

A model for integrating Islamic values and local contexts into mathematics instruction for secondary students

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Abstract

Islamic integrated instruction connects the teaching of knowledge, concepts, and skills in a particular subject matter with the Quran and the Hadith to promote desirable characteristics in Aqidah, Ibadah, and Akhlaq. This study formulated a model for integrating Islamic values and the contexts of Thailand's three southern border provinces (Deep South) into mathematics instruction for secondary students. The constructed approach comprised learning activities administered in six steps, including 1) attention-grabbing, 2) presenting contents, 3) validating, 4) building awareness, 5) practical training, and 6) presenting outcomes. Suggestions included teachers exploring and utilizing Islamic content relevant to lessons or local contexts for lessons less related to Islamic knowledge and allowing students to recognize presented mathematic and Islamic bodies of knowledge for further connections to their daily lives.

Keywords: *Islamic values, local contexts, teaching mathematics*

INTRODUCTION

Islam is a way of life or a living system that every Muslim must learn and regularly observe as an individual and a society member. Every Muslim is obligated to study Islam as a religion (a.k.a., Islamic Studies) in conjunction with other fields of knowledge for peaceful coexistence. These obligations for learning and practicing are attached to Muslims from their births to their graves, and regardless of factors, time conditions, barriers, and locations, Muslims are destined to acquire and achieve these life purposes (Office of the Basic Education Commission, 2010). The Quran contains Islamic values, and all Muslims use it as guidance to thrive in this world and find peace in the hereafter. On the other hand, the Hadith refers to an Islamic body of knowledge accepted by Prophet Muhammad and adopted by Muslims as living guidance in parallel with the Quran. Furthermore, Islamic values derived from the Quran and the Hadith not only appear as adopted living guidance for harmonious social coexistence but also exist within many contemporary disciplines, e.g., History, Geography, Science, and Mathematics, reflecting the virtues of Islamic principles (Salleh, 2009; Halstead, 2007; Rafiki & Wahab, 2014; Shafique, et al. 2015, Nuriman & Fauzan, 2017).

Islamic integrated instruction is a pedagogical model that combines secular and Islamic concepts and skills using blended learning units, projects, and activities. Knowledge of the Quran and the Hadith is added to lessons to enrich the understanding of a particular subject with emphasis to promote desirable characteristics in Aqidah, Ibadah, and Akhlaq following the way of life native to students (Wae-sama-ae, 2009; Bahroni, 2010; Hakim, 2012; Sunhaji, 2016). Simply put, this integrated instruction seamlessly associate secular matters (rational knowledge) with Islamic principles (revealed knowledge) using a single pedagogy package to promote the awareness of Islamic values while learning. This teaching practice is beneficial as it encourages students to become better Muslims by adopting Islamic values and controlling their behaviors. Simultaneously, the integration also demonstrates that the power of Allah also lies beneath the foundations of Science (Nurkhamimi et al., 2016; Lateh, 2019). Listyono et al. (2018) proposed an instructional integration of Islam into Biology by encouraging students to study the values of the Quran and the Hadith related to biological principles and asking them to verbally associate the principles of Biology with Islamic values in the Quran and the Hadith. Eventually, the instructor pointed out that Islamic values in the Quran and the Hadith can explain any relationships on Earth. Moreover, there are studies

reporting the success of integrating Islamic knowledge in teaching. For instance, Safkolam et al. (2021) integrated Islamic concepts into a science course for seventh-grade students in a private school in Yala, Thailand, and reported that supplementing the class with the knowledge of Islamic history provided students with a greater understanding of the nature of science. Similarly, Purwati et al. (2018) conducted a classroom experiment by integrating Islamic principles in a science lesson titled “Substances and the Changes, Temperature and Heat, and Energy in Living Systems” for seventh-grade students at Islamic Junior High School (MTs) in West Lombok, Indonesia, and revealed that these participants achieved a 15.19% higher mean score and those in the control group. Furthermore, Umudee (2016) explored student achievements when studying a science subject on ecosystems through an integrated Islamic pedagogy and found that the students' posttest scores were 17.34% higher than those of their pretest. However, Mualimin and Subali (2018) explored the degrees to which Islamic knowledge was integrated with Biology subjects in Magelang, Indonesia, and indicated that teachers integrated the Quran only 32% of the time into subjects taught to students in Grade X and 35% to subjects for those in Grade XI. Similarly, the Hadith was integrated only 19% for Grade X and 21% for Grade XI.

Concerning the scope of this study, dealing with the integration of Islamic into Mathematics, Baka and Narongraksakhet (2010) proposed an integrated curriculum framework for level three students in Deep South private Islamic schools, covering all the eight learning strands. However, when it comes to the Mathematics Strand, the framework only included Standard Kor 2.1 (the fundamentals of general measurements) of the Mathematics Strand 2. Furthermore, Kusaeri, et al. (2018) constructed an instrument to measure advanced thinking skills in a mathematic lesson titled Algebra, Statistics, and Arithmetic with Islamic integrations in three aspects: Muamalat, Fiqh, and Aqidah. Results showed that while the students were comfortable finding answers within the Aqidah aspect, it was not easy to solve questions of the other two aspects. Context-based learning is a pedagogical approach that aims to connect lessons to familiar real-life contexts and situations, encourage students to participate in activities, give them opportunities to practice autonomously, and simulate experiences that allow students to learn to apply knowledge in daily lives (Gilbert, 2006). Also, there are studies proving the success of context-based learning. For instance, Kaewsansai and Kijkuakul (2021) organized mathematic activities on

probability for Secondary 4 students in Sukhothai, Thailand, and published that most students obtained the skills to associate contexts with Mathematics, followed by other subjects and daily situations, respectively. Supa and Poonpaiboonpipat (2020) ran a context-based learning activity for Secondary 3 Mathematics in Tak, Thailand during a lesson unit called Surface Area and Volume and revealed that most students could make mathematical representations with their abilities rated as high. The discovery reflected that the students could define problem-solving variables, draw a geometric model from problems, appropriately choose formulas, and practically solve the problems. Furthermore, Ekkapan and Thongmoon (2020) organized a context-based learning activity for a Secondary 5 mathematics class in Maha Sarakham, Thailand during the lesson titled "Introduction to Graph Theory" and suggested that the students' mean score of mathematical literacy was 74.55%, with mean scores of mathematical situations, contexts, and processes at 89.09%, 87.27%, and 65.45%, respectively. In the same vein, Hidayat and Wijayanto (2020) conducted cultural context-based activities for a Grade 4 mathematics class in SD Negeri 06 Kota Salatiga, Indonesia, and disclosed that the students achieved more satisfactory learning outcomes than those exposed to regular lessons.

In Thailand, Muslim youths from 6-12 years old begin their education at mosque's Islamic education centers (a.k.a., Tadika), established based on community needs to train youths with the Mosque's Fardune Islamic Studies Curriculum BE 2548/AH 1426. Furthermore, Islamic Studies are also provided for Muslim youths in some public schools to promote the knowledge of moral principles, faith principles, and life application of Islamic teachings, and the addition of Islamic Studies follow Strand 1 on religion, morality, and ethics of the Social Studies, Religion, and Culture Strand (Office of the Basic Education Commission, 2010). However, after exceeding the said age range, some families send their youths to pursue further education in public schools (beginning at 13-18 years old) with a secular curriculum offering only a class of Islamic Studies per grade. On the contrary, some families might opt to admit their children to private Islamic schools that simultaneously provide a parallel curriculum that offers secular and Islamic courses. Following this alternative education pathway, youths' families (13-18 years old) justify their decisions based on three fulfillments (Halstead, 2007, Salleh, 2009; Saputra, 2019) such as 1) Their children have pure faith in Allah without any doubt (Aqidah). 2) The practice is considered a sign of respect to Allah (Ibadah). 3) Their children would possess desirable ethics, etiquettes, characteristics,

and behaviors (Akhlaq). Hence, Muslims in any country generally desire to have their children study Islam as early as possible to ensure that they have the right nurturing to become physically, mentally, emotionally, socially, and intellectually sound individuals with faith, strict compliance with the teachings, rational thinking guided by the Quran, beautiful manners as exemplified by Prophet Muhammad, and happiness in life within the society.

Nevertheless, there remain several problems in administering the secular-Islamic parallel curriculum. Firstly, as students advance deeper into a more specialized secular education pathway, they become less interested in or focused on studying religion. Secondly, according to students' perspectives, specializing in a religion produces no perceivable professional advantage. Thirdly, this type of parallel curriculum seems to still revolve around the concept of dichotomous learning. Prince of Songkla University Demonstration School is committed to admitting Thai Muslim students from both secular and private Islamic schools because it has two intentions: to increase educational opportunities in pursuing upper-secondary and tertiary education and simultaneously motivate private Islamic schools to improve the quality of their education. Consequently, tangible results could be observed reflecting these intentions. Firstly, the school has been increasing classes to accommodate the growing number of Thai-Muslim students coming from local secular and private Islamic schools, and as they graduated, more of them continued pursuing higher education in universities nationwide. Secondly, local private Islamic schools become more enthusiastic about educational development, measured by higher annual numbers of their students passing entrance examinations and entering universities. Based on these notions, students in the Muslim quota classes of Prince of Songkla University Demonstration School must have obtained some unique instructional advantages, unlike those in other classes or schools as they were able to meet requirements following key performance indicators of each learning strand as prescribed by the Basic Education Core Curriculum. Therefore, this study attempted to integrate Islamic knowledge and local contexts of Thailand's Deep South into teaching a basic mathematics course for Secondary 5 students. The course contents included decision-making and planning, information and data collection, preliminary data analysis with graphs and statistics, and opinion surveys with aims for students to develop positive attitudes towards mathematics; see values in Islamic knowledge that is relevant to mathematics; and obtain knowledge, ideas, and learning skills/processes necessary for productive daily living. In addition, the study aimed to formulate a model for integrating Islamic values and Deep South contexts into mathematics instruction for Secondary 5 students and explore their attitudes towards the Islamic integrated mathematics instruction.

METHOD

The participants were secondary students in the classes of 5/3 enrolled in Prince of Songkla University Demonstration School during the second semesters of Academic Year 2017 (n=38) and 2018 (n=39). In addition, the participants were admitted to the school through the Thai-Muslim quota allocated for the five southern border provinces. Students in these classes were also enrolled in the 1.5-credit Basic Mathematics course (coded as Kor 32104) administered three periods per week for 15 weeks. This course includes three chapters: Chapter 1 on Statistics and Information, Chapter 2 on Preliminary Data Analysis, and Chapter 3 on Polls and Surveys. Further details of each chapter are illustrated in Table 1.

Before implementation, the lesson plan, integrated with Islamic values and local contexts, was initially validated for quality by experts, and it received a passing mean of 4.80/5.00 (SD 0.45). After implementing with the target groups, the students were asked to write a learning journal during their last sessions. Afterward, their two-year feedback was used to revise the lesson plan and its learning activities. The model was constructed to suggest how the mathematic learning activities should be organized in conjunction with the integrated contents of Islamic values and local contexts. Consequently, the revised lesson plan, post-learning journals, and an assessment form on integrating Islamic values and local contexts were submitted to five experts for further assessment on congruence, appropriateness, and practicality.

Table 1. Contents of learning activities for secondary 5 students.

Weeks	Contents
1-2	Chapter 1 Statistics and Information - Examples of cases or problems that require statistics - Statistics and decision making and planning - Information and Data Collection
3-7	Chapter 2 Preliminary Data Analysis - frequency distribution of data - Graphs and presentations of various graph formats such as pie graphs, line graphs, bar graphs, donut graphs, radar graphs, waterfall graphs, histograms, stem and leaf diagrams, box diagrams, etc. - Descriptive statistics such as mean values, distribution values in both non-frequency distribution data and the frequency distribution as well as skewness, equilibrium, quartile, percentile
8-15	Chapter 3 Polls and Surveys - scope of polling and surveying - Selection of samples - Process of conducting polls and surveys - Data collection, analysis and presentation

RESULTS AND DISCUSSION

After teaching the Secondary 5 students at Prince of Songkla University Demonstration School following the explained sequence, the model for integrating Islamic values and the Deep South contexts were concluded to contain six steps per learning unit as follows: *First*, attention-grabbing: In this step, teachers should try to grab students' attention by exemplifying the wonders of the Quran or different phenomena that God (Allah SWT) created that are relevant to the lesson and could be seen inside and outside the area. *Second*, presenting content: Teachers should associate course contents with lessons in the Quran or events and phenomena that occur locally and non-locally. For instance, a lesson on central tendency and spread could be associated with the finding of central tendency and spread of letters and words in Surah in the Quran. Similarly, a lesson on sampling could be matched with Surah's teaching on the sampling technique. *Third*, validating: Teachers should ask students to work together to verify knowledge from the Quran and introduced phenomena by referring to reliable sources and academic articles. For instance, students could check the numbers of letters and words and the accuracy of Surah's sampling technique.

Table 2. An example of learning activities organized with the integration of Islamic values and local contexts.

Topics	Learning activities
Central tendency and spread	<p>Attention-grabbing: A student representative begins the activity by leading the class to read verses in the Quran while their classmates read along. Afterward, the teacher gives examples of miracles in the Quran, such as the magic of the number 7, which is one of the wonders of numbers in the Quran in science.</p> <p>Presenting contents: The teacher introduces the class content on finding central tendencies and spread. The students learn about "Measures of Central Tendency and Spread in Noble Quran," ways to count letters and words in Surah in the Quran, and examples of central tendency and spread in letters and words of selected Surah.</p> <p>Validating: The students crosscheck the counted numbers of letters and words in selected Surah with results that scholars documented. Furthermore, the students are asked to verify the knowledge gained from learning to calculate averaging values of local and non-local examples.</p> <p>Building awareness: The teacher teaches the students ways to utilize central tendency and spread. The students discuss local and non-local case studies involving central tendency and spread. The teacher supplements the learning by stating problems from various textbooks and Ordinary National Educational Test (O-NET) exams in an activity called Stat_Rally, where students in each group rotate to solve a predetermined number of problems.</p> <p>Practical training: The students practice calculating central tendency and spread related to surrounding objects, such as leaf midribs and heights of their classmates.</p> <p>Presenting outcomes: The students present their work outcomes produced as infographics during the practical training.</p>

First, building awareness: In this step, students should be encouraged to expand their conceptualization and establish an understanding of matters because established knowledge will be handy in further application with other contents and serve as a foundation for extensive knowledge expansion. For example, after counting the numbers of letters and words, teachers might encourage students to expand their thinking based on the obtained information or explore other Surah's teaching related to the principles of statistics. *Second*, Practical training: During this step, students should be tasked to apply learned principles and concepts in practices based on given situations. For instance, they could be tasked to calculate the central tendency and spread of leaf midribs or heights of members of each class, create polls, and conduct surveys on topics of interest. *Third*, presenting outcomes: Students present work outcomes (i.e., products of their practical training) to classmates and publish them through social media.

Table 2. (Continued)

Sampling	Attention-grabbing: A student representative begins the class by leading their classmates to read verses in the Quran and have their classmates read along. Afterward, the teacher gives examples of events or phenomena that occur locally or non -locally, given that such scenarios would require the students to select or decide on something. Presenting contents: The teacher introduces a lesson on sampling, informs the students about Sampling and Sampling Distributions in Noble Quran, provides examples, and explains the steps of each sampling method. Validating: The students check the samples in polls or academic articles. Building awareness: The teacher informs t he class of the criteria for selecting sampling methods and leads the discussion of cases with appropriate sampling decisions. Practical training: The teacher creates situations related to the life of local Muslims and allows the students to decide on a sampling method and justify their decisions collaboratively. Presenting outcomes: After working on the situations, the students show their classmates the infographic results.
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Table 2 exhibits an example of the learning activities for each step for teaching the topic of central tendency and spread, sampling, and polling, and table 3 illustrates the results obtained from the five experts after assessing the instructional implementation of the model for integrating Islamic values and Deep South contexts.

Table 2. (Continued)

Polling	<p>Attention - grabbing: A student representative leads the class by reading verses in the Quran, and the teacher asks their classmates to read along. Afterward, the teacher gives examples of miracles in the Quran, such as the number of times a word or an opposite pair of words are repeated in the Quran. Furthermore, the teacher tells example events or phenomena of interest and presents examples of institutional polling.</p> <p>Presenting contents: The teacher introduces the criteria for selecting a topic, including hot issues that are either ongoing, already occurred, or yet to occur. Similarly, when creating polls, the students are asked not to use too many questions and keep them simple. Simply put, their questions should be based on the principles of being “small, simple, and quick.”</p> <p>Validating: The students are tasked to validate data from a given poll, provide explanations on matters, provide interpretations of poll results, and check the accuracy of the poll results.</p> <p>Building awareness: The teacher informs the class on how to take advantage of polling and asks the students to discuss case studies with poll presentations.</p> <p>Practical training: The students practice creating polls on topics of interest, starting from determining the target population, sampling, to constructing poll questions. The students are encouraged to practice creating questions and interviewing members of other groups to see if their questions are understandable and not misleading and revise their sets of questions by adding missing information or removing redundancies.</p> <p>Eventually, the students are tasked to conduct a survey with their targets according to preselected sample sizes and generate poll results.</p> <p>Presenting outcomes: The students present infographics of the results from the practical training to the class and social media.</p>
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Table 3. The results of the instructional implementation assessment of the model for integrating Islamic values and local contexts.

Dimension	Mean	Standard deviation
1. Suitability of the integration model	4.80	0.45
2. Consistency of the activities based on the model's aims for integrating Islamic values and local contexts	4.80	0.45
3. Feasibility for applying the integration model to other lessons	4.60	0.55

On the application feasibility dimension, the experts remarked that a training or coaching mechanism should be constructed and provided to ensure that the model is applied more effectively and produce tangible outcomes. Furthermore, it was concluded that the learning activities were appropriate and relevant to local contexts. However, the experts expressed concerns that some integrations of some lessons were too difficult to be practical because they require knowledge or coaching support from specialists with Islamic Studies qualifications when designing learning activities.

The integration model contains six crucial steps, including 1) attention-grabbing, 2) presenting content, 3) validating, 4) building awareness, 5) practical training, and 6) presenting outcomes. However, note that each lesson was organized with learning activities that differ in time consumption. As a result, each lesson took various hours to complete all the required steps. Furthermore, Step 1 and 2 are similar to the Islamic integration sequence proposed by Mohd Rushdan (2013, as cited in Nurkhamimi, et al., 2016), for instance, with the first step titled as Al-Tansis (i.e., referring to primary sources of Islamic sciences and knowledge, such as the Quran, the Hadith, and the authentic Islamic books). Furthermore, this study employed a similar context-based learning approach as Gilbert (2006), which comprises four steps: 1) choosing a situation that is relevant to students or their interests for them to identify problems and explore solutions, 2) gathering knowledge to find answers to a given situation or taking action to solve problems, 3) extracting key concepts by discussing concepts related to the situation with the support of students' prior knowledge, and 4) applying knowledge to new situations in other related contexts. Moreover, the model also shares a similarity with the GPAS-5 Steps proposed by the Office of the Basic Education Commission (2008), which has four steps. Step 1 (Gathering) begins with the use of thought-provoking questions to grab attention, trigger curiosity, and spark an interest in problems, which lead to the subsequent formulation of hypotheses, questions, and goals for data collection. Step 2 (Processing) deals with data processing which involves analytical thinking and mind-mapping to organize ideas systemically, e.g., classification, ordering, linking, and operation planning. Step 3 (Applying) is when operations are taken according to plan with a monitoring measure in place to tackle problems and improve results of each step where lessons learned are summarized into core concepts. Step 4 (Self-regulating) involves a systematic assessment to identify the strengths and weaknesses of the mechanism, the team, and the self for further enrichment of moral, ethical, and values by linking knowledge to the greater good.

The pedagogical model with the integration of Islamic values and Deep South contexts proved to be productive as it exposed students to a worldview indicating that Mathematics, Islam, and local contexts (Makhluk) share profound interconnectedness, providing knowledge applicable in daily life and simultaneously reflecting the incredible might of God (Allah SWT). Furthermore, every time at the beginning of the class, the

students would take a turn taking the lead in reading the Quran and pause for classmates to read aloud and follow along. This activity was practiced to add moral and ethical cultivation to the classes as it is believed to reinforce individual growth along education pathways, bring them closer to God (Allah SWT), increase learning concentration, and shape a person towards becoming more genteel. Badarudin (2019) also conducted an experiment by asking Elementary 1-6 students to read the Quran for 15 minutes before lessons and published the benefits of doing so, which included the students being more fluent at reading and confident to read aloud. Moreover, it was argued that reading aloud is also known to increase the ability to memorize. Narongraksakhet, et al. (2010) also recommended this activity by stating that Ibn Sina's principles of Islamic education emphasize early training for children by nurturing two aspects, including desirable habits and cognitive capacity. More specifically, children should begin improving cognitive capacities by practicing reading the Quran, the Arabic language, and Islamic principles. Hence, Ibn Sina suggested that the children memorize various verses in the Quran (Ayat). Congruently, Colina and Listiana (2020) proposed a Quran-based learning model for early childhood education, which contains four critical aspects. 1) The dogmatic aspect states that the Quran discusses not only spiritual life but also provides holistic, comprehensive, and universal teachings. 2) The sociocultural aspect indicates that Muslim people have a culture that cannot be separated from the Quran. 3) The political aspect suggests that the words "faith and taqwa" are clear from the contents of the Quran. In the view of Islam itself, it is impossible for someone to be able to believe and be pious without practicing the contents of the Quran. Therefore, studying the Quran is an obligation for all Muslims. 4) The historical aspect points out that the Quran highly appreciates the past and is perpetuated so that it is used as a basis for overcoming various problems in every era.

According to the infographics from the polls and surveys conducted within the Deep South contexts, it was found that the students' choices of polling were on vaccination, terrorism, school-age marriage (Nikah), and opinion surveys on donations, Waerung Pai Nai Facebook Fanpage, and Salat. Figure 1 displays infographics of the said learning activities published via Facebook. Having the opportunity to create infographics, the students have mastered presentation skills. Furthermore, communicating through social media is a productive activity as the students could share what they learned from the course with the

public. These results align with Songmuang (2015), suggesting that the provision of Islamic Studies instruction requires more than faith-building, moral development, and spiritual strengthening to create a balanced and wholesome life. What is also essential to be developed in parallel is communication competence that would equip students with the ability to communicate their multicultural backgrounds and the adaptability to switch roles between message senders and recipients in society. Therefore, youths must sharpen their communication skills, especially intercultural communication, to thrive amid cultural differences. Furthermore, they should be taught relevant knowledge to gain an accurate understanding and the necessary skills to become Islamic proselytizers (Daiy) whose roles are to promote a better understanding, invite others to learn about the truth, and avoid creating conflicts with those who disagree. Moreover, teachers of Islamic Studies should seek to utilize information technology, such as infographic presentations, to effectively reach a broader target audience, quickly get messages across, and make knowledge easily accessible and understandable. Kharbach (2012) confirmed that infographics are a powerful learning tool because it eases communication by using a captivating communication medium that is easier to understand and more difficult to forget. Besides, created infographics can also be published outside classrooms to expand educational opportunities to the public. In the same vein, Alqudah, et al. (2019) experimented with Year 1 students in Jordan and discovered that infographics positively and strongly impacted students' interaction and perception. In this study, in addition to the improved academic achievements, work creation skills, communication skills, and information presentation skills, the students also learned to remain patient and wait for respondents to return poll and survey data. Furthermore, they learned to present data honestly and sharpened their analytical thinking skills when extracting topic-related issues and creating poll and survey questions. These notions seem in line with Masduki, et al. (2014) which reported that mathematics instruction was able to foster desirable characteristics according to the six Islamic principles of Shabr (patience), Shidq (honesty), Tafakur or Tadabbur (thinking), Istiqomah (consistency), and Tasamuh (tolerance).

Concerning the resulting attitudes of the Secondary 5 students towards learning the mathematics course integrated with Islamic values and local contexts, two noteworthy issues emerged as to be elaborated below:

First, regarding the issue of exposure to a new worldview in mathematical education, relevant evidence from post-learning journals is as follows:

“I think that studying statistics in conjunction with the knowledge of Islam helps me understand better because I get to see statistics in a more familiar perspective that we, Muslims, could easily relate to, which is the Quran. So, I think it is like a new worldview into the world of statistics, at least to my friends and me.”

“It was an eye-opener to learn that mathematics shares a link with Islamic knowledge. I think there is something doubtfully important hidden within these repetitive number patterns. After adding Islam to the lesson, we had to study more about Islam to create the poll and the survey and was able to learn more in the process.”

“The act of adapting Islamness into the teaching, such as using the Quran's Ayah, which is close to us, Muslims, convinced me that mathematics is all around. I was able to see mathematics can, in fact, be related to a simple event in life.”

On the issue of Islamic knowledge reviewing and expansion, relevant example excerpts of students' learning journals are below:

“At first, I could not imagine how any knowledge of Islam would be relevant in mathematical learning. Both disciplines seem mutually exclusive and separate. However, after studying this course, I think Islamic knowledge helped me understand mathematics better, and in turn, I also gained a better understanding of Islamic knowledge. It was like the teacher used what we already know (truth in Islam) as examples to support and explain the lessons, and they began to make sense and become easily understandable. And in every step of the course, there were also many activities that allowed me to practice and apply the knowledge I learned. This, I think, was very good. It made the learning more enjoyable.”

“I think it was good because the course combines the knowledge around you with mathematics. This is especially crucial to southern-border children because, for example, in Surah Al-Fatiha, I never knew how many words and Ayah there are and how many are duplicates. But when I got to use statistical knowledge to count words and letters in the Quran, I became more intrigued by it and felt eager to learn more. I think the inclusion of Islam in mathematical learning also increased my enthusiasm to learn more about other aspects of mathematics in relation to Islam.”

The above results demonstrate that the students were impressed, satisfied, and content with the Islamic integrated instruction and the incorporation of local contexts in mathematical learning. Evidently, they became more excited to study mathematics, realized that Islam has more to explore than they already knew, and learned that mathematical knowledge also exists in the Quran. For instance, there is the Word of “Statistics” in the Noble Quran, stating that “... We have recorded with numbers (as a record) in a Clear Book” [Noble Qur'an 36:12] and “... Allah has kept account of it, while they have forgotten it. And Allah is Witness over all things” [Noble Qur'an 58:6]. Furthermore, there is a Surah on stratified

random sampling, indicating that “And a party of the people of the Scripture say: Believe in the morning in that which is revealed to the believers (Muslims) and reject it at the end of the day...” [Noble Qur'an 3:72]. This verse is an example of stratified samples where the people of the Scripture have two parties, one of them the Jews, say, to some among them, 'Believe in what has been revealed to those who believe, that is, the Quran, at the beginning of the day, and disbelieve, in it, at the end of it (Safi, 2013).

Several Islamic values and Deep South contexts can be integrated into lessons. Teachers are suggested to explore options in Islamic content and choose the ones that are valid to their instruction. Also, consider switching to local contexts for lessons that Islamic values might not apply. Furthermore, teachers should allow some time for students to recognize the connections between such mathematical and Islamic knowledge and further infer such connections to real-life situations or case scenarios of interest. Furthermore, it would be ideal for teachers to create a database of their integrations describing how Islamic values and local spatial contexts could be integrated into each of their mathematical lessons to simplify future designs of learning activities.

CONCLUSION

This study integrated Islamic values and local contexts (Allah's Makhhluk) into the instruction of a course in mathematics to demonstrate to the students that there is a connection between revealed and rational knowledge. To do so, the instruction was delivered in six steps, including 1) attention-grabbing, 2) presenting contents, 3) validating, 4) Building awareness, 5) practical training, and 6) presenting outcomes. In addition, flexible instructional hours were allocated for each lesson, depending on activities. In the future, more learning activities are to be designed and provided for teachers to enhance implementational effectiveness and suitability.

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