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IMPLEMENTATION OF DIGITAL MEDIA IN LEARNING ISLAMIC RELIGIOUS EDUCATION IN THE ERA OF INDUSTRIAL REVOLUTION 4.0

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Digital Media, Islamic Religious Education, Industrial Revolution 4.0	<i>This study explores the integration of digital media in Islamic Education (PAI) learning during the Industry 4.0 era, focusing on its implementation, challenges, and strategies. Employing a qualitative descriptive approach, data were gathered through interviews with senior high school PAI teachers, observations of digital learning sessions, and document analysis of syllabi and educational platforms. The findings reveal that digital media, such as instructional videos, interactive applications, and online platforms, significantly enhance the accessibility and engagement of PAI learning. These tools provide innovative ways to teach complex Islamic concepts while fostering collaboration and critical thinking among students. However, the implementation of digital media faces challenges, including limited teacher competence in digital literacy, insufficient technological infrastructure, and socio-economic disparities. Ensuring the alignment of digital content with Islamic values and addressing distractions from non-educational digital tools are additional concerns. To overcome these challenges, strategies such as teacher training, the development of PAI-specific digital content, and investment in infrastructure are recommended. Collaboration among educators, parents, policymakers, and the community is crucial to ensure equitable access and effective use of digital media. This study concludes that thoughtful integration of digital media can modernize Islamic Education, maintaining its relevance and impact in the digital era while preserving its core values.</i>

A. INTRODUCTION

The Fourth Industrial Revolution (Industry 4.0) has brought transformative changes in various sectors, including education. This era, characterized by the integration of advanced technologies such as the Internet of Things (IoT), Artificial Intelligence (AI), and big data, demands educational institutions to adapt and innovate their teaching methods to meet contemporary challenges (Priyanto, 2020). Among the subjects taught in schools, Islamic Education (Pendidikan Agama Islam, PAI) plays a critical role in shaping noble character and maintaining spiritual values in an increasingly digitized society. (Hajriyah, 2020) Islamic Education, historically rooted in traditional pedagogical approaches, now faces the challenge of adapting to technological advancements. Students today are more inclined towards digital platforms, which offer interactive and visually engaging content. Consequently, this preference underscores the need for PAI to leverage digital media to deliver Islamic teachings effectively. (Halimurosid, 2022) However, such integration requires significant shifts in instructional design, teacher training, and infrastructure development (Khojir et al., 2022).

One of the pressing issues is the digital divide between urban and rural educational settings. While urban schools have relatively better access to technology, rural schools often face limited internet connectivity and insufficient resources. This disparity exacerbates educational inequality, limiting the potential benefits of digital learning for students in underprivileged areas. (Amanullah, 2020) Moreover, many PAI teachers lack the digital literacy required to effectively integrate technology into their teaching practices (Cahyani & Masyithoh, 2023).

The transition to Education 4.0 an educational paradigm aligned with Industry 4.0 requires a shift from teacher-centered to student-centered learning models. This shift emphasizes the role of teachers as facilitators, guiding students to explore knowledge through interactive digital platforms. (Arizki, 2020) For Islamic Education, this model presents both opportunities and challenges, as it must balance technological advancements with the preservation of Islamic values (Musthafa & Meliani, 2021).

Digital media, such as videos, Massive Open Online Courses (MOOCs), and gamified learning applications, offer innovative ways to engage students. These tools enable educators to present complex Islamic concepts in a more accessible and relatable manner. (Nafa et al., 2021) For instance, using animated videos to illustrate stories from Islamic history can captivate students and enhance their understanding of moral lessons. Despite its potential, the implementation of digital media in Islamic Education is not without challenges. Issues such as content relevance, ethical considerations, and alignment with curriculum standards require careful attention. Educators must ensure that digital content upholds Islamic principles while also meeting pedagogical goals. (Furqon, 2024) Furthermore, the rapid pace of technological change necessitates continuous professional development for teachers to stay updated with emerging tools and trends (Priyanto, 2020).

The role of technology in shaping educational practices has been widely recognized. Studies suggest that integrating digital tools can significantly enhance student engagement and learning outcomes. (Halimurosid, 2022) However, the effectiveness of these tools depends on their proper utilization and the readiness of educators to adopt innovative teaching methods. (Khojir et al., 2022) Islamic Education, being a value-based discipline, faces unique challenges in the digital age. The

incorporation of technology must be guided by ethical considerations to prevent misuse and ensure that it supports the development of students' moral and spiritual character. (Musthafa & Meliani, 2021) This balance is crucial to maintaining the integrity of Islamic teachings while embracing modern pedagogical practices. (Nafa et al., 2021)

The Industrial Revolution 4.0 has also highlighted the importance of lifelong learning. For PAI teachers, this means acquiring new skills and knowledge to effectively utilize digital tools in their teaching. Training programs focusing on digital literacy and instructional design can empower educators to overcome challenges and leverage technology for enhanced learning experiences. Moreover, the role of parents and the community in supporting digital learning initiatives cannot be overstated. Collaborative efforts between schools, families, and local governments are essential to bridge the digital divide and ensure equitable access to technology for all students. (Amanullah, 2020) This collective approach can create a supportive environment for the successful implementation of digital media in Islamic Education. (Cahyani & Masyithoh, 2023)

In addition to technical challenges, the integration of digital media in PAI requires a reevaluation of pedagogical strategies. Traditional lecture-based methods may no longer suffice in capturing the attention of digitally native students. Instead, interactive and experiential learning approaches, supported by technology, can foster deeper understanding and retention of Islamic principles. (Priyanto, 2020) The use of digital platforms also offers opportunities for collaborative learning. Students can engage in online discussions, participate in virtual study groups, and access a wealth of resources that enrich their understanding of Islamic teachings. (Halimurosid, 2022) Such collaborative efforts can promote critical thinking and a sense of community among learners. (Nafa et al., 2021)

Despite the growing recognition of the potential of digital media in enhancing Islamic Education (PAI) in the era of Industrial Revolution 4.0, significant gaps remain in understanding its effective implementation. Existing studies primarily focus on the technical aspects of digital integration, such as the development of e-learning platforms and digital content. (Amanullah, 2020) However, limited research addresses the pedagogical strategies required to balance technological advancements with the preservation of Islamic values. Furthermore, the role of teacher competence in effectively utilizing digital tools and fostering moral and spiritual development in students has been underexplored, creating a critical void in the literature. (Cahyani & Masyithoh, 2023)

Another significant gap lies in addressing the socio-economic and infrastructural disparities that hinder equitable access to digital media for Islamic Education. While urban areas benefit from advanced technological resources, rural schools often struggle with limited internet access and inadequate digital infrastructure. (Halimurosid, 2022) This disparity perpetuates unequal learning opportunities and raises concerns about the inclusivity of digital-based PAI. Additionally, there is a lack of comprehensive studies that evaluate the long-term impact of digital media on students' understanding of Islamic principles and their moral character development. These gaps underscore the need for research that holistically examines both the opportunities and challenges of integrating digital media into Islamic Education.

One of the main obstacles is the digital literacy of PAI teachers. Many educators remain limited to traditional lecture methods without utilizing technology as a support tool. Additionally, limited internet access in certain regions poses a significant barrier.

Therefore, it is crucial to explore how digital media can be effectively implemented in PAI instruction. This research aims to explore the potential, challenges, and solutions in utilizing digital media for PAI learning. It is hoped that the findings of this study will serve as a guide for educators and policymakers to improve the quality of learning in the digital era.

B. METHOD

This study employs a qualitative descriptive approach to analyze the implementation of digital media in Islamic Education (PAI) learning during the Industry 4.0 era. This approach was chosen to deeply explore how digital media is utilized in the learning process, the challenges faced, and the strategies applied to optimize its use. Data were collected from various sources, including interviews, observations, and literature reviews. This approach enables the researcher to understand the phenomenon holistically and provide a comprehensive overview.

The subjects of the study consist of senior high school (SMA) Islamic Education teachers who have integrated digital media into their teaching. The subjects were selected purposively to ensure that the respondents had experiences relevant to the research topic. Additionally, supplementary data were gathered from students involved in the learning process to gain their perspectives on the effectiveness of digital media.

Data collection was conducted through in-depth interviews with PAI teachers, direct observations during the learning process, and document analysis, including syllabi, digital modules, and the educational platforms used. The interviews aimed to explore the teachers' experiences, constraints, and views regarding the use of digital media. Observations were employed to examine the interaction between teachers and students when using digital media, while document analysis served to assess the relevance and quality of the digitally presented materials.

Data analysis followed the steps of data reduction, data presentation, and conclusion drawing. Data obtained from interviews and observations were organized into main themes, such as the types of digital media used, their impact on learning, and the challenges encountered. The researcher then integrated the analytical findings with the literature review to identify relevant solutions and strategies. Data validity was verified through source and technique triangulation to ensure the accuracy and reliability of the research findings. (Sugiyono, 2020)

C. RESULT AND DISCUSSION

Digital Media in PAI Learning

Digital media has brought significant changes in how teachers deliver material and how students learn information. In the context of Islamic Education (PAI), digital media such as instructional videos, interactive applications, and online platforms can present complex material in a more easily understandable manner. For example, teachers can use YouTube to convey Islamic stories through engaging animations. These videos not only increase students' interest but also enrich their learning experiences. Additionally, applications like Kahoot and Quizizz allow students to learn through interactive quizzes, making the learning process both enjoyable and competitive.

Beyond enhancing interaction, digital media also helps students grasp abstract concepts in PAI, such as tauhid, fiqh, or ethics. Application-based simulations can provide practical illustrations of religious practices, such as the correct way to perform

prayer or the Hajj pilgrimage. This is particularly helpful for students in remote areas who have limited access to hands-on practice facilities. However, using digital media also requires the right strategy. Teachers must be able to select content that aligns with the curriculum and Islamic values. Content that is irrelevant or contradicts Islamic teachings can have a negative impact on students. Therefore, supervision of digital media use is crucial in PAI learning.

The use of digital media also opens up opportunities for collaborative learning. Students can engage in online discussions via platforms like Google Classroom or Microsoft Teams, enabling them to share ideas and perspectives on PAI material. This collaboration not only enhances students' understanding but also builds their character through respectful and constructive dialogue. Although digital media offers substantial benefits, its implementation still requires adequate infrastructural support. Without reliable internet access, the optimal use of digital media is difficult to achieve. Therefore, schools and the government must ensure that every student and teacher has access to the necessary technology.

Digital media continues to redefine the learning experience in Islamic Education (PAI) by making complex subjects more accessible. Platforms like YouTube, which offer rich multimedia content, allow educators to present Islamic teachings in engaging ways. For instance, animated videos about the lives of prophets or the history of Islamic civilization create a captivating narrative that resonates with students of all ages. (Arizki, 2020) This method not only enhances engagement but also addresses various learning styles, including visual and auditory preferences.

Additionally, digital media tools such as interactive quizzes, simulations, and games foster active participation among students. For example, platforms like Quizizz and Kahoot enable educators to test students' understanding in a fun, competitive environment. These tools encourage repeated practice and peer interaction, which are essential for consolidating knowledge in subjects like tauhid and fiqh. (Halimurosid, 2022)

Another significant benefit of digital media is its ability to bridge the gap between theoretical and practical knowledge. Simulation applications allow students to experience religious practices, such as the procedural steps of performing wudu or the significance of rituals during Hajj. These applications are particularly invaluable for students in regions where access to physical practice facilities is limited. (Cahyani & Masyithoh, 2023)

Digital media also offers personalized learning opportunities. Adaptive learning platforms, powered by AI, provide tailored content based on individual student progress and performance. This ensures that students receive the support they need to master challenging concepts in PAI while progressing at their own pace. (Musthafa & Meliani, 2021) Personalized feedback mechanisms further enhance learning outcomes by addressing students' unique strengths and weaknesses.

The integration of digital platforms has significantly enhanced collaborative learning among students. Online discussion forums and collaborative tools like Google Classroom and Microsoft Teams create spaces for students to exchange ideas, debate perspectives, and build a deeper understanding of Islamic principles. Such interactions not only broaden their knowledge base but also instill critical thinking and communication skills. (Amanullah, 2020)

However, the benefits of digital media extend beyond the classroom. It serves as a tool for fostering moral and ethical development. For example, educational videos and apps often incorporate scenarios that challenge students to reflect on ethical dilemmas and apply Islamic principles in decision-making. This approach strengthens students' character while making learning more relevant to their daily lives. The ability of digital media to facilitate cross-cultural exchanges is another remarkable advantage. Through global virtual classrooms or inter-school projects, students can interact with peers from different regions and cultures, gaining insights into diverse interpretations and practices within Islam. Such experiences promote tolerance and unity among Muslim communities worldwide.(Nafa et al., 2021)

Despite its advantages, implementing digital media in PAI learning requires a balanced approach. Teachers must critically evaluate the content to ensure it aligns with Islamic teachings and curricular objectives. Unsupervised use of digital tools can lead to the dissemination of misinformation or content that contradicts Islamic values, highlighting the need for vigilant oversight.(Furqon, 2024)

Furthermore, digital media has proven effective in supporting inclusive education. For students with disabilities, features such as text-to-speech, subtitles, and customizable interfaces ensure equitable access to PAI content. This inclusivity reinforces the universal message of Islam and reflects the principles of equality and justice.(Halimurosid, 2022) Lastly, digital media provides an invaluable resource for lifelong learning. Beyond formal education, platforms like MOOCs (Massive Open Online Courses) and Islamic e-libraries offer continuous opportunities for individuals to deepen their understanding of Islamic knowledge. These resources empower both students and the wider community to engage in self-directed learning, fostering a culture of lifelong intellectual and spiritual growth.(Khojir et al., 2022)

Challenges in Implementation

The implementation of digital media in PAI (Islamic Education) learning faces several complex challenges. One of the main challenges is the lack of digital competence among teachers. Many PAI teachers, especially those from older generations, find it difficult to adapt to modern technology. Another obstacle is the limited technological infrastructure in schools, particularly in remote areas. Slow or unavailable internet access prevents both teachers and students from making optimal use of digital media. This issue is further exacerbated by the lack of adequate devices such as laptops, tablets, or smartphones.

In addition, socio-economic disparities also serve as a hindering factor. Not all students have their own devices to access digital media. Some must share devices with other family members, which reduces the effectiveness of the learning process. On the other hand, students' digital literacy still poses a challenge. Although most students are quite familiar with technology, they often use digital devices more for entertainment than for learning. Therefore, special education on using technology for educational purposes is needed.

The final challenge is the lack of oversight regarding the digital content used in learning. Teachers must ensure that all content is relevant, accurate, and aligned with Islamic values. This requires extra effort from teachers to filter and verify digital sources. Given these various challenges, implementing digital media in PAI demands a comprehensive strategy. Not only teachers, but also schools, parents, and the government must work together to overcome these obstacles.

The integration of digital media into PAI learning presents numerous challenges, one of which is the significant gap in digital literacy among teachers. While younger educators may adapt more easily to digital tools, older teachers often struggle to incorporate technology into their teaching practices effectively. This generational divide limits the potential of digital media as a learning tool and highlights the need for targeted training programs.(Amanullah, 2020) Additionally, teachers who lack confidence in their digital skills may resist adopting new teaching methods, further delaying the transition to digitalized learning environments.(Furqon, 2024)

Another major hurdle is the unequal distribution of technological infrastructure, particularly in rural and underdeveloped areas. Many schools in these regions suffer from unreliable or non-existent internet connectivity, which hinders their ability to utilize digital platforms effectively. Even in urban settings, disparities in internet speed and quality can create inequities among students, affecting their access to online resources and learning opportunities.(Khojir et al., 2022)

The cost of digital devices also poses a challenge for both schools and families. For many low-income households, purchasing a smartphone, tablet, or laptop for educational purposes is financially burdensome. In some cases, students must share devices with siblings or parents, making it difficult to participate fully in digital learning activities.(Halimurosid, 2022) This economic disparity not only limits access but also widens the educational gap between privileged and underprivileged students.

The lack of standardized training for teachers exacerbates these issues. While some educators have access to professional development programs that focus on digital tools, many others do not. This inconsistency results in uneven levels of competence across schools and regions, creating disparities in the quality of education. Without a cohesive strategy for equipping teachers with the necessary skills, the integration of

digital media into PAI learning remains a significant challenge. Moreover, cultural and societal factors also play a role in impeding the adoption of digital media. In some communities, there is skepticism or resistance toward the use of technology in religious education, driven by concerns that it may dilute the spiritual essence of Islamic teachings. This resistance can discourage schools from adopting innovative approaches, perpetuating reliance on traditional, less engaging teaching methods.(Cahyani & Masyithoh, 2023)

A lack of oversight and regulation regarding digital content further complicates the implementation of digital media. Teachers often lack the resources or time to thoroughly vet online materials for accuracy and alignment with Islamic values. This creates a risk of students encountering inappropriate or misleading information, which can undermine the integrity of their religious education.(Musthafa & Meliani, 2021)

Additionally, digital platforms used for learning are not always designed with Islamic Education in mind. Generic learning tools may lack features that cater to the unique needs of PAI, such as Arabic script recognition or Islamic calendar integration. This limits their utility and effectiveness, necessitating the development of specialized platforms tailored to Islamic Education.(Nafa et al., 2021)

Another issue is the potential for distractions. While digital tools offer numerous educational benefits, they also provide access to non-educational content, such as social media and games. Without proper monitoring, students may misuse these tools, detracting from the learning experience and reducing the overall effectiveness of digital media in education.(Halimurosid, 2022)

Finally, the rapid pace of technological change adds another layer of complexity. Schools and educators must constantly adapt to new tools and platforms, which requires ongoing investment in training and infrastructure. This creates a continuous cycle of adjustment that can be resource-intensive and challenging to sustain, particularly for schools with limited budgets.(Amanullah, 2020)

Collaboration among stakeholders is essential to overcome these challenges. Teachers, schools, parents, and policymakers must work together to address the systemic barriers that hinder the adoption of digital media in PAI learning. By fostering a supportive ecosystem, it is possible to unlock the full potential of digital tools while preserving the core values of Islamic Education.

Solutions and Strategies

Several strategic steps can be taken to address the existing challenges. One primary solution involves improving teachers' digital competencies through training and workshops. Such training should cover the use of various learning applications, the creation of digital content, and the management of online classrooms. The government and schools must also invest in technological infrastructure, for example by providing free internet access in schools and distributing devices to students in need. These programs will ensure that all students have equal opportunities to learn through digital media.

In addition, the development of PAI-specific digital content is crucial. This content should be engaging, relevant, and aligned with the curriculum. For instance, instructional videos, e-books, and interactive applications designed specifically for PAI can help students better understand the material. Parents also play an important role in supporting the use of digital media. They should monitor their children's online

activities and ensure that devices are used for educational purposes. Collaboration among schools, the government, and the community is key to the successful implementation of digital media. With strong synergy, the existing challenges can be overcome, allowing PAI learning in the Industrial Revolution 4.0 era to proceed more effectively and efficiently.

Improving digital competencies among teachers is an essential step in addressing challenges related to the integration of digital media in PAI learning. Regular workshops and professional development programs should be conducted to familiarize teachers with emerging technologies and pedagogical strategies for using these tools effectively. Topics such as managing online classrooms, designing interactive content, and assessing students in digital environments should be prioritized. These efforts can bridge the generational digital divide and empower teachers to adopt innovative teaching methods. Another critical strategy is the development and dissemination of high-quality, PAI-specific digital content. Such content should be both engaging and aligned with Islamic values and educational standards. Collaborative efforts between curriculum developers, religious scholars, and technology experts can ensure the creation of materials that resonate with students while maintaining the integrity of Islamic teachings.(Cahyani & Masyithoh, 2023) Interactive applications, gamified quizzes, and multimedia modules can enhance students' understanding and retention of PAI concepts.

Providing adequate technological infrastructure is equally important. Governments and educational institutions must prioritize investments in reliable internet connectivity and the distribution of digital devices, particularly in underserved areas. Public-private partnerships can play a significant role in ensuring equitable access to technology, enabling students from all socio-economic backgrounds to benefit from digital learning opportunities.(Nafa et al., 2021)

Parental involvement is another vital component of successful digital integration in PAI. Parents should be educated about the benefits and risks of digital learning, as well as their role in monitoring and supporting their children's use of technology. Workshops for parents can help them understand how to guide their children in balancing academic and non-academic use of digital tools (Halimurosid, 2022). Collaborative communication between schools and families can create a supportive environment for students.

Community engagement is a valuable strategy for overcoming challenges related to resource limitations. Local organizations and religious institutions can provide additional support by organizing digital literacy programs and contributing to the development of PAI-specific resources. This community-based approach can foster a sense of shared responsibility for improving education in the digital era (Amanullah, 2020).

The use of blended learning models can also optimize the benefits of digital media in PAI education. By combining traditional face-to-face instruction with digital tools, educators can create a flexible and effective learning environment. For example, online modules can supplement classroom teaching by providing additional resources and exercises that students can access at their convenience (Khojir et al., 2022).

Continuous monitoring and evaluation are crucial for ensuring the success of digital integration in PAI. Feedback mechanisms should be established to assess the effectiveness of digital tools and identify areas for improvement. Teachers, students,

and parents should have the opportunity to provide input on the usability and relevance of digital content, which can inform future updates and innovations (Furqon, 2024).

Collaboration between policymakers and educational institutions is essential for creating a supportive regulatory framework. Policies should focus on addressing digital inequalities, ensuring data privacy and security, and promoting the ethical use of technology in education. Clear guidelines for digital content development and usage can help maintain the quality and consistency of PAI instruction across different schools and regions. Incorporating digital media in teacher education programs is another forward-looking strategy. Future educators should be equipped with the skills and knowledge needed to integrate technology into their teaching practices effectively. By embedding digital pedagogy into teacher training curriculums, educational institutions can produce a new generation of teachers who are well-prepared for the challenges of Education 4.0 (Cahyani & Masyithoh, 2023).

Lastly, international collaboration can provide valuable insights and resources for advancing digital learning in PAI. By learning from the experiences of other countries that have successfully implemented digital education initiatives, local educators and policymakers can adopt best practices and adapt them to the unique cultural and religious context of PAI (Nafa et al., 2021). This global perspective can enhance the overall quality and impact of digital media in Islamic Education.

D. CONCLUSION

The integration of digital media in Islamic Education (PAI) learning during the Industry 4.0 era presents both transformative opportunities and significant challenges. On one hand, digital tools such as instructional videos, interactive applications, and online platforms have the potential to enhance the learning experience by making complex Islamic concepts more accessible, engaging, and interactive. These tools also provide opportunities for personalized and collaborative learning, which can deepen students' understanding and foster essential skills such as critical thinking and communication. However, the implementation of digital media in PAI is not without its challenges. Key obstacles include the lack of digital literacy among teachers, disparities in access to technology, limited infrastructure in remote areas, and the need to ensure that digital content aligns with Islamic values. Additionally, socio-economic inequalities and potential distractions from non-educational digital content further complicate its effective integration into the classroom.

To address these challenges, several strategies can be employed. Improving teachers' digital competencies through training, developing high-quality PAI-specific digital content, and investing in reliable infrastructure are crucial steps. Furthermore, fostering collaboration among educators, parents, policymakers, and the community is essential to create a supportive ecosystem for digital learning. Blended learning models, continuous monitoring, and international collaboration can also play pivotal roles in optimizing the use of digital media in PAI education. Ultimately, while the adoption of digital media in PAI requires concerted effort and strategic planning, it offers a promising pathway to modernize Islamic Education while preserving its core values. By leveraging technology thoughtfully and inclusively, educators can ensure that PAI

remains relevant and impactful in the digital era, preparing students to navigate the complexities of modern life with moral integrity and spiritual grounding.

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