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Digital Teaching Strategies of Islamic Education Teachers: A Case Study in Primary Schools

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Abstract. Despite increasing emphasis on digital technology in education, educators face challenges in effectively integrating digital technology; they also find it difficult to achieve digital mastery, select efficient tools, and implement effective pedagogy. These limitations hinder the implementation of optimal teaching strategies and have an impact on learning outcomes. Considering that the literature highlights the benefits of digital teaching, deeper investigation is necessary to enhance educators' digital competencies. This study explored the digital teaching strategies of Islamic education teachers in primary schools by focusing on improving pedagogical effectiveness in the digital era. This research employed a single case study design with a qualitative approach. Snowball sampling was used to select five primary school Islamic education teachers who were known for their proficiency in digital instruction. Data were comprehensively collected through in-depth interviews, observations, and analysis of audio-visual materials; rigorous measures were implemented to ensure the trustworthiness of the findings. The findings identified five main themes of digital teaching strategies that have the potential to enhance teaching effectiveness: i) game-based digital strategies; ii) web-based strategies; iii) metaverse-based strategies; iv) social media integration-based strategies; and v) interactive visual-based strategies. These findings have significant implications for educational practices, particularly in supporting pedagogical innovations that are relevant to current technological advancements. The study recommends providing more comprehensive professional training for teachers to strengthen their digital teaching competencies and their strategic leverage of technology in Islamic education teaching.

Keywords: technique; approach; digital teaching; Islamic educator**;** case study

1. Introduction

Digital teaching techniques refer to pedagogical approaches that employ digital technology to improve instruction and learning quality. It involves the efficient and interactive delivery of material through the use of tools, software, apps, and online platforms (Yarbro et al., 2016). To guarantee that Islamic religious

knowledge is presented in an engaging manner using digital technology, digital teaching methodologies are crucial in the context of Islamic education (Tamuri, 2023). This is because, particularly for primary school students, teachers must employ creative methods to pique students' interest in studying and valuing religious knowledge in daily life. Primary school students are members of Alpha generation and are exposed to technology from a young age, therefore, researchers believe that Islamic education instructors in primary schools should learn how to utilize technology effectively (Anwar & Setiawan, 2024). To promote students' active participation in, enthusiasm for, and motivation to study, and to enhance their comprehension of Islamic religious knowledge, educators should use digital teaching methods (Adnan et al., 2021; Sari, 2024; Taher & Bakar, 2021).

Scholars report that Islamic education teachers are eager to use and adept at using technology in their lessons (Hassan & Zulkifli, 2022; Norazhar & Morshidi, 2024; Saidi et al., 2023; Subpei & Razak, 2024). However, research has concentrated on teachers' preparedness with regard to their knowledge of and particular abilities to use digital tools for Islamic education instruction, including online learning, Google Meet, and Frog VLE (Baharan et al., 2021; Mailis, 2022; Moyang & Razak, 2022). There is, however, a shortage of studies that thoroughly investigated the real-world experiences of Islamic education teachers when they use digital teaching tactics fully and how these strategies might improve students' comprehension of, engagement in, and enthusiasm to acquire Islamic education.

To increase the efficacy of Islamic education teaching in primary schools, this study aimed to close this gap by investigating the experiences of Islamic education teachers in selecting, organizing, and putting into practice digital teaching methodologies. The findings of this study offer a fresh viewpoint on creating a more productive online learning environment and could serve as a valuable resource for teachers who wish to advance their digital proficiency. The authors' implementation of this study was guided by the following research question: What digital teaching techniques do Islamic education teachers in primary schools employ?

2. Literature Review

2.1 Digital Teaching by Islamic Education Teachers

Today, online learning platforms and smart teaching systems have replaced traditional teaching techniques to a significant extent and digital integration has become common in education (Wu et al., 2024). By utilizing Big Data, artificial intelligence (AI), and high-speed internet to enhance learning, this transformation has revitalized the education landscape. Digital integration is employed as a tool for education reform in the context of Islamic education in primary schools. In accordance with the evolving demands and circumstances of contemporary education, digital technology is utilized not only to improve teaching methods but also to provide efficient and student-focused digital learning (Blundell et al., 2016).

Digital teaching highlights how important it is for teachers to possess the mindset and skills necessary to successfully employ digital technology in their lessons.

According to Kalantzis and Cope (2010), teachers must modify their lesson plans, teaching methods, learning environments, and assessment methods. They also need to comprehend the pedagogical theories and principles that underpin their teaching, particularly when it comes to incorporating technology in lessons. Therefore, employing digital teaching is likely to enhance students' learning experiences in primary schools, and it has several advantages (Tække & Paulsen, 2017). Given the evolving role of Islamic education teachers in an era where digital pedagogy is becoming more common, it is essential to examine the direct impact of digital teaching on learning quality and student engagement.

2.2 The Importance of Digital Teaching in Islamic Education

In Islamic education, digital teaching boosts the pedagogical abilities in the context of 21st-century learning. One advantage of integrating digital technology into Islamic education is that it could reinforce student-centered learning methodology. Technology can help students reach their full potential through active self-learning, claims McGarr (2024). Digital games, simulations, and learning apps are examples of technology that could help students think more deeply and develop a greater comprehension of complex ideas (Wijnen et al., 2023). Additionally, by giving students access to more relevant and realistic learning scenarios, multimedia instruction can provide richer and more meaningful learning experiences (Ashoumi & Shobirin, 2019).

It has been demonstrated that digital teaching in Islamic education could raise the caliber and efficacy of the teaching and learning process. This finding has been confirmed by several studies that report on the benefits of digital teaching in Islamic education. For example, using multimedia as a learning control tool can result in high-quality and effective instruction (Nawi, 2020), and using digital devices such as projectors, computers, and digital cameras can speed up information delivery, save time, and make instruction more engaging and comprehensible for students (Abdullah & Razak, 2021; Halili & Suguneswary, 2017).

Digital teaching also encourages flexible and collaborative learning in Islamic education. This is in accordance with Abukhattala's (2016) research, which found that social media and online platforms could help students, teachers, and the larger learning community to communicate and work together. According to Misman et al. (2019), using new media in Islamic education can facilitate flexible learning by enabling students to collaborate in an interactive environment while they study through virtual classrooms and learning partners. Similarly, teachers and students could communicate freely using apps like Zoom, Webex, Telegram, and YouTube, which increases accessibility and inclusivity in education (Hasin et al., 2022).

Even though research has demonstrated the benefits of digital teaching, teachers continue to encounter obstacles, including a shortage of digital infrastructure in schools (Sumardi et al., 2020), a shortage of specialized training in technology integration (Kim et al., 2022), teachers' resistance to change (Jang et al., 2024), and a shortage of resources for Islamic education (Sholeh, 2023). Thus, research on

how teachers use digital teaching to overcome these limitations facing Islamic education is necessary. Research on how Islamic education teachers employ digital tactics in primary schools is still lacking, particularly when it comes to incorporating the newest, technology-based teaching methods in Islamic education. Therefore, to solve problems and enhance the quality of instruction, more thorough research is required to examine digital teaching techniques that Islamic education teachers can use.

3. Conceptual Framework

This conceptual framework adopted DigCompEdu (digital competence framework for educators model), with the goal of clarifying the key ideas and connections among significant components that underpin the digital teaching approach used by Islamic education teachers in Malaysia. The European Commission created DigCompEdu to help teachers evaluate and develop their digital competency (Redecker, 2017). This method categorizes 22 teacher digital competencies into three primary competency categories: i) professional competence; ii) pedagogical competence; and iii) student digital competence. Table 1 summarizes the six major groupings under the three competency categories:

Table 1: Key conclusions of the DigCompEdu model framework

Educator professionalism competence	Educator pedagogical competence	Student digital competence
1. Professional involvement	2. Digital resources 3. Teaching and learning 4. Assessment 5. Student empowerment	6. Developing students' digital competence

Source: Caena and Redecker (2019)

The study's main focus was pedagogical competency, specifically how Islamic education teachers apply technology in their lessons by using various methods, strategies, and procedures. Caena and Redecker (2019) explain that the DigCompEdu system is adaptable and can be tailored to the specific environment and digital education policies of any country. The system can be adapted to the unique requirements of Islamic education teachers in primary schools in Malaysia. The demands of primary school students, the country's digital education policies, and the unique challenges posed by teaching Islamic education can all be considered in this adaptation.

Since the DigCompEdu model describes broad concepts and can be modified for implementation, the authors believe that it is necessary to broaden its pedagogical competence components and elaborate on the original concepts pertaining to the teaching resource group, 3. Teaching, and learning, in the pedagogical competence category, particularly with regard to the requirements of Islamic education subjects. We did this because Islamic education, in addition to requiring students to master information and abilities, stresses the implementation of moral principles and *ibadah* practices in students' everyday lives (Suhid et al., 2021).

This study carefully analyzed the elements of the pedagogical competency category, including a digital teaching approach that emphasizes the integration of technology with teaching strategies, in order to improve the effectiveness of learning in Islamic education. By examining pedagogical competence factors, this article contributes to or expands on the body of knowledge on digital teaching methodologies tailored to Islamic education in primary schools. The ramifications of the findings can offer constructive advice that enables Islamic education teachers to organize and carry out high-quality instruction in accordance with the requirements of the modern digital classroom.

4. Research Methodology

A study's design outlines how data were gathered to achieve its objectives (Yin, 2018); it acts as a thorough procedural manual for researchers' preparation to undertake a study (Hiebert et al., 2023).

4.1 Research Design

To comprehend the actual phenomenon of how Islamic education teachers apply digital teaching methodologies in primary schools through natural investigation, this study employed a case study design using a qualitative methodology (Creswell & Creswell, 2023). As a unit of analysis (an individual unit) in primary schools, the researcher selected a single case featuring a group of digitally proficient Islamic education teachers as the case delimitation (Tisdell et al., 2025). The rationale for selecting this case stems from its distinctiveness: Islamic education teachers who have digital technology skills are still isolated cases because there were not many true professionals in this area at the time the study was undertaken.

4.2 Population and Sampling

Instead of focusing on a single school or location, this study was carried out in primary schools in suburban, rural, and urban locations. Because the goal of the study was to explore the digital teaching practices employed by Islamic education teachers who were adept at applying digital technology, the choice of location was contingent on the workplaces of the participants. The study's participating schools did, in fact, have fully functional digital infrastructure, including computer labs, electronic gadgets, and reliable internet connections. As a result, the study's conclusions offer a comprehensive view of the use of digital teaching in Islamic education in primary schools.

The participants were chosen according to three suggestions made by Tisdell et al. (2025). To get meaningful data, the researcher, first, established four criteria for choosing study participants. One was that they had to teach Islamic education, others were they had to have received awards in the digital field and be actively involved in any digital technology program organized by the Ministry of Education, they had to be serving in primary schools, regardless of the length of service experience, and they they were willing to voluntarily participate in the study.

Secondly, the researcher adopted the snowball sampling technique (Tisdell et al., 2015; Yin, 2018) because participants were well positioned to identify information-rich individuals in their shared networks (Creswell & Creswell, 2023). In all, five participants were recruited for this study using the snowball sampling approach. On the recommendation of an authorized official, recruitment started with Participants 1 and 2. Through their engagement in digital technology, Participant 1 recommended Participant 4, whom they knew via social media, and Participant 2 recommended Participant 3, whom they knew from doing their task in a national-level digital program together. As the next participant, Participant 3 proposed the name of Participant 5. Each of the three participants—Participants 3, 4, and 5—suggested Participant 1 as the study participant with the knowledgeable participant during the data collection process.

The researcher determined a sample size of five participants, following the guidelines provided by Creswell and Cresswell (2023), who clarify that four to five participants are adequate to describe a phenomenon in a case study. This approach is supported by Stake (2010), who clarifies that the primary goal of choosing case study participants is to choose individuals who are knowledgeable informants, so that the case description can fully explain the phenomena under investigation and reach data saturation (Saunders et al., 2018). Participants in this study are described in Table 2.

Table 2: Details of participants

Partici-pants	Years of service	Gender	Age	Digital awards received	Digital certificates acquired
PK1	14	Male	37	- National Inspiration Teacher - *Juara Digital* Teacher - ICT Teacher Icon - Advocate Teacher - Innovative Teacher -1 *Bestari net* Inspiration Teacher - *Bestari* Coordinator Teacher Icon	- *Apple Teacher* - *Google Certified Educator* - *Microsoft Innovative Educator Expert* - *Microsoft Innovative Educator Trainer*
PK2	14	Female	36	- Al Imam Al Ghazali Gold Award - *Juara Digital* Teacher	- *Microsoft Innovative Educator Expert*
PK3	9	Male	36	- *Bestari* Coordinator Icon - State Education Inspiration Teacher	- *Microsoft Innovative Educator Expert*
PK4	3	Male	27	- *Juara Digital* Teacher -*Peneraju Generasi Digital* Teacher - Virtual Learning Teacher Icon -EDUFLUENCER	- *Apple Teacher* - *Google Certified Educator* - *Microsoft Innovative Educator Expert*

PK5	8	Male	35	- State & National Educational Technology Teacher Icon -Innovative Teacher	- *Microsoft Innovative Educator Trainer* - *Microsoft Innovative Educator Expert*

According to Table 2, participants' genders, ages, length of service, and recognition in the digital industry represent a range of demographic backgrounds. Through descriptions of digital teaching activities and resources used to teach Islamic education, this range of demographics could give primary school Islamic education teachers a comprehensive overview of digital teaching methodologies.

4.3 Data Collection

The primary data collection method of this study was interviews, which provided data to develop themes in response to the research question. Observations and audio-visual materials served as supporting data to reinforce theme formation (Creswell & Cresswell, 2023). Using several data-gathering techniques improved the legitimacy of qualitative research, triangulated data (Stake 2010) and facilitated a comprehensive investigation of the case (Yin, 2018). The researcher conducted semistructured interviews to explore the experiences of participants. The interviews were guided by an interview protocol, which guided the researcher to broad questions and, depending on the participants' responses, probe for more detailed information (Tisdell et al., 2025). There were four types of questions in the interview protocol: introduction, transitional, main, and closing questions. Among the keywords of the questions are personal background, engagement, and accomplishments in digital education; opinions on the potential of digital education; and methods, approaches, activities, and digital teaching materials in the field of Islamic education. Each interview lasted an average of four to five hours. After the interviews, the researcher transcribed the interviews from the audio recordings that had captured participants' responses. The researcher then sent each participant a copy of the transcription to go through for a member checking exercise (Tisdell et al., 2025; Yin, 2018). A data consent form was provided for the participants for this evaluation procedure. The researcher proceeded to analyze the interview data once the participants had read and signed the form.

In order to address the study goal, an observation technique was employed to obtain supporting information. In accordance with the goal, the researcher organized the observation by establishing four key areas of focus, which included monitoring instructional behavior and practices associated with the use of digital teaching techniques in the classroom. For every participant, the researcher made three firsthand observations. During the observation, the researcher used a video recorder to capture the teaching session and jot down the key points in fieldnotes. Information regarding the participants, teaching strategies, participant activities, and unforeseen behaviors or circumstances was among the items included in the fieldnotes (Tisdell et al., 2025). It was anticipated that the reflexivity of the

researcher who gathered the data would aid in assuring the trustworthiness of observations, since they knew what they wanted to observe and was aware of its significance for the study (Olmos-Vega et al., 2022).

To address the study topic further, data are supported by the analysis of audio-visual materials such as images, videos, social media posts, personal blogs, e-learning websites, YouTube channels, Telegram, and WhatsApp accounts. To ensure the accuracy of the study findings, data from observation techniques were used to support audio-visual data (Tisdell et al., 2025). The nature of the participants engaged in the digital environment aligns with this audio-visual analysis. To index document data, the researcher, first, gathered audio-visual data, then selected and evaluated the reliability of the data sources, and, lastly, took written notes using a coding and cataloging method (Tisdell et al., 2025). To ensure the reliability of audio-visual data, the researcher secured the participants' consent and protected their privacy. A consent form was signed by the participants after they consented to participate. The researcher then anonymized participants' names and faces in the audio-visual sources to guarantee the security and confidentiality of personal information. Finally, to ensure that their privacy rights were not infringed upon, participants were entitled to voice their opinions and inquire about the way the data would be utilized (Taub et al., 2024).

The researcher conducted the indexing procedure in accordance with the needs of the data-gathering technique, such as transcribing interview data, taking fieldnotes during observations, and taking document notes for audio-visual analysis, once the data collection process was finished. The data was uploaded into the NVivo 14 program to conduct the data analysis procedure.

4.4 Analysis of Data

Following a phased data-gathering process, the researcher started applying the theme analysis technique of Miles et al. (2020) to the study data. Tisdell et al. (2025) state that, to provide a coherent explanation of a phenomenon's patterns, the researcher must categorize, compare, evaluate, and combine the data, which had, in this case, been obtained via observations, interviews, document analysis, and audio-visual materials) (Rubin & Rubin, 2012).

The researchers undertook two cycles of coding to comprehend the phenomenon of primary school teachers' use of digital teaching methodologies in Islamic education. In the first cycle, the researchers used various codes, including in vivo, process, values, descriptive, and emotion codes, to code the interview transcripts. The practice of providing data units associated with the research questions with symbolic significance was the main emphasis of this procedure. Once this had been done, the researchers checked the developed codes to make sure they were sufficient for the following step. The researchers then assigned definitions to the code groups based on the type of coding that had been grouped to aid the researchers in following the rules and placing the correct codes in the appropriate places. After completing this procedure, the researchers sent the coding list to the study participants for verification.

The goal of the second cycle of coding, also referred to as pattern coding, is to identify and produce data patterns using the codes created in the first cycle. The researchers formed clusters to start the second cycle of coding. The codes that were examined in the first cycle were initially listed by the researchers according to the type of coding. The researchers then grouped the codes into the same group to continue the analysis process by searching for similarities; doing so can help a researcher focus on each cluster and find patterns in the data. The code cluster is assigned a specific name with tiny unit code mapping. To answer the research question, the researchers' last step is to generate data by creating themes and subthemes. In this stage, researchers systematically organize data, critically reflect on key insights, and formulate judgments through a structured mapping process that integrates both creative and analytical thinking. To address the research question, the researchers developed five themes and 11 subthemes.

To strengthen the reliability of the findings, the researchers sent the themes that had been developed to five experts in the field of digital technology in Islamic education for peer review. In response to the experts' suggestions, the researchers discussed their feedback and made adjustments. The themes that emerged were triangulated against the results of the audio-visual analysis and the interviews.

4.5 Ethics

According to Patton (2015), ethical concerns are the rules and guidelines that help researchers make judgments about data, participants, and how to share their findings. It strives to strengthen researchers' credibility and accountability for adhering to certain rules and standards, and to make it easier for reviewers or stakeholders to analyze and evaluate a study's ethics components. Consequently, the researchers established two ethics guidelines—informed consent and confidentiality—that were suitable for this investigation (Patton, 2015).

First, the researcher called the participants to obtain verbal consent to participate in the study. After their in-person encounter, the researcher thoroughly outlined the study's overall goal and the way study participants would be included in data-gathering methods such as interviews, classroom observations, and extracting audio-visual material from their social media accounts. The participants were then given time to reflect before they completed the consent and confirmation forms; they could withdraw from the study at any time without facing consequences.

The researcher employed three strategies to protect participants' identities: they used pseudonyms or fictitious names when reporting data, obscured information in material such as photos and participants' real names in data sources or data reporting, and stored the participants' personal data securely. Before the participants signed consent forms at the start of the study, the researcher discussed the process for obtaining written consent with them, which also included explanations about confidentiality.

5. Findings

This study identified five themes and 11 subthemes, which are visually portrayed in Figure 1 and will be fully discussed.

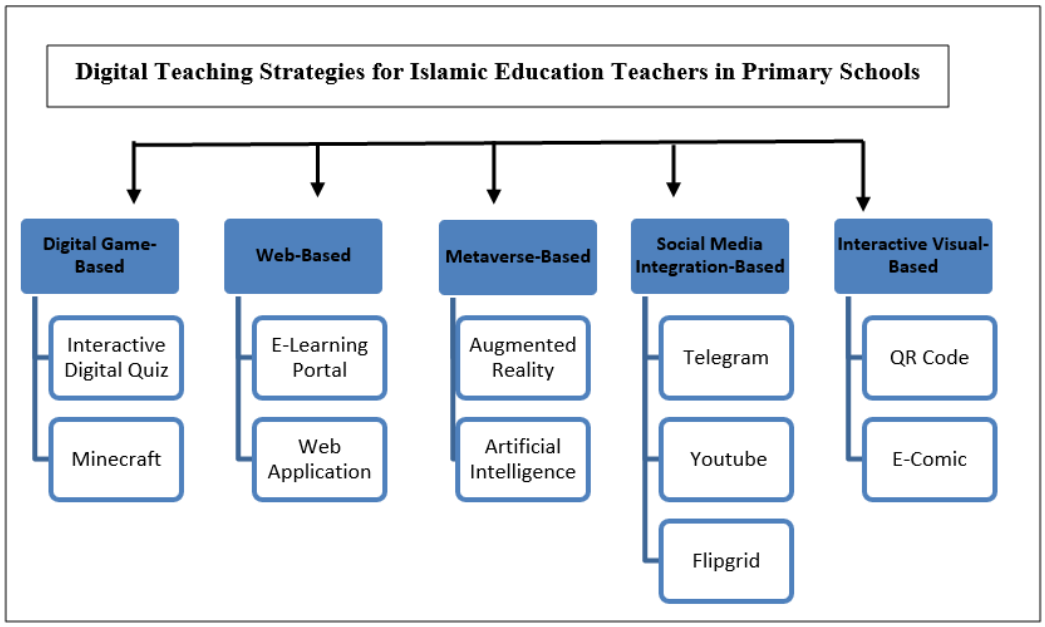

Figure 1: Concept mapping of the results of the study

Based on the study findings, five themes emerged to address the research objectives: i) Digital game-based, ii) Web-based, iii) Metaverse-based, iv) Social media integration-based, and v) Interactive visual-based strategies.

5.1 Theme 1: Digital Game-based

The majority of research participants used game-based learning as their primary digital teaching approach. As a result, this type of instruction is explained in two subthemes: i) digital interactive quizzes and ii) Minecraft.

Subtheme: Digital interactive quizzes

Almost every study participant used interactive digital quizzes for teaching. However, what distinguishes them is the type of quiz used, which was affected by personal preference. PK1 chose the Quizziz and Kahoot! applications because they believed students enjoyed competing during learning. The following quote summarizes the experience of PK1:

> *What I always do is Quizziz and Kahoot! … the impact is high and it is really fun because they are beating each other to get the highest ranking in answering questions. The impact is that they enjoy learning. (PK 01/TB:557-559)*

PK2 used the Wordwall application to implement digital interactive quizzes in teaching:

> *I am very familiar with Wordwall application, the use of gamification in learning. (PK 02/TB:1015)*

Among the examples of Wordwall applications that PK2 used for teaching is the technique of creating puzzles to give students an idea of the topic to be learned:

> *We can use puzzles. Students guess and we arrange them. We arrange and the students guess. Or the student comes to the front and arranges the puzzle. So, what comes up when the puzzle is completed is the topic that we will teach. Students play at the beginning. (PK 02/TB:1954-1957)*

Meanwhile, PK5 used Liveworksheets quizzes in his teaching because students could see their responses immediately:

> *I usually use Liveworksheets. If it's Liveworksheets, the students can directly see the answers there. (PK 05/TB:203-204)*

PK5 liked Liveworksheets because it offered a wide range of question sets. This enabled him to easily select the best alternatives for the students, as he explained:

> *This Liveworksheets is also good because it has many collections of questions. We don't have to worry as much about developing questions. We search for questions pertaining to our topic. (PK 05/TB:1788-1789)*

Subtheme: Minecraft

The second subtheme related to gaming approaches using the Minecraft application. PK3 stated that Minecraft is gamification:

> *Minecraft is a game that follows the lines of gamification. (PK 03/TB:276)*

PK5 demonstrated how to teach Aqidah using the Minecraft approach by developing a Minecraft world with examples of Allah's creation and connecting natural happenings to Allah's magnificence. He summarized his practice:

> *If we want to teach about Aqidah, we can create a virtual world about the universe. We create a virtual world in the space. Look over there and you will see Pluto, all kinds of planets. We will then relate who created it. There must be a Great Power, which is Allah who created it. (PK 05/TB:725-727)*

PK3 recounted his experience with Minecraft as a teaching tool, which helped him conduct lessons that required the usage of English and Arabic. He explained:

> *The Minecraft can read directly in English and Arabic … we just copy paste in there and press it, then it will read it for us. (PK 03/TB:315-318)*

Data triangulation for Minecraft was done with analysis of audio-visual material, in this case, a recording of the students' work in the program. The image in Figure 2 depicts the students' replies written on the "board" according to their groupings. The cartoon image in Figure 2 depicts the students from the Minecraft Universe.

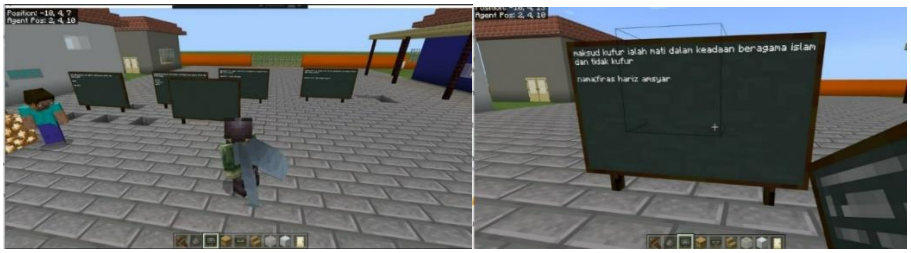

Figure 2: The result of students' work in Minecraft

5.2 Theme 2: Web-Based

One of the instructional strategies that the research participants were interested in applying is web-based teaching. This is a teaching method that involves using the internet and online platforms as digital teaching tools. Participants in this study supported the learning processes of their students by using online apps such as Google, Microsoft, and Apple, as well as e-learning portals, as teaching tools.

Subtheme: E-learning portal

The research participants' experiences with e-learning portals, specifically e-Jauhar and e-Murabbi, as teaching resources, whether as teaching aids or student activities, provide a scenario that illustrates the use of web-based teaching approaches. PK1 claimed that he used the e-Jauhar learning platform to carry out moral education. He employed the portal's movies as tools to help students investigate moral principles. He described the experience as follows:

> *So, when we log into e-Jauhar, just play the moral values video for the topic, Ziarah which is Berhikmah. We have a film with moral lessons on Ziarah etiquette. (PK 01: TB 808-809)*

A teacher observation session during the teaching and learning process by PK2 reinforced the findings for this theme further. She employed the e-learning portal's digital resources as a tool to help students focus and pay attention while students read Quranic verses. She followed up videos with additional exercises to help students retain what they had learned.

Subtheme: Web applications

According to the study participants, teaching with web applications was frequently employed in *Sirah*-related teaching. This is because, as PK5 explained, the learning materials in *Sirah* emphasize information about locations and occasions. The teacher must help students to see the actual circumstances:

> *Since Sirah involves places and events …, we can show our students where the events occurred. (PK 05: TB 1919-1920)*

Research participants employed advanced technologies such as Google Maps to accomplish this purpose and present an accurate depiction of a place. PK2 described this situation:

> *In Sirah for example. We want to show the Thur Cave to our students, but where is it? Since the textbook won't show it, we have them using Google Maps instead, so that students may observe the location and elevation of the cave. (PK 02: TB 1255-1256)*

Google Earth is another Google application that the study participants utilized to teach Aqidah. The 3D feature of Google Earth, which enables students to view a more realistic visual depiction, is what makes it intriguing. PK1 described this experience:

> *For instance, al Malik, outer space. We utilize Google Earth for representing the actual. Thus, we create him in 3D in this manner [by selecting the accessible characteristics]. (PK 01: TB 2525-2527)*

5.3 Theme 3: Metaverse-based

Only a small number of research participants used metaverse-based teaching strategies. In this study, a metaverse-based teaching approach refers to using metaverse-based teaching strategies by the study participants. Metaverse-based instruction led to the development of two subthemes, specifically i) augmented reality and ii) AI, which demonstrate the scenario for this subtheme.

Subtheme: Augmented reality

PK5 discussed his experience of using augmented reality to teach the Quran in an engaging way. Students must first use augmented reality devices and apps to scan existing photographs.

> *It's like this, we must install the augmented reality software on our phones first. When the applications had been installed, then we could scan them. (PK 05: TB 441-442)*

Once the photos have been scanned, the audio will start playing automatically, and a virtual object—a 3D visual—will be created. Students may engage with the content in this way, which makes it easier and more accurate for them to follow the reading. He explains this procedure:

> *So, when the student scans it on the AR [augmented reality], the content of the lesson will appear. Students can interact with the AR. If they press a letter, for example the letter ba with a fatha. What it gives, what it shows to the user is the sound of ba with a fatha. The sound of ba with a fatha, is ba. Then, the user can follow the pronunciation. (PK 05: TB 430-432)*

The researcher's observation of PK5's instruction triangulates data on the way study participants used augmented reality in the classroom. PK5 used Interactive Tamhid, a teaching tool with augmented reality components, to teach students how to pronounce the correct *makhraj*.

Subtheme: AI

The research participants' experiences, as reported by PK5, provide an explanation of how AI approaches were used to implement *tajwid* teaching in Islamic education. First, using the given application, students listen to recitations of the Quran. After that, the teacher instructs the students, as described in the following excerpt:

> *For example, in Artificial Intelligence Centre (AIC) there is an application called Learn Tajwid to literally learn tajwid. They will use that. They will be given training in identifying the rules of tajwid from the readings recited by the computer. (PK 05: TB 1409-1410)*

The observation session of the research participants' instruction and learning confirmed that they used this AI-based teaching approach. As reported in the teaching observation notes, the researcher witnessed firsthand how the participant effectively led the class and simultaneously piqued the students' interest.

> *At this time, the teacher asked the students to go to a corner and make a movement (wave their hands) forward. The AI sensor will detect this hand movement, and as a result, the slide on the screen will change to another. This is because the students' hand movement can control the teaching material on the screen. Then, the student controls the movement on the screen using his hands. (Fieldnotes)*

5.4 Theme 4: Social Media Integration-based

The term social media-based teaching describes the method in which teachers use social media platforms to help students learn. Three subthemes relate to platforms used for teaching: i) Telegram, ii) YouTube, and iii) Flipgrid.

Subtheme: Telegram

Telegram is an application that study participants frequently used in their teaching:

> *I often use a medium that is friendly to students, such as groups in Telegram. (PK 02: TB 112)*

According to PK1, he used Telegram to store his teaching materials, such as videos and exercises.

> *If you want to record a video, then transfer it to Telegram. I just store it in Telegram. (PK 01: TB 2191)*

This practice means students have access to the gathered and stored instructional materials via a link created by PK2 for tasks that provide student reinforcement. According to PK2:

> *I can share my link just now, the gamification link in my class Telegram group … So they can replay it as a drill and enrichment when they are home. (PK 02: TB 971)*

Audio-visual analysis of screenshots of PK2's Telegram posts that she used for student learning triangulated the interview data. The researchers confirmed the presence of various gamification tasks, instructional videos, and other resources. Since links are supplied to the material on Telegram, all instructional resources are conveniently accessible to students. A snapshot of the PK2's Telegram application interface is shown in Figure 3.

Figure 3: A snapshot of Telegram application

Subtheme: YouTube

PK1 shared his experience of conducting a live teaching process using YouTube Live. He explained how he asked students to do storytelling activities via the YouTube Live broadcast:

> *Yes, just yesterday I did a YouTube Live. They were telling stories in front of the class, I was a contact and immediately saw their faces on YouTube. (PK 01: TB 2215)*

The students were thrilled to get the chance to view themselves on the YouTube site. For this reason, they attached great significance to the educational experience that PK1 provided. The participant explained the students' enthusiasm:

> *Because they want to be on YouTube. It excites them like, eh I am on YouTube. So, they are like, eh, this is something new for them. Oh, Ustaz [Teacher] can you upload us on YouTube. (PK 01: TB 2225-2228)*

Audio-visual data, namely the recording of PK1's images during the classroom observation session, was used for data triangulation. In Figure 4, a live broadcast using the YouTube Live technology was taking place, with a student presenting a narrative while simultaneously having her face shown on the screen in front of the class. The teacher used a cell phone to record the students' actions.

Figure 4: YouTube Live teaching session

Subtheme: Flipgrid

Flipgrid is a social networking site designed specifically for sharing educational films. PK4 reported on his experience of utilizing Flipgrid in teaching, by giving an example of student learning activities that involved students filming themselves memorizing Quranic verses and submitting the video to the Flipgrid program:

> *He recorded himself memorizing the Quran, we told them to record the video and upload it to Flipgrid. (PK 04: TB 1058)*

On Flipgrid, students can provide comments and words of encouragement, as PK4 explained:

> *If you use Flipgrid, other people can see and respond to their friends. For example, words of encouragement, thank you, congratulations. (PK 04: TB1062-1063)*

The outcome is that students can boost their motivation and confidence by expressing ideas:

> *The students can express their own reasons, their own views … it can boost their motivation, their confidence also increases with this medium. (PK 04: TB 1064-1065)*

5.5 Theme 5: Interactive Visual-based

One of the instructional strategies that the research participants use is interactive visual instruction. With this teaching approach, students engage with the content by interacting with interactive visuals. The findings for Theme 5 are described according to two subthemes: i) Quick response code (QR code) and ii) e-comics.

Subtheme: QR code

The research participants used QR codes as a teaching tool and PK1 explained how he used the QR code from the textbook. He scanned the given QR code, and a video demonstrating how to perform *istinja'* according to the teaching of *ibadah* showed up:

> *Just like a QR code, when we scan it, videos will come out … When we scan the QR code, a video of how to clean mukhaffafah najis will appear. (PK 01: TB 1884-1885)*

In addition to videos, audio materials that support teachers' instruction are linked to QR codes in textbooks. PK3 presented the situation of using QR codes to play audio of Arabic phrases spoken correctly:

> *If it were like an Arabic textbook, it would have provided the pronunciation for each word in the QR code. (PK 01: TB 905-906)*

Observation data, namely from a classroom observation session of PK2, enabled triangulation of these findings. During the observation, PK2 demonstrated to the students how to use a mobile phone to scan the QR code and explained to them the purpose of the QR code in the textbook.

Subtheme: E-comics

The study participants did not emphasize using e-comics in Islamic education instruction. However, PK2 used e-comics as a substitute approach, so that students could learn content in a more relaxing way—she found this particularly effective for complicated topics. The following quote explains her goal with using e-comics for teaching:

> *The target of e-comics is to have in a relaxed delivery of what is contained in the textbook. Only difficult topics are delivered in e-comics. (PK 02: TB 2194-2195)*

PK2 went on to say that using e-comics to teach *Sirah* is a good way to tell the tale in a more casual way:

> *Sirah can also be inserted... We tell a relaxed story from comics about how the prophet could survive without a mother and father. But it is presented in a comic dialogue, a relaxed reading. (PK 02: TB 2196-2198)*

In fact, through the dialogue in e-comics, students can also take in lessons from the story of the Prophet, which they understand from the relaxed narration:

> *In the Sirah there are many lessons and teachings. So, students can easily get them from the dialogues. (PK 02: TB 2199)*

6. Discussion

From the data, this study identified five themes that characterize the digital teaching strategies of Islamic education teachers in primary schools: i) Digital game-based teaching; ii) Web-based teaching; iii) Metaverse-based teaching; iv) Social media integration-based teaching; and v) Interactive visual-based teaching. The results of this study are consistent with that of other studies that found that teachers of Islamic education used digital teaching techniques. These studies include investigation of digital teaching methods such as gamification strategies (Othman et al., 2023; Zahari et al., 2021), using multimedia in Islamic education (Amin et al., 2022; Hashim et al., 2020), and augmented reality applications (Anuar & Razak, 2022; Saidi et al., 2023). Additionally, this study confirms earlier findings about the use of digital tools for instruction, including Google Meet (Haron et al., 2020; Moyang & Razak, 2022), Kahoot! and Quizizz (Hambali & Lubis, 2022; Zin et al., 2021;), and Minecraft (Shuhaimi et al., 2023).

The results of this study demonstrate that Islamic education teachers are dedicated to using digital teaching methods in primary schools. The present scenario regarding the integration of digital tools has given teachers in Islamic education a more optimistic outlook on their attempts to give students access to digital learning environments. The approach seeks to pique students' curiosity and boost their drive to study Islamic education, and makes it easier for students to comprehend and promote the implementation of the principles they learn. Using digital teaching in Islamic education is another way that Islamic education teachers demonstrate their inventiveness.

By combining five digital teaching techniques into a framework that demonstrates the variety of digital integration in Islamic education instruction, this study advances the field of Islamic education by providing a thorough view on digital teaching strategies. The fundamental elements of any digital teaching strategy, including instructional materials, implementation strategies, the justification for strategy selection, and its real-world application in Islamic education, could be thoroughly explained by this study. This study, which employed a qualitative methodology, offers fresh perspectives on how instructors of Islamic education apply digital resources for instruction.

The results of a digital teaching strategy unequivocally demonstrate that Islamic education teachers have met the teaching and learning component of DigCompEdu's pedagogical competency. The case described in this paper clearly

demonstrates the suitability applying the DigCompEdu model in Malaysia's Islamic education system. The results of the study also reveal that, particularly in Islamic education, the digital teaching approach being used seeks to empower students digitally by offering a digital learning environment. Teachers in other professions can also employ the digital teaching techniques described in this study. However, there are particular requirements that Islamic education teachers must take into account when implementing digital teaching. Specifically, teachers must stress the application of moral values and *ibadah* practices that students must perform in their daily lives, and they must make sure that students comprehend the material. This requirement is in contrast with other disciplines, for which teachers primarily concentrate on the acquisition of the content of the lesson.

7. Conclusion

The findings on digital game-based teaching methodologies (Minecraft) and metaverse-based education (augmented reality and AI) are among the significant contributions of this study. These two approaches to instruction demonstrate how primary school Islamic education teachers can fully utilize digital resources by including in Islamic education teachings augmented reality, AI-driven education, and the metaverse.

Despite offering a comprehensive review of digital teaching practices in Islamic education, this study has a number of limitations that should be acknowledged. One of these limitations is the fact that only five teachers participated. A bigger sample size may offer more comprehensive and varied viewpoints on digital teaching methods that could be employed, even if the qualitative study technique seeks to obtain profound knowledge. The study's contents and scope, which center on five primary techniques, were also subject to restrictions. Other aspects, such as institutional characteristics, the school environment, and the students' level of digital literacy, which could affect the efficacy of digital teaching methodologies, were not thoroughly examined by this study. To gain comprehensive knowledge, the unit of analysis for the research can be broadened by taking into account students and school administrators' views, in addition to that of teachers.

Notwithstanding these drawbacks, the study's conclusions, nevertheless, provide a significant addition to our knowledge of digital teaching methods in Islamic education. To obtain a more complete range of experiences, it is advised that the number of participants are increased in future research. Examining outside variables that affect the efficacy of digital techniques, such as education policy, technical infrastructure, and the degree of teacher preparedness for integrating technology into lessons, might broaden a study's focus further. Practically speaking, the study findings have significant implications for the creation of education policies and teacher training programs. Stakeholders could consider offering regular, structured professional development courses to help teachers become more digitally empowered. To ensure the efficacy and relevance of educational practices, Islamic education teachers must adjust to the quickly changing digital education landscape and be receptive to trying out innovative teaching techniques.

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Appendix 1

Instrument

Interview Protocol Questions

Opening Questions

No	Question
1	Can you briefly share about your background: - Age - Residence/Surrounding environment - Workplace/school environment - Years/experience in teaching - Education level/teaching qualification (Higher Education Institution) - Social media platforms owned
2	Can you share your experience of when you started teaching using digital technology?
3	Have you attended any courses/training related to digital technology? *(Request related certificates/documents)*
4	Can you share your achievements in digital technology throughout your service?
5	Can you share your achievements in teaching technology at the following levels: - Personal - School - District - State - National - International *(Request related documents/certificates/materials)*

Transition Questions

No	Question
6	What is your opinion about digital technology in Malaysia?
7	What motivates you to be directly involved in digital technology?
8	Why are you interested in digital technology?
9	Who encouraged your involvement in digital technology?

Main Questions

No	Question
10	What do you understand about digital technology?
11	What do you understand about digital technology competence?
12	Based on your knowledge, what elements should be present in digital technology competence? *(Can you elaborate on these elements?) (Probing questions based on possible responses from the interviewee. Examples: Intention, creativity, futurism, reflection, determination, self-satisfaction) (Ask questions related to emotions/feelings connected to the interviewee's response.)*
13	Can you share examples of how these elements are applied in Islamic Education teaching?

No	Question
14	According to you, what is the importance of each element mentioned earlier?
15	What approach do you use in applying digital technology in classroom teaching? - Face-to-face - Online *(Provide examples, evidence of teaching materials, teaching and learning process carried out)* **Audio Visual:** - Google Classroom - YouTube - Social Media - Other teaching materials
16	How do teachers apply digital technology in teaching: - Lesson planning - Teaching implementation (Introduction, development, assessment, closure) - Activity preparation - Teaching aids creation - Teaching aids implementation - Evaluation *(Prepare an observation inventory.)* **Documents:** - Lesson Plan - Student Exercises - Student Worksheets
17	Based on the responses above, is Islamic Education suitable to be taught using digital technology? *(If Yes, provide reasons.)*
18	What approach do you use in planning and implementing digital technology teaching in the following fields: - Al-Quran/Hadith - Aqidah - Worship - Sirah - Akhlak *(Prepare a checklist.)* **Documents:** - Lesson Plan
19	Based on your experience, what are the benefits/advantages of Islamic Education teachers using digital technology in teaching and learning?
20	Can you share suggestions to improve teachers' skills in using digital technology?

Closing Questions

No	Question
21	In your opinion, why should Islamic Education teachers master digital technology today?
22	In your opinion, how can one develop their potential in digital technology to become more competent?
23	What are your hopes for improving digital technology competence among Islamic Education teachers?