith in varying degrees of explicitness. Heie's classification, which was initially created for the university level, largely holds true for school mathematics. The implicit technique, used by Dina, Evi, Filza, and Ana, exhibits the least overt connection of religion and math instruction among them. There was seldom any explicit religious content in their lessons. Instead of incorporating religious substance into their (mathematics) instruction, they attempted to implicitly live out their faith. This might be viewed as fitting within Heie's "incarnational mode," which holds that the lecturers "incarnated" as their performances (or Islamic

personalities) in order to show their concern for and affection for the students.

The add-on strategy has poor content integration. In Abdul's lessons, both the mathematical content and the religious message have been made clear. The two parts are, however, somewhat divided. This strategy is comparable to Heie's coexistence strategy.

A good content integration strategy is thematic approach. Coherence themes were supposed to be organized in Riki's lessons. Under the themes, explicit connections between mathematical goals and religious messages were made. This strategy is consistent with Heie's coherent worldview strategy, which places a focus on the explicit relationship between mathematics and religion. Islamic viewpoints on the significance of the mathematics themes were purposefully included in their lessons. This design attempted to move the teaching of mathematics from a purely technical to an epistemological perspective, therefore potentially affecting religious viewpoint. Heie's method, however, has a wider scope. It aims to "Islamize" the entire mathematics curriculum by closely tying together the epistemological principles of the two subject fields (rather than simply one particular mathematical issue). We refer to Heie's coherence worldview approach and the theme approach as local and global coherence worldview approaches, respectively, to distinguish between them.

According to the study above, the six cases covered each of Heie's (2002) three integration strategies. The theme approach serves as an example of a coherent worldview approach, but its reach is not as expansive as Heie suggests. There are numerous options. One is that we didn't cover the complete curriculum, simply one lesson. The implementation of global coherence in educational institutions is also constrained. For universities to follow, each topic has its own self-contained curriculum (mathematics in particular). To change the curriculum, we need to generate consensus and go through the entire curriculum development process.

In addition to the aforementioned requirements, we suggest that, in order to apply a coherence worldview approach with a wider scope, cultural elements instead of the specific contents of mathematics. One the one hand, mathematics is a cultural activity unique to humans (Wilder 1952). However, Luitel and Taylor

(2007) link the "mathematical worldview" to the social and cultural significance of mathematics. From a historical perspective, cultures (including religions) had a big impact on how mathematics developed, and possibly the other way around as well. In their instruction, math lecturers should incorporate as much as they can the historical evolution of mathematical concepts and a focus on their religious and cultural foundations. In our study, Riki applied this technique to connect the SPLSV, the mathematics subject she taught, with its Islamic principles.

Reevaluating the teaching of religious and spiritual education in university subjects

The relevance of our work to the debate over religious instruction through mathematical teaching was covered in the section above. In this section, we will go a step further and consider how to incorporate spiritual and religious education into the teaching of all subjects in universities, not only math. Our fundamental tenet is that higher education ought to incorporate religious values. In theory, religion ought to be taught alongside all university courses rather than being restricted to religious education classes. Every lecturer (regardless of subject area) would automatically include their own religious beliefs into their daily teaching if they were considering the students' spiritual development.

However, we believe that students would likely to have autonomous personal decisions rather than being indoctrinated if they have a more thorough understanding of religions from different perspectives. Whether or not this enactment would lead to authentic integration is a complicated issue that is beyond the discussion scope of this paper. The cases in this research offered practical data demonstrating the viability of such a goal and the wide range of implementation options. In some instances, the teacher (Abdul) did not discuss religious concepts but instead imparted the moral teachings gained from her religion. In other instances, the speaker (Riki) was able to discuss religious doctrines directly in math lectures. A kind of compromise to the school's "no religion in lessons" policy, strictly speaking, it was spiritual education rather than religious education. Instead

of discussing religion and spirituality in the lessons, the lecturers for the remaining cases of Aini, Ana, Dina, and Evi behaved as their respective religions had taught them to.

There might also be more options. Since it depends on the actual situation, we do not wish to draw any conclusions about which is more effective. Isn't it true that each instance must be considered separately? The religious message can be highlighted using a theme or coherent worldview approach, which is advantageous for the students who are prepared. The kids who are not yet prepared, however, may benefit more from an implicit or incarnational approach.

Additionally, a strong content integration strategy could be misconstrued as a religious endorsement and lead to indoctrination rather than education. It agrees with Heie (2002) that the integration's content component completes the incarnational component. Referencing religious ideas in education may need the balanced application of several methodologies. The code of ethics should be a consideration for lecturers while using these strategies. Our research is positive overall. In the Muslim culture, there is a proverb that reads: ‘We said: "Get ye down all from here; and if, as is sure, there comes to you Guidance from me, whosoever follows My guidance, on them shall be no fear, nor shall they grieve. (al Baqarah 38). If the lecturers have such incentives, there would be an acceptable manner to integrate religion with school curriculum despite a variety of limitations.

Culture must be preserved and expanded through education. This is especially true for topics like morality lessons and spiritual education, where the lecturers' "soul" (Ball 2003) impacts the students' souls. It is clear from these research that the teacher is essential to the transfer of values and the development of spirituality. An "ordinary" mathematics class can be improved by the quality and skill of the lecturer. The spiritual component is important for both the creation of curricula and the training of lecturers. Without a question, we need to have a well-designed curriculum, well-planned classes, and teaching that is carried out on solid basis. Additionally, it is important to safeguard the lecturers' training and other fundamental expertise. However, this is not the entire truth. The lecturer is the one who imparts the knowledge.

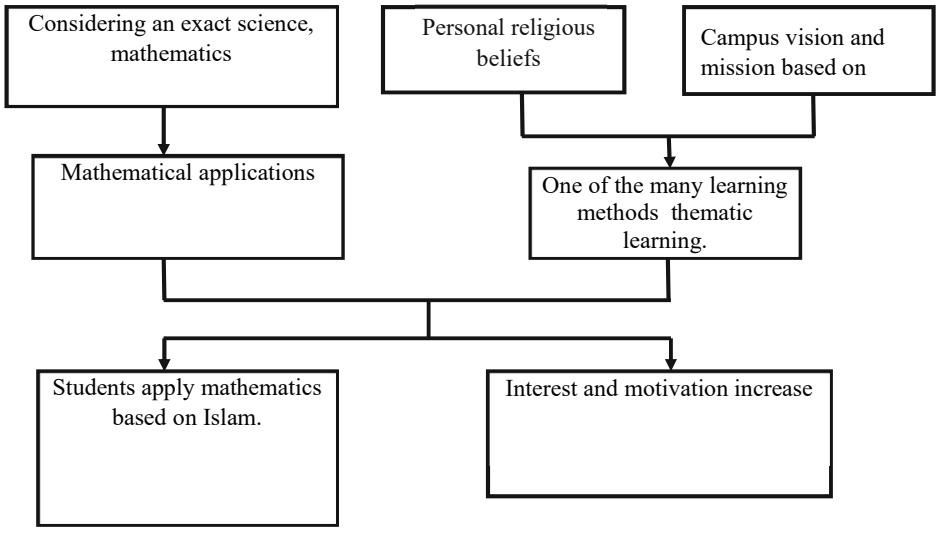
B. Mansour framework-based data and discussion

The following cases are presented. Even though the participants in each situation practice the same or different religions, they all employ unique teaching philosophies and techniques to pique students' curiosity and spur their desire to learn. These three situations clearly demonstrate the link between personal religious beliefs (PRB) and the teachers' pedagogical ideas. They demonstrate that religious views and beliefs about mathematics and its teaching do not have to be mutually exclusive. This makes the three examples mentioned above "critical cases" (Flyvbjerg, 2006) of the study.

Riki, a lecturer at IAIN Lhokseumawe who practices religion and has eight years of teaching experience, is a case in point.

Riki thinks that learning mathematics is very difficult because it is an exact science. His childhood dream was to become a math teacher. So that they can be useful in a variety of ways throughout their lives, he wants his students to be able to master basic mathematical concepts. In order to increase student motivation and interest in math lessons, he also thinks that a connection to religion can be made. The fractions used in Islamic law and zakat are just two examples of the many mathematical topics that have a direct bearing on Islamic law. No mathematical topics, in his opinion, are incompatible with Islamic religious principles.

Fig. 1 Riki's religious beliefs and their connections



Aini Ana, Dina, Evi, and Ira's case

Aini, a lecturer at IAIN Lhokseumawe, who has been teaching for 20 years and is not religious, IAIN Lhokseumawe's Ana, a five-year teaching experience of the religious department; Dina, a lecturer at IAIN Takengon who has been teaching for ten years and is not religious, Evi, a lecturer of religion at IAIN Takengon who has been there for ten years, For ten years, Dina has been a religious educator at IAIN Takengon. Ira is a lecturer at UIN Arraniry who has been working as an academic for three years.

Aini recognizes the true nature of mathematics, which enables her to provide educational initiatives on mathematical subjects in ways that are simple to comprehend and put into practice in daily life, promoting attitudes and mindsets from the mathematics learning process. Additionally, she finds studying enjoyable and needs to continue learning. the requirement for math education. He thinks that teaching mathematics should be engaging in the sense that students are encouraged to express their confusion by saying things like, "I don't really understand this part," or at the very least, "I don't understand ma'am." He also thinks that teaching mathematics should be done in a way that encourages interaction between students. This expression demonstrates that he still has a desire for further information, even if it is private, because it demonstrates that he is still curious about mathematics.

Others claim that these positive traits are used by students when they solve mathematical problems, and when they are in everyday life, these traits are very important. Ana understands that mathematics teaches more than just content; there are other things that are much more important, like critical thinking skills that students can use in everyday life in the context of problems in life, positive characters such as not giving up easily, focus, discipline, and others. Mathematics is recognized by Dina, Evi, and Ira as the foundation of all knowledge. In daily life, mathematics is also frequently used. However, a lot of students believe that mathematics is scary and difficult. For the students I teach, I want to change the way they think of mathematics as a challenging and frightening subject by presenting it as a practical science.

There aren't any mathematical concepts that are consistent with religion, according to Aini, like probability, which is connected to gambling. The idea description may have been replaced, though, in this case. Since the beginning, various instances that are more Islamic and consistent with the subject matter and environment of Indonesia as a Muslim-majority nation have taken the place of dice and playing cards. He compared life and death to chance by stating that they are both examples.

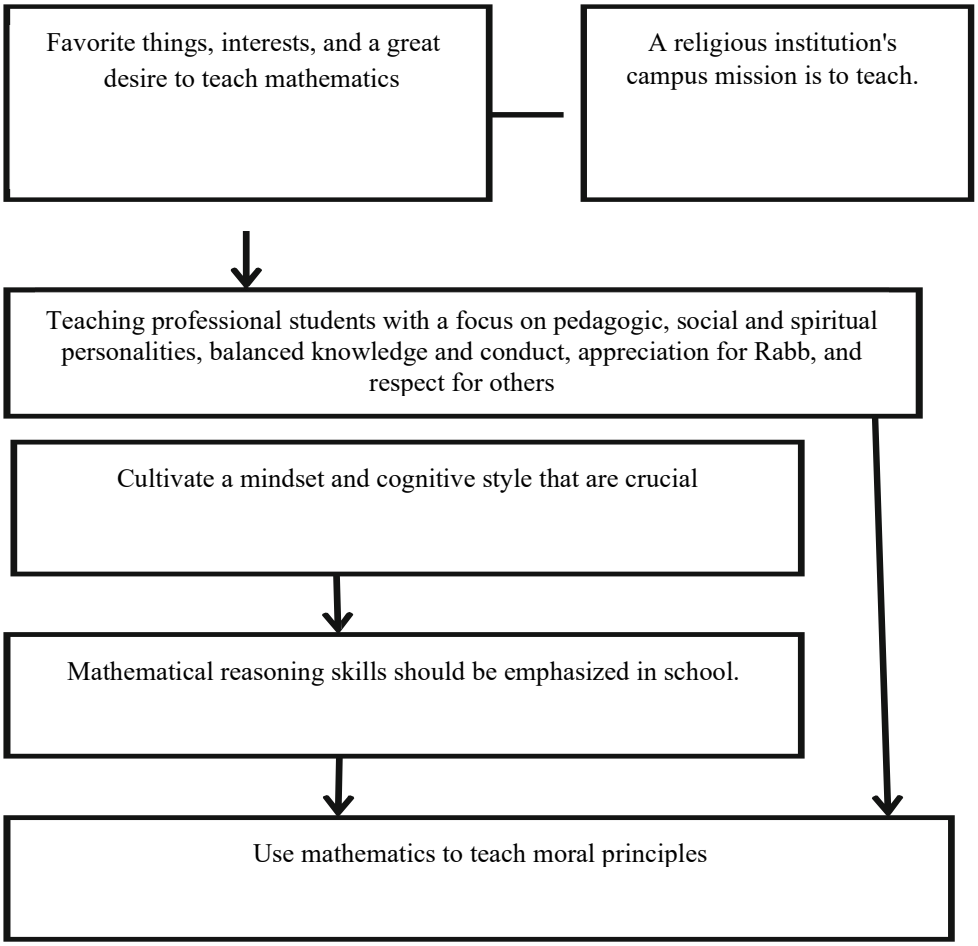
He asserts that knowledge of probability enables one to estimate strength and forecast the likelihood of actions taken. Ana agrees that teaching students about probability is crucial. This content can be used to build a wide range of cognitive and affective skills. Dina is of the opinion that dice or rummy are no longer even used in modern gambling. He contends that studying mathematics through the use of dice and playing cards does not teach about gambling but rather the concept of chance, whose applications are exceedingly extensive, broad, and deep. Although it is true that some things might still distort it, Evi thinks it's still important to teach probability to students, but she also thinks it's important to make sure they understand that gambling is forbidden for Muslims. Ira thinks that by teaching adolescents, they will realize that the only people who profit from gambling are the bookies. If playing cards are at problem, there are a variety of other mediums that support the idea of chance.

Aini discussed the relationship between mathematics and religion, using the Al-Qur'an sentences as examples of how logic can be found in the use of negation, disjunction, conjunction, and implication. Islamic values are taught in various mathematics courses, according to Ana, who cited one of her studies titled "Perceptions of Students' Mathematical Literacy Toward Islamic Values."http://103.52.61.43/index.php/dedikasi/article/view/1083.

Dina suggested a scientific explanation of the relationship between mathematics and religion, citing the Golden Ratio as an example. According to Dina, Allah "designed" our bodies' proportions to be 1: 1.618, which is the golden ratio. On the subject of set theory, Evi presented an illustration. He noted that the idea of assemblages is frequently seen in the Qur'an, as seen, for instance, in the

collection of three groups of people in Surah QS. Al-Fatihah verse 7, the worst animals in Surah QS. Al-Bayyinah verse 6, and the collection of four groups of people in Surah QS. Al'Asr verse 3. Ira thinks that the idea of boundaries is just one of many mathematical concepts that might help people have more faith.

Fig. 2 Aini's religious beliefs clusters and their connections



Rani, Abdul, a lecturer at AIU Kedah and IAIN Cot Kala who practices religion and has been teaching for 38 and 12 years, is a case in point.

Rani, who is deeply devout, has been a teacher for 38 years. She started off teaching chemistry and then transitioned to teaching mathematics. She perceived and recognized mathematics as a divine sign. In order to make mathematics more relatable to my students, she often draw connections between algebra and actual

occurrences like blood flow. Genetics can be used as yet another useful example to illustrate probability.

When Rani began teaching in 1985, she kept up with the advancement of technologies. Software like Word, Excel, geometric sketchpads, and graphing calculators were the tools of the 1980s. In his lectures, she also considers how mathematics is used in everyday situations. As educator, you should view mathematics as a guide for establishing a connection with the creator rather than as a subject. Numerous verses in the Alquran provide explicit, implicit, or real explanations of mathematical concepts.

She claimed that although I had not known the value of mathematics as a student, She had educated myself when I became a teacher. From that point on, I realized that mathematics was a language that could be used to comprehend and research higher mathematics. In Malaysia, for illustration, there is a problem with the notion that mathematics is the property of no one, even religious leaders (ustadz). The prevalent consensus is that Westerners tend to understand mathematics. History actually reveals that Imam Syech Ahmad Alhasyim was an imam at the Grand Mosque (Masjidil Haram) who authored mathematics textbooks for colleges, as students came to Mecca for both academic and mathematical purposes at the time.

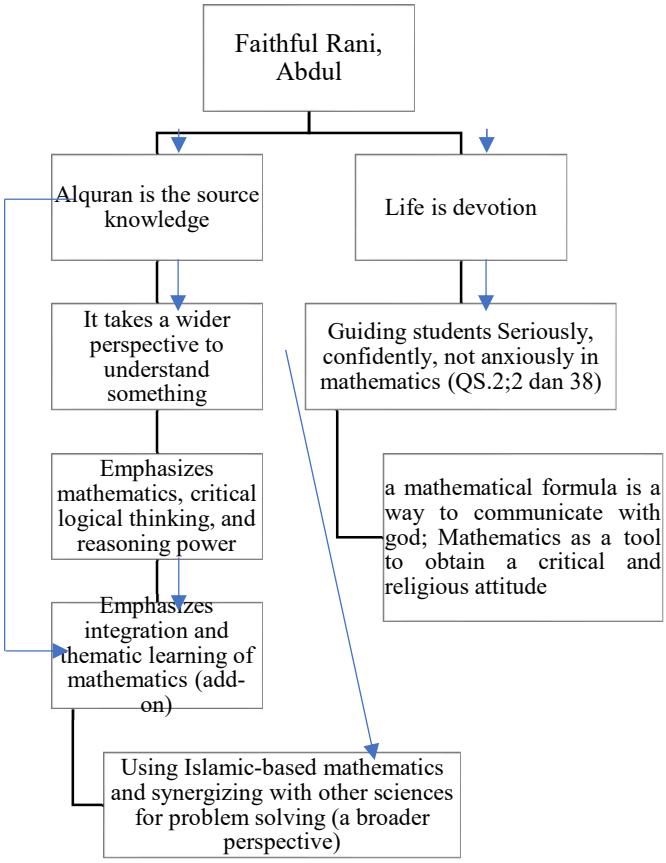
The book is a historical artifact that most people are unaware of, having been written in Arabic before being translated into Javanese script. That's crucial information that I provide to aspiring USM teachers. It is hoped that such content can alter the attitudes and behaviors of students. He went on to say that I once saw a textbook about fruit in Mecca, and it had the Alquran fruit-related verses arranged in an intriguing way. Sunflowers with seeds that haven't altered in thousands of years are sold in the Netherlands; these sunflowers can be used as a teaching tool to expose children to a variety of mathematical concepts. This is especially beneficial for primary school kids.

When teaching about distance at the university level, for instance, one could use the speed of light to illustrate the concept by using an example of someone

sending a WhatsApp message from one location to another, no matter how far or close. This is the kind of instruction or understanding that will make someone realize how wonderful Allah is. Students can be inspired to study mathematics diligently by reading about Islamic history, such as that of Alkhwarizmi, who made contributions to the field of mathematics. There is a title on the history of mathematics that, in my experience as a master's level teacher in England, begins with Archimedes, 3000 years before Messiah, and takes to 1600, between 1000 and more; before 1000, it appears that mathematics is meaningless. Pascal is the name of the individual who made the discovery of Pascal's triangle. In higher mathematics, Pascal a mathematician who developed in Europe between 1600 and 1700 BC is recognized with developing this idea. The majority of people are unaware of Pascal's triangle because the book by Omar Hayyam is written in Arabic, although the idea is present in it already. Of course, Omar Hayyam wrote the first version of what is known as Pascal's triangle. This implies that a great deal of historical information is unknown, resulting one to believe that there is no relationship between mathematics and Islam.

Abdul enjoys teaching and finds the subject of mathematics to be enjoyable. In addition to being mathematically proficient, he wants his students to be religious. He contends that mathematics develops our capacity for rational thought and teaches us how to handle problems realistically and logically. Therefore, the necessity for fundamental mathematical knowledge has a wide range of applications in daily life. This mathematical information is also integrated with other sciences to increase its utility. Abdul also said that there are no subjects in mathematics that are incompatible with religion. For example, material on probability is crucial if it is examined both fundamentally and in-depth. Numerous issues affecting human life, including those of an economic, social, exact, and even theological nature, can be resolved with this content. because our faith contains mathematics as a science. Mathematical knowledge is a huge part of religious knowledge. Abdul clarified that if you comprehend mathematics, Surah Al-Ikhlas declares a single god. Probability also encourages individuals to consider carrying out more good deeds than evil.

Fig. 3 Rani's religious beliefs and their connections



The three examples above demonstrate a connection between PRB and instilling confidence in mathematics. It's interesting to note that while implicit, a person's personal religious views do influence their understanding of mathematics. On the other hand, the way that lecturers internalize religion into mathematics instruction varies depending on their levels of religiosity as well as how much their backgrounds and worldviews impact them. This is in line with Mansour's statement that lecturers' PRB, experience, and pedagogical views are complementary.

Islam is a teaching for rahmatan lil alamin, describing how one should behave, how to view the world, and how to have a spiritual life (connection with Allah), according to the general interpretation that can be put out. Education may not be primarily concerned with social issues like education. But according to Islam, everyone must worship Allah (QS Adzariat; 56). The level of submission to

Rabb will have an impact on how arithmetic is taught in the classroom. Therefore, when someone teaches, they will naturally do so from their own perspective and internalize religion into mathematics instruction in numerous ways. The three scenarios that have been shown highlight the need for mathematics education to focus on making students happy, unwinding them from stress, and instilling a sense of religion in them. Islam emphasizes that there is no distinction between general or secular information and religious knowledge; mathematics is found in the Qur'an, which is a source of knowledge. In order to avoid knowledge dichotomies, it is crucial to reinforce this point of view.

These results are reinforced by supporting data obtained from participants on campuses that encourage the 'Islamization of knowledge', specifically IIUM Kuala Lumpur and AIU Kedah. These institutions uphold the Islamic ideals of aqidah, akhlak, adab, amanah (trust), and amalan (practice), which are employed as fundamental values. An explanation of their opinions on scientific integration is provided below.

Muis's perspective as an IIUM Kuala Lumpur science lecturer

The word "scientific integration" emphasizes the word "integration." Multi disciplinarity occurs when different disciplines are arranged in a pattern; problems in Islamic studies, politics, economics, or sociology can be solved using these patterns. On the other hand, interdisciplinary refers to the combination of various fields that are studied and integrated, such as engineering, Islamic studies, economics, and so on. For instance, in the IIUM Kuala Lumpur department of fundamental and disciplinary studies, it is explained that fundamentals are the principles of religion that are then integrated into other disciplines, like sociology and psychology. This resulted in the development of the concept of the "Islamic worldview," which demands consideration of both the natural environment and the texts. Not to add that, given the advancements in research that have occurred recently, the average person is now more interested in science. Nature has supplanted God, and artificial intelligence (AI) and robotics have taken control of nature.

The real world and virtual world are becoming increasingly similar, as the phrase "digital revolution" suggests. Even the number of likes one receives on social media influences one's self-worth. That's how homo digitalis originated: "I click, and I am." What then is the analysis from the perspective of a human? No matter what, humans will always be humans. As mentioned in Surah Arrahman verse 55 of the Qur'an, "O humans and jinn, if you cross the corners of the earth and the heavens, then exit them; you cannot enter them unless by force."

The ability to jump between locations with Allah's permission is known as the multiverse in modern parlance. In the military's bullet-guiding system, people can also execute haking. As a result, new perspectives will emerge regarding the nature of Islamization that will be applied to mathematics and Islamic studies, as well as the intended outcomes. For instance, the learning outcomes (LO) and materials of the Islamization part are organized according to an online course offered on the campus of IIUM. In this context, Islamization refers to justice, whereas the academic framework is more concerned with implementation—that is, the pursuit of accurate and comprehensive facts. in order for just decisions to be made. Provide several relevant references to back up whatever theory you are given regarding whether or not Islamization is detrimental to Islam.

When teaching a dynamic subject like heat movement, the Islamic approach is to refer to Surah Yasin verse 36 and other relevant verses from the Qur'an. We can refer to this as Islamization. The use of Islamization to achieve happiness in this world and the next is a component of what IIUM refers to as "prosperity." Lecturers at IIUM are expected to be experts in both science and Islam. In the event that just one of them is available, training is provided to ensure the lecturer is proficient in both of these areas.

Asnah's perspective as an AIU Kedah kindergarten education lecturer

The five basic values of AIU are practices, trust, creed, morality, and morals; however, there is no Islamic course program offered. Religious principles are integrated into kindergarten education, for illustration. While AIU does not practice Islam, some of its principles are.

CHAPTER 5

Conclusion

Conclusion

The integration of religious and spiritual education with several academic fields at the institution is a top priority. For universities without classes for religious education, this goal is particularly crucial. The actual implementation, however, is not exactly on equal, according to the literature. The intention-practice gap in classrooms has only been the subject of a few empirical research, and this one is one of them. Eight lecturers who are religious, very religious, not religious, or have no religious affiliations were responsible for creating and implementing the math lessons that were reported. In order to include the lecturers' religious beliefs into the teaching of mathematics, the lessons were specifically created. Based on these six lessons, three teaching approaches of thematic, add-on and implicit were found. These methods were contrasted with Heie (2002)'s classifications. It was discovered that our methodologies are essentially the same with the exception that Heie's coherence worldview approach in our study does not cover as much ground. We have suggested a potential technique for putting a broader coherence worldview approach into practice in university mathematics. This study also served as an example of how to include religious beliefs into university academic instruction when obvious mention of religion is not desired. The key is the lecturer. The lecturers can always find a way if they are committed enough. A small idea can have a big impact.

Meanwhile, referring to Mansour's framework, it may be inferred that, no issue how quiet, there is evidence that lecturers' attitudes about teaching and studying mathematics are in remaining with their own underlying religious beliefs. It differs from previous study in that the lecturers themselves disclosed their level of religiosity rather than the researchers designating them as having a certain level. A person's beliefs will affect how he perceives methods of teaching mathematics.

Suggestion

The fact that lecturers' intrinsic religious beliefs have an impact on the way they teach mathematics, the following strategies should be suggested:

1. It is essential for lecturers to be enough religious in order to be able to teach mathematics in a way that highlights strong spiritual relationship and incorporates associated religious teachings. reincarnation; creating an integrated mathematical curriculum with Islamic principles (coherence)
2. The curriculum of mathematics education departments or study programs in universities, particularly PTKIN or Islamic universities, must include Islamic mathematics courses such as Islamic mathematics studies, falaq science, philosophy and history of Islamic mathematics, and others.
3. It is crucial that institutions take action by mandating that lecturers create lesson plans or RPS for religiously integrated mathematics instruction, particularly on PTKIN or Islamic universities.
4. To give lecturers more resources for their work, it is crucial to carry out research on mathematics instruction which includes Islamic principles.
5. To improve the teaching of mathematics, campuses—particularly PTKIN or Islamic campuses—should support the creation of publications or other instructional resources for integrated religious mathematics education.
6. The author proposes a small example of PR-PPMA. PTKIN, particularly IAIN Lhokseumawe, which advocates for a "civilized" campus, could establish a research and development center for integrated religious mathematics instruction. This is an initiative to directly contribute to the development of this concept and will engage math teachers, particularly in Aceh. In this particular case, Unsyiah Banda Aceh already has the Center for Research and Development of Indonesian Realistic Mathematics Education (PRP-PMRI), a weekly program called TADARUS that provides opportunities for research on religion-integrated mathematics education, as well as UIN Malang, which has published numerous papers on the subject. In meanwhile, the Islamization of Knowledge (IOK) is a well-known accomplishment of International Islamic University Malaysia (IIUM). IAIN Lhokseumawe will collaborate with Unsyiah, UIN Malang, and IIUM among others when creating PR-PPMA.

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