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Technological Pedagogical and Content Knowledge (TPACK) in Islamic Religious Education in the Digital Era

Wildan Nur Hidayat*[1], Nurlaila[2], Eko Purnomo[3],Noor Aziz[4]

UIN Salatiga, Jawa Tengah, Indonesia[1], UIN Sultan Thaha Saifuddin, Jambi, Indonesia[2], UIN Sunan Kalijaga, Yogyakarta, Indonesia[3], UNSIQ Jawa Tengah Wonosobo, Jawa Tengah, Indonesia[4]

andariwaniiwildan@gmail.com[1]

nurlaila574@gmail.com[2]

ekopurnomo4993@gmail.com[3]

nooraziz@unsiq.ac.id[4]

Abstract

This study aims to (1) determine the supporting components and content of TPACK. (2) knowing the integration of the TPACK concept in Islamic religious education. This research method uses library (library research), data information collected by reviewing journal articles, books, and documents that are relevant to the research problem. The results of this study indicate that: (1) TPACK (Technological Pedagogical and Content Knowledge) is a combination of three components namely technology, pedagogy and some content in teaching and learning activities. (2) Integration of Islamic Religious Education (PAI) with the TPACK concept as an effort to hone and increase the skills of Islamic religious education teachers in teaching Islamic material on aqidah morals, fiqh, or the history of Islamic civilization. Among these three aspects of understanding, learning strategies emerge that are able to achieve educational goals, including developing students' creative thinking skills. TPACK in PAI starts with the teacher who must have a lesson plan (RPP).Implementation Learning) first, then applied to teaching and learning activities by integrating technology, pedagogy and educational content.

Keywords; *Technological Pedagogical and Content Knowledge, Islamic Religious Education*

*Corresponding Author

A. Introduction

The current era is marked by the advancement of communicative technology, which has influenced the development of education (Husna Nashihin, Anisatul Baroroh, and Aslam Ali, 2020) in various parts of the world. The education system has undergone significant changes, transitioning from traditional (conventional) systems to digital-based systems (H. Nashihin, 2019). Initially, the transfer of knowledge took place in closed classrooms with limited space. However, in the present time, the learning process occurs in an open environment, unrestricted by space and time. Therefore, educators, as the main actors in the knowledge transfer process and the key supporters of learning, are expected to master the supportive media in instructional activities (Shalikhah, 2016)

The proficiency of an educator in using communicative technology is explicitly explained in legislation, specifically Ministry of Education Regulation No. 16 of 2007. This regulation addresses the utilization of informative technology to support educational development (Sujanem, R., Suswandi, I., & Yasa, 2019). This demonstrates the government's significant attention to the interactive use of technology media by teachers (Husna Nashihin, Yenny Aulia Rachman, Betania Kartika, Nurmasinta Fadhilah, 2023). As the main actors in the teaching and learning process in the classroom, educators are obliged to possess excellent competencies in creating a learning atmosphere in the 21st century. Students in the current era are well-acquainted with changes, especially related to technology (Husna Nashihin, 2019b). To keep pace with these changes, it is important for teachers to develop learning activities and integrate them into their teaching practices (Habibah, 2022:76).

Islamic religious education teachers also bear a great responsibility in implementing Technological Pedagogical and Content Knowledge (TPACK). They are not only responsible for delivering and practicing the subject matter but also for shaping the moral and character development of students (Ainiyah, 2013). The responsibilities placed on Islamic religious education teachers become more complex when they are faced with two major tasks: conveying matters related to faith and Islam while integrating them with technology and media, which cannot be separated from their positive and negative impacts. With the presence of technology and other sources of information, it is hoped that these factors become motivation for making the work of Islamic religious education teachers easier rather than the opposite.

The integration of learning and technology has become an urgent matter in the field of education, especially during the COVID-19 pandemic when learning had to be conducted online (Husna Nashihin, Nazid Mafaza, and M. Okky Haryana, 2021) instead of in physical classrooms. The learning process was carried out online using various technological devices that were previously unimaginable. This situation arose due to unfavorable conditions for face-to-face learning or the possibility of completely suspending the educational process. In the midst of this predicament, educators were required to think critically and utilize media and technology to ensure that learning continued even outside the traditional classroom setting (Rita, 2020).

The readiness and ability to integrate technology in the learning process are manifestations of a teacher's professionalism. Being a teacher entails having expertise in managing the learning process and using technology media innovatively and creatively in the 21st century to ensure that both the learning process and outcomes align with expectations (Wahyono, Poncojari, 2020). However, based on previous experiences and research, it can be concluded that a significant portion of Islamic religious education (PAI) instruction is teacher-centered, meaning that the focus of learning is on the teacher rather than challenging students to explore their own knowledge (Rohmad, 2013). Yet, the application of humanism in education provides a concept for individuals to better understand themselves, as human beings possess innate qualities and intellect.

Government Regulation of the Republic of Indonesia Number 55 of 2007 states, 'the aim of Islamic Religious Education (PAI) is to nurture and develop the potential or abilities of students in understanding, internalizing, and practicing religious values that are in line or harmonized with the understanding of Science and Technology (IPTEK) and the arts (RI 2007).' PAI (Islamic Religious Education) combines content understanding and technology for unity and harmony, which mutually influence each other. As Islamic Religious Education is an education that provides guidance for a person's life to be better and directed towards happiness in both the worldly life and the hereafter. The application of learning that adapts to technological advancements enables the integration of digital technology in teaching and learning activities (Sutrisno 2011) through the application of the Technological Pedagogical and Content Knowledge concept, which is the teacher's task planning to integrate digital technology into teaching and learning activities.

Technological Pedagogical and Content Knowledge is essential for teachers because it can influence the teaching methods used in the subjects they teach. A teacher's teaching method can be observed through their ability and capability in creating instructional components, such as the Lesson Plan (RPP), which is a manifestation of a curriculum change in teaching and learning activities where the focus of delivering messages shifts from the teacher to the active participation of students (Sari 2022).

Previous research relevant to this article, written by Imroatul Azizah and M. Nurul Huda, titled 'TPACK as the Preparation for PAI Teachers in the Industrial Revolution 4.0 Era,' in 2020, explains that TPACK plays an important role as the preparation for educators in teaching and learning PAI, allowing them to analyze innovative, creative, and effective teaching and learning activities in the classroom, enabling students to easily understand the ongoing teaching and learning activities. Therefore, educators' proficiency in TPACK becomes a problem-solving approach that balances these criteria to align with digital era advancements (Ajizah and Huda 2020). Furthermore, there is another research article titled 'Technological Pedagogical and Content Knowledge (TPACK) in Islamic Religious Education' written by Susi Siviana Sari in 2022. The research results explain that Technological Pedagogical and Content Knowledge is a combination of three components of knowledge that can generate a learning model to achieve the goals of teaching and learning activities (Ardianta 2022), one of which is developing students' creative thinking skills. Another research article examined by Tata Hartati et al., titled 'Technological Pedagogical Content Knowledge (TPACK) in Improving the Quality of Pre-service Primary School Teacher Education' in 2019, shows that literacy and TPACK-based models with a significance value of 0.001 can be concluded that the literacy model based on TPACK influences the quality of pre-service primary school teacher education.

The problems that can be formulated in this research are focused on how the components and supporting content of TPACK (Technological Pedagogical and Content Knowledge) in Islamic religious education in the digital era. Furthermore, how to integrate TPACK (Technological Pedagogical and Content Knowledge) in Islamic religious education and for the knowledge level of teachers' proficiency (Aji, Ifadah, and Alfi 2022) in terms of integrating content understanding, pedagogy, and technology as learning activities. The objectives of this research are (1) to identify the components and supporting content of TPACK (Technological Pedagogical and Content Knowledge) in Islamic religious education, and (2) to understand the

integration of the TPACK concept in Islamic religious education. Therefore, this research discusses the fundamental concept of Technological Pedagogical and Content Knowledge (TPACK) in Islamic religious education and the interaction process of each component as an effort by teachers in integrating teaching and educational technology in the digital era of Islamic religious education.

B. Method

This research is classified as a qualitative study conducted through library research method (Husna Nashihin, 2023). The researcher primarily utilized incidental means as the main instrument and analyzed scientific literature such as journal articles, books, scientific magazines, and other scholarly publications related to the topic under investigation. Data sources refer to the materials used in a research study (Suharsimi Arikunto: 129). Library research involves collecting theories and information from literary sources as a foundation for addressing the research problem.

In this study, the researcher employed data collection techniques by initially gathering relevant data sources related to the research variables. Secondly, the researcher selected data that had several connections and relevance to Technological Pedagogical and Content Knowledge (TPACK) in Islamic religious education in the digital era. Subsequently, after the data was gathered, the researcher performed data analysis. The data analysis technique utilized by the author involved various stages, including data collection, data display, data condensation, and drawing conclusions and verification (Sugiyono, 2018).

C. Results and Discussion

1. Islamic Education Concept

Islamic Religious Education is one of the mandatory subjects that should be taught by an Islamic religious educator to instill religious norms in students, enabling them to develop faith and piety as stated in the national education objectives. According to Sugiana, the purpose of Islamic religious education is to bring about behavioral changes or appropriate actions through guidance from Islamic religious teachings. This approach follows the example set by Prophet Muhammad (PBUH) in conveying Islamic teachings through preaching and positive role modeling (Oktariani, 2022).

Technological Pedagogical and Content Knowledge (TPACK) is a theoretical framework that focuses on enhancing Pedagogical Content Knowledge (PCK). Shulman introduced the concept of pedagogical content knowledge in 1986. According to Shulman (as cited in Sari, 2022), teachers should understand and master pedagogical knowledge and content knowledge. This means that teachers need to comprehend not only the subject matter but also the pedagogical aspects of delivering instruction.

TPACK is often used by teachers to integrate technology into the teaching and learning process (Schmidt et al., 2009). Koehler and Mishra define TPACK as the integration of social, pedagogical, content, and technological knowledge, resulting in transformative practices when applied (Leanna M. Archambault, 2010). As Islamic religious education teachers, it is important to possess a strong Pedagogical and Content Knowledge (PCK) in order to effectively implement teaching and learning activities in Islamic Religious Education. Furthermore, educators should strive to enhance TPACK from PCK to effectively incorporate technology in education. For instance, in enhancing PCK, prospective and current educators actively analyze various techniques to prepare for teaching using various digital technologies. Based on the aforementioned definitions, it can be concluded that Technological Pedagogical and Content Knowledge (TPACK) is a framework or mindset that guides teachers in understanding the fundamental elements consisting of three components: technology, pedagogy, and content. Various supporting components of TPACK include Content Knowledge, Technological Knowledge (TK), and Pedagogical Knowledge.

TPACK, also known as TPACK, provides guidance for integrating new technological advancements into education. TPACK encompasses a range of skills and abilities that teachers need to navigate an increasingly advanced technological landscape. Teachers who understand and apply TPACK in their teaching practices will approach education differently from those who do not possess TPACK knowledge. Therefore, educators are encouraged to innovate their teaching practices by prioritizing digital technology content in order to align with the rapid advancement of digital technology in the digital era. This includes selecting appropriate teaching approaches and instructional materials to enhance students' knowledge, understanding, and learning outcomes. One of the approaches in the 21st century is the Technological Pedagogical and Content Knowledge (Oktariani, 2022).

Schmidt, as mentioned in Farikah and Malik, describes Technological Pedagogical and Content Knowledge as the understanding of how technology can be used in teaching and education. TPACK involves comprehending various technologies that can be utilized in instruction, which in turn can transform teaching techniques (Irawan, 2022). According to Rahmatillah (2022:2232), there are three main pillars that form the basis of TPACK:

a. Content Knowledge (CK): Refers to knowledge of the subject matter that teachers are obligated to teach. This includes theoretical knowledge, ideas, content, approaches, and practices in the development of content knowledge.
b. Pedagogical Knowledge (PK): Refers to teachers' understanding of various teaching strategies, methods, and practices.
c. Technology Knowledge (TK): Refers to teachers' knowledge of technology, both conventional and modern, that can be integrated into the teaching process.

Sahidin & Pradjono (2022:212) explain that there are several aspects used as tools to assess TPACK, namely:

a. Technological Knowledge (TK): Knowledge of using communicative technology that includes various types of technology, such as (a) Knowledge of using conventional technology, for example, paper and pencil, as well as the use of digital technology, for example, software and the internet. (b) Knowledge of a teacher's skills in operating specific applications. (c) Basic knowledge of the usefulness of communicative technology to facilitate and help achieve goals and solve specific problems or tasks. (d) Pedagogical Knowledge (PK): A teacher's understanding of protocols or student management and classroom teaching.
b. Pedagogical Knowledge: It includes several pedagogical aspects, such as (a) Understanding of the implementation process and teaching methods. (b) Knowledge related to how students learn, skills in classroom management, and strategies for planning teaching and assessing students. (c) Content Knowledge (CK): A teacher's understanding of the subject matter being taught to students and knowledge related to the essential knowledge to facilitate student learning.
c. Content Knowledge: It encompasses the following aspects: (a) The teacher's understanding of the subject matter, including concepts, facts, and standard procedures to be taught or learned by students. (b) The teacher's knowledge of the subject matter, including concepts, facts, and standard procedures to be taught or learned by students.

d. Pedagogical Content Knowledge (PCK): It refers to the understanding of how to teach and strategies that are suitable for the content being taught. There are several types of knowledge related to PCK, including: (a) Knowledge of the combination of content and pedagogy with the goal of developing effective and efficient learning processes. (b) Knowledge of strategies or methods in presenting different or diverse materials. (c) Knowledge of curriculum, teaching, reporting, assessment, and the interrelationship between assessment, pedagogy, and curriculum.

Based on the above explanation, it can be concluded that Technological Pedagogical and Content Knowledge (TPACK) comprises seven components: technological knowledge (TK), content knowledge (CK), pedagogical knowledge (PK), pedagogical content knowledge (PCK), technological pedagogical knowledge (TPK), and technological pedagogical content knowledge (TPACK).

2. Integration of Technological Pedagogical and Content Knowledge (TPACK) in Islamic Religious Education (PAI)

The integration of Islamic Religious Education (PAI) with the concept of Technological Pedagogical and Content Knowledge (TPACK) is a conscious effort to combine basic concepts in order to sharpen and enhance the knowledge and skills of an Islamic Religious Education teacher in teaching Islamic or PAI-related topics such as faith and morality, jurisprudence, and the history of Islamic civilization. With such "demands," it encourages educators to have the ability and creativity to prepare the appropriate instruments, components, concepts, and models in the teaching and learning of Islamic Religious Education (Rusydiyah 2019). It is possible that the integration of TPACK (TK, PK, and CK) in the learning process will create a more dynamic, efficient, and innovative learning environment with the assistance of technology.

The advancement of science and technology (IPTEK) has triggered the growth and development of beneficial technological media in various aspects of life (Husna Nashihin 2019a), ranging from traditional (conventional) to modern (digital) technologies in today's industrial era. Technological progress has influenced various sectors of human life, including business, economy, politics, health, and education. As a consequence, educators are required to master technology and have sufficient knowledge to operate various technologies as a necessity for providing innovation and creativity in teaching (Muhasin 2017).

Education campaigns based on technology are being advocated everywhere and have even become global-scale programs, as manifested in the Sustainable Development Goals (SDGs) program. This adds a significant "task" for educators to enhance their competencies by understanding and utilizing technology to make the learning process more enjoyable and engaging. It is important to note that the current younger generation is claimed to be familiar with technology-related matters. This generation prefers instant things and tends to undervalue the process (Fadlurrohim 2019). Recognizing this characteristic, educators are required to create a scheme of change in the teaching and learning process. One way to achieve this is by integrating technology with instructional media. The combination of these two elements can develop and enhance learning and instructional resources (Miskiyah, 2019).

The effective use of digital technology in the learning process cannot be achieved without the teacher's knowledge in pedagogical competence and subject matter mastery. Baturay et al. state that the use of technology in the learning process does not guarantee effectiveness if educators do not employ pedagogical approaches (Baturay, Meltem Huri Sahin Gökçearslan 2019).

TCK (Technological and Content Knowledge) in the process of teaching Islamic Religious Education (PAI) requires educators to consider which technology is suitable for the content they want to teach to students. Additionally, educators need to have a mastery of the characteristics of the content they will teach. This way, we can see the relationship between technology and content combined in learning. For example, in the subject of fiqh, the practice of shrouding a deceased body has a characteristic of psychomotor skills or practical competence for students. Therefore, it is not feasible to use an actual corpse as a practical medium. We can utilize technological advancements to solve this issue, such as using digital technology through videos or using conventional technology like dolls or other models for practicing how to shroud a body. These technologies can facilitate students in practicing the taught materials.

Pedagogical Content Knowledge (PCK) in the learning process demands that teachers have a fundamental understanding of pedagogical knowledge. This pedagogical knowledge includes classroom management strategies, classroom learning strategies, and assessment. With this knowledge, educators can understand and address issues or problems by organizing, representing, and aligning them with the students' talents and interests (Koehler, M. J., & Mishra 2014).

An example of implementing this in Islamic Religious Education is in the topic of purification (thaharah). This topic is taught in both primary and secondary schools, but with different levels of depth. Teachers at the elementary level are expected to have strategies for understanding scientific learning and the psychology of that age group. For example, an Islamic Religious Education teacher at the primary level may teach thaharah by focusing on the correct ablution (wudhu) movements. Meanwhile, at the secondary level, the demands are different, expanding beyond the practical aspects of purification to include the conditions, prerequisites, recommended acts, and invalidators of ablution.

Technological Pedagogical and Content Knowledge (TPACK) (Technology and Pedagogy) The combination of conceptual technology and pedagogical understanding is crucial in Islamic Religious Education. By understanding the characteristics of the students, it is necessary to plan the use of technology that suits them. For example, when a teacher teaches at a high school level, they must understand the characteristics of high school students, who tend to be more independent compared to primary or middle school students. Therefore, the independent learning concept can be applied at the high school level. The technology that can be used in accordance with the description above is through the application of this concept.

The main concept of TPACK is its relationship with technology, pedagogy, and content knowledge. The interaction between these three components has the capacity and attractiveness that can be applied in active learning, focusing on students. This situation can be seen as an innovation in learning, shifting the focus from educators to students. The role of educators becomes more than just imparting knowledge or understanding but also involves the challenging task of shaping educators as role models who consistently exhibit good behavior in the community and within the school environment (Hanik et al. 2022).

So, TPACK integration is a reference or concept used by educators to develop modern teaching methods through collaboration among the three TPACK components, which include technology, pedagogy, and understanding of the teaching materials in the learning environment. TPACK integration is classified into four parts: integration of pedagogical knowledge, integration of content knowledge, integration of technological pedagogical content knowledge, and integration of technological knowledge in Islamic Religious Education teaching.

D. Conclusion

Technological Pedagogical and Content Knowledge TPACK adalah perpaduan dari tiga komponen pendukung yaitu teknologi, pedagogi, dan konten pada kegiatan belajar mengajar. Petunjuk di antara ketiga komponen utama pemahaman atau pengetahuan tersebut memberikan hasil metode pembelajaran sehingga mampu mencapai tujuan kegiatan belajar mengajar, di antaranya perkembangan kecakapan berpikir kreatif siswa. Jika ketiga unsur tersebut ditinggalkan, sama saja tidak mampu menggunakan dengan baik pemanfaatan teknologi. Oleh sebab itu mungkin pembelajaran akan terasa sulit meningkat dengan mengikuti kemajuan era digital sekarang ini.

Technological Pedagogical and Content Knowledge (TPACK) is a combination of three supporting components: technology, pedagogy, and content in the teaching and learning process. The integration and guidance among these three main components provide effective teaching methods that can achieve the objectives of teaching and learning, including the development of students' creative thinking skills. If these three elements are neglected, the utilization of technology will not be effectively utilized. Therefore, learning may become challenging to keep up with the progress of the current digital era.

The integration of Islamic Religious Education (PAI) with Technological Pedagogical and Content Knowledge (TPACK) is categorized into four parts: integration of pedagogical knowledge, integration of content knowledge, integration of technological pedagogical content knowledge, and integration of technological knowledge in Islamic Religious Education teaching. This integration aims to enhance the knowledge and skills of Islamic Religious Education teachers in teaching Islamic-related subjects such as faith, morality, jurisprudence, or the history of Islamic civilization. The use of digital technology in the learning process cannot be successful without the teacher's pedagogical competence and mastery of the subject matter.

Based on the findings of the above research, it has several theoretical benefits, including (1) scientific exploration of Technological Pedagogical and Content Knowledge in Islamic religious education in the digital era, and (2) generating substantial and formal findings to enhance knowledge about Technological Pedagogical and Content Knowledge in Islamic religious education in the digital era. Furthermore, there are practical benefits, such as (1) guiding teachers and prospective teachers in developing instructional concepts by referring to Technological Pedagogical and Content Knowledge, and (2) serving as a reference

for future researchers to conduct studies on educators' abilities, particularly in utilizing digital technology.

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