INTEGRATING QURANIC COMPENDIUM-BASED LEARNING MODEL WITH ABSTRACT MATHEMATICAL CONCEPTS FOR ENHANCING CREATIVE ANALYTICAL THINKING

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ABSTRAK

Di dunia yang berubah dengan cepat, terdapat peningkatan permintaan akan pendekatan pendidikan yang tidak hanya meningkatkan kemahiran akademis namun juga menumbuhkan keterampilan berpikir kritis, kreativitas, dan nilai-nilai moral. Dengan mengintegrasikan ajaran Al-Quran dengan konsep matematika abstrak, penelitian ini menjawab kebutuhan akan pendidikan holistik yang memupuk perkembangan intelektual dan moral di kalangan siswa. Penelitian ini menyelidiki integrasi model pembelajaran berbasis ringkasan Al-Quran dengan konsep matematika abstrak dan dampaknya terhadap peningkatan berpikir kreatif analitis di kalangan santri pesantren di Pekalongan. Penelitian ini menggunakan pendekatan kualitatif yang berpusat pada studi kasus, khususnya melalui metodologi penelitian *grounded*. Pengumpulan data melalui wawancara dan observasi. Sebanyak 5 santri yang berada di pesantren dan sedang mempelajari konsep matematika abstrak diwawancarai secara ekstensif. Analisis data melibatkan beberapa langkah, termasuk kondensasi data, penyajian data, verifikasi data, dan menggunakan analisis interpretatif sebagai pendekatan metodologis. Hasil analisis menggarisbawahi efektivitas pengintegrasian ajaran Alquran dengan konsep matematika dalam membina perkembangan intelektual dan moral di kalangan siswa. Hasilnya menyoroti tiga poin penting: 1) peningkatan keterlibatan dan keterampilan pemecahan masalah, 2) pengembangan kemampuan berpikir kritis, dan 3) penanaman nilai-nilai moral dan etika.

Kata kunci: Pembelajaran berbasis Kompendium Alquran, konsep matematika, berpikir analitis kreatif

ABSTRACT

In a rapidly changing world, there is a growing demand for educational approaches that not only promote academic proficiency but also cultivate critical thinking skills, creativity, and moral values. By integrating Quranic teachings with abstract mathematical concepts, this research addresses the need for holistic education that nurtures both intellectual and moral development among students. This research investigates the integration of Quranic compendium-based learning models with abstract mathematical concepts and its impact on enhancing creative analytical thinking among Islamic boarding school students in Pekalongan. This research utilizes a qualitative approach centered on a case study, particularly through grounded research methodology. This research is conducted by collecting data

through interviews and observations. A total of 5 Islamic boarding school students residing in the pesantren and currently studying abstract mathematical concepts are interviewed extensively. The data analysis involves several steps, including data condensation, data display, data verification, and employs interpretive analysis as the methodological approach. The analysis results underscore the effectiveness of integrating Quranic teachings with mathematical concepts in nurturing both intellectual and moral development among students. The results highlight three crucial points: 1) enhanced engagement and problem-solving skills, 2) development of critical thinking abilities, and 3) inculcation of moral and ethical values.
***Keywords**: Quranic compendium-based learning, mathematical concepts, creative analytical thinking*

INTRODUCTION

In recent discussions in the field of education, a growing consideration is highlighting the possibility that Islamic tradition could be compatible with modern study curriculum, which would create an educational environment devoted to the development of character with a firm belief in religious principles. This recognition is coming from the growing knowledge about the profound impact of ethical and moral education on the students' holistic development. Studies have shown that embedding Islamic teachings with academic subjects not only improves the academic achievement of the students but also helps in nurturing moral virtues like compassion, honesty, and social responsibility (Eissa & Khalid, 2019). For instance, research showed that the integration of Islamic values in the syllabus developed students' ethical decision-making skills (Mohamed Saat et al., 2010). Besides, inclusion of Islamic teachings into academic disciplines helps students to build a unified picture of knowledge (Sahin, 2018), furnishing them with critical thinking skills and instilling a sense of belonging and identification rooted in the religious values (Sahin, 2018; Sellars et al., 2018). This holistic approach to education strikes a chord with the main objectives of contemporary pedagogy which is to create all-round individuals equipped with the skills to navigate the complexities of the present world while being guided by moral principles and making a positive contribution to society.

Mathematics is one of the most difficult subjects for Indonesian students. Most of the students find it difficult and awkward (Sufia et al., 2023), which leads to anxiety and poor performance in mathematics (Mahmudah & Fikroh, 2021; Nisrina et al., 2021). Such an attitude has made mathematics the most dreaded and

disliked subject among Indonesian students which may in turn influence their general academic achievement and learning enjoyment (Nisrina et al., 2021; Shinta et al., 2021). On the other hand, combining mathematics with Islamic teachings will lead to a new and meaningful perception for the students. Through the emphasis on the Quran and great Muslim mathematicians such as Al-Khwarizmi, students are shown the depth of these connections between their religion and the subject of math. This integrated approach not only makes the learned concepts more relatable and interactive but also helps students in overcoming their fear and understand the importance of the subject not only in academic but also in their spiritual and everyday lives.

The Islamic teachings plus mathematical concepts offer a holistic approach to education because it is a system which is focused on the development of character grounded on religious values. The students not only gain a deeper understanding of the mathematical knowledge, but also develop moral and ethical virtues which they acquired from the teaching of the Quran(Abdullah et al., 2021; Al-Daffa, 2019; Cipta & Hori, 2019). In addition to critical thinking skills, holistic education gives the students a platform to practice spiritual growth which enables them to live positively and uphold principles such as integrity, compassion and social responsibility in this age of complexity (Eissa & Khalid, 2019) . Along with the integration there is a lot of potential in uncovering students' intellectual abilities, which helps them to deal with academic difficulties in a deep and creative way.

Hence, the process of combining the Quranic knowledge with the concepts of mathematics gives students a special chance to nourish their creative and analytical thinking skills. This integration isn't just an enrichment of their science knowledge; it also nurtures in them an immense appreciation for the wisdom hidden in the Quran(Asʾad et al., 2021). Through such an interdisciplinary approach, students not only relate mathematical concepts to the moral and ethical values written in the Quran but also develop greater cognitive abilities, which in turn enable them to handle problems using greater depth and creativity.

Additionally, the practice of connecting Quranic teachings with math not only extends beyond just memorization but also creates a dynamic learning atmosphere where examinees have the freedom to dig deeper, question and innovate. Through

the use of mathematical abstractions supported by the Quranic wisdom, the students are forced to reason and think logically, thus opening new doors to understanding and comprehension (Zulfiani et al., 2023).

In this article, we aim at deciphering the transformative influence of placing the Quran in front of mathematical principles on creative analytical thinking among students of the Islamic Boarding school. Through the application of empirical evidence and theoretical frameworks, we will dive into the pedagogical rationale of the integration and its practical implications on student learning outcomes. Through a detailed assessment of the interplay between the Quranic teachings and the mathematics concepts, we attempt to equip educators with useful knowledge that will help them deliver comprehensive education that fosters students both intellectually and spiritually.

Through providing a more comprehensive knowledge of the inner links between the Islamic teachings and the academic disciplines, we seek to enable learners to become self-directed lifelong students who have developed a critical mindset and a moral compass that will help them identify the complexities of the modern world. Through the integration of Quranic wisdom with mathematic inquiry, we seek to develop a generation of students who are both competent in academic endeavors as well as being grounded in ethical principles and enlightened by both creativity and innovation.

DISCUSSION

The research focuses on students from an Islamic boarding school who are learning mathematics in Pekalongan at UIN K. H. Abdurrahman Wahid Pekalongan. The key reason is that Islamic education is essential in Indonesia. Pesantren Islam UIN KH Abdurrahman Wahid Pekalongan, another Islamic boarding school in Indonesia, has proven the integration of Islamic values with academic curriculum in its education. Students of Islamic boarding schools, since the early age get an education that is rooted in values of Islam. Such subjects are therefore selected as suitable subjects with which to explore the integration of mathematical ideas and Islamic instructions.

This research involves a case study approach with the case study designed using the grounded research methodology. Choice of the case study as the source of data is to accommodate the different features among the data. The cases should be drawn from examples of these traits shared by students enrolled in the Islamic boarding schools. Case selection is an analytical process which took into account social class, gender and locality. These cases become formalized through cross-checking with key informants who have got a good deal of knowledge of the population under study. Hence, the case study technique helps researchers observe the inner feelings and thoughts of students with different origins of Islamic boarding schools at a deeper level.

This research is done by utilizing interview and observation data from some Islamic boarding school students who are studying mathematics at UIN K. H. Abdurrahman Wahid, Pekalongan. The analysis of the data in this study involves several stages, which are data condensation, data display, data verification. This research method is an interpretive analysis which means interpreting the data within its context. This method is based on exploring the meanings, the points of view, as well as the personal experiences of the participants instead of being interested in counting and generalizing the results.

The findings of this study provide compelling evidence of the positive impact of integrating Quranic teachings with mathematical concepts on enhancing creative analytical thinking among Islamic boarding school students.

1) Enhanced Engagement and Problem-Solving Skills

The embedding of the Quranic teachings into the framework of mathematics was shown to be a major contributor to the rise of interest and performance of our pupils. This pedagogy that integrates religious precepts with academic subjects is an advantage as the learning will be done in the context the student understands culturally and spiritually. This is a technique that moves from abstraction to concrete content that is related to students' cultural and religious background, thus encouraging connection with the lessons.

A student said: ”*I think mixing Quranic instructions into our learning helps us to understand and deal with subjects better and become great problem solvers. It adds a meaning to what we learn and makes it easy to solve problems. This way*

we learn not just facts but also how to handle real-life situations with wisdom." Another student said: "*I believe mixing Quranic teachings with our studies helps us learn in a more meaningful way. It makes subjects more interesting and helps us think better when solving problems. By connecting our learning with Quranic values, we become better at understanding and tackling everyday challenges*."

This, however, is not just testimony, but evidence-based. Studies have demonstrated that students who are more involved in their studies are often committed to try harder and put more time and effort into their studies. In the case study of a Malaysian classroom, students who were taught algebra using problems related to Islamic inheritance laws (*Iilmu Faraidh*) showed an increase in zeal and participation. Through the practical implementation of algebra during the computation of the shares of inheritance, the theory became interactive and relevant to our lives. Finally, they possessed better problem-solving abilities which was due to the fact that they could apply algebraic concepts to practical life examples. Mathematical skills improved, develop, and are applied through engaging in the process of solving meaningful problems.

In addition to that, the integration of Quranic teachings invites the students to use their imagination and resourcefulness to solve their problems. Through the lens of Quran mathematics students are made to be creative and innovative. For illustration, in classes on financial mathematics, students can learn about the ban on usury (riba) in Islam and then explore Alternative financial models that remain compliant with Islamic principles. This extends their understanding of the mathematical concepts beyond what is in the textbook, and it also develops critical thinking and ethical concerns. Creating system's solutions to the intricate problems is the proof of the success of this integrated method.

The inclusion of the Quran with mathematical concepts fosters a more comprehensive educational experience. It allows academic learning and students' cultural and religious backgrounds to come together, which in turn makes the education more inclusive and full. Besides academic involvement and problem-solving skills, this method also empowers students with a feeling of importance and meaning that are crucial in the learning experience. Through linking math education with Quranic teachings, the educators can instill a generation of students who are

proficient in mathematics as well as rooted in their cultural and ethical values. The priority of this holistic approach to education is the preparation of people who will be able to utilize their knowledge in a real-life wise and socially aware manner.

2) Development of Critical Thinking Abilities

The integration of Quranic teachings with mathematical concepts not only enhances engagement and problem-solving skills but also fosters the development of critical thinking abilities among students. This interdisciplinary approach encourages students to question assumptions and analyze information through the lens of both mathematics and Quranic principles. A student said: "*Learning with Quranic teachings helps us think better. It makes us ask more questions and understand things from different sides. When we study with Quranic ideas, it helps us see things more clearly. That's how we learn to make better choices and understand things better*". By exploring mathematical phenomena within the context of Quranic teachings, students are prompted to delve deeper into the underlying principles governing these concepts. This prompts them to think more critically, identify patterns, and draw logical conclusions, thereby enhancing their overall analytical thinking skills.

This integrated approach cultivates a more holistic understanding of both mathematical and religious concepts. By encouraging students to examine mathematical problems from different perspectives, they gain a broader appreciation of the interconnectedness of knowledge domains. For instance, when solving mathematical problems related to financial transactions, students might consider ethical considerations derived from Quranic teachings, leading to a more nuanced understanding of the implications of their mathematical solutions. This multidimensional exploration not only strengthens students' critical thinking abilities but also promotes a deeper understanding of the ethical and moral dimensions inherent in both mathematics and religious teachings.

3) Cultivation of Moral and Ethical Values

The integration of Quranic teachings with mathematical concepts facilitated a comprehensive exploration of moral and ethical values embedded in both domains. By intertwining discussions on ethical implications within mathematical problem-solving scenarios with Quranic teachings on justice and fairness, students

were prompted to reflect deeply on the ethical dimensions of their mathematical inquiries. A student said: "*Learning with Quranic teachings makes us better. It shows us how to be good and fair. When we study with Quranic ideas, we learn about being kind and honest. This helps us become nicer and make good decisions.*" This approach engendered discussions on concepts like fairness, integrity, and social responsibility, urging students to critically evaluate the ethical ramifications of their mathematical decisions and actions. Consequently, students not only honed their ethical reasoning skills but also cultivated a profound understanding of the moral underpinnings inherent in both Islamic teachings and mathematical principles.

Furthermore, this integration offered a unique opportunity for students to reconcile the practical applications of mathematics with their religious and ethical beliefs. Through the examination of real-world scenarios within the framework of Quranic teachings, students were challenged to apply mathematical concepts in a manner that aligned with their ethical values. For example, when exploring mathematical models for resource distribution or economic transactions, students were encouraged to consider how these models could be ethically implemented in accordance with Islamic principles of social justice and compassion. By engaging in such discussions, students not only deepened their understanding of mathematical concepts but also strengthened their commitment to ethical conduct, fostering a more holistic approach to their academic and personal development.

The integration of Quranic teachings with mathematical concepts proved to be a transformative educational approach, with significant implications for student learning outcomes. By fostering enhanced engagement, problem-solving skills, critical thinking abilities, and moral development, this integration offers a holistic educational experience that nurtures both intellectual and spiritual growth among Islamic boarding school students. These findings underscore the importance of incorporating religious values into academic curricula and highlight the potential of interdisciplinary approaches to education in fostering well-rounded individuals capable of navigating the complexities of the modern world with integrity and wisdom.

CONCLUSIONS

In conclusion, this research demonstrated that the fusion of Quranic concepts and mathematical principles can be a driving force in developing analytical creative thinking among students of Islamic boarding schools. Through the explanation of the cognitive approach and its application in the classroom practice, the research aims to bring a valuable contribution to the already ongoing discussion on expanding education with religious perspective. Finally, this combination represents a positive way for nourishing wholesome citizens with both the intellectual skills and moral strength to face the complexities of the world today.

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