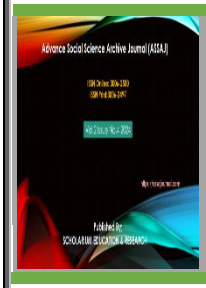

Advance Social Science Archive Journal
Available Online: https://assajournal.com
Vol.2 No.4, Oct-Dec, 2024. Page No. 1140-1150
Print ISSN: 3006-2497 Online ISSN: 3006-2500
Platform & Workflow by: Open Journal Systems

AI-POWERED PLATFORMS FOR ISLAMIC EDUCATION: OPPORTUNITIES AND CHALLENGES

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ABSTRACT

The application of Artificial Intelligence (AI) in Islamic education comes with unique opportunities as well as formidable challenges. The development of AI-powered platforms leads to fulfilled individual learning needs, improved access to education, and better knowledge dissemination provided by adaptive learning systems. There are more advanced processes of education with the integration of modern technology in traditional and online Islamic education. On the other hand, ethical issues, cultural prejudices, data privacy challenges, and diminished human contact in education are some of the most important problems. This paper analyzes the application of AI in Islamic education through several illustrative case studies while considering the impacts as well as the negative consequences and ethical issues resulting from using AI. In the end, this study suggests that there needs to be a compromise that incorporates AI innovations in Islamic education while making sure that the spiritual, moral, and ethical underpinnings of Islam are not violated. Close attention from Muslim educators and AI specialists is necessary in order to responsible and inclusive apply AI for Islamic education in the classroom.

Keywords: Artificial Intelligence, Islamic Education, AI-powered Learning, Adaptive Learning Systems, Ethical Considerations, Data Privacy, Personalized Education, Technological Integration, Digital Learning, Educational Innovations.

Introduction

Academic institutions and various educational organizations are increasingly eager to harness any available opportunities that modern technology offers in order to significantly assist in achieving their broader educational mission and objectives. This momentum is not unique to traditional forms of education but extends deeply into the realm of Islamic education as well. In fact, the Islamic educational platform stands out as one of the major platforms that effectively delivers ethical and comprehensive content to learners (Taja et al.2021). Fundamentally, this paper aims to construct a realistic and strategic roadmap regarding the existing and forthcoming influences and implications of the use of AI-powered platforms in the domain of Islamic education by thoroughly unraveling both the remarkable opportunities and the inherent challenges that this technological integration can present. To begin with, this study starts by

highlighting the specific nature and essential constituents of Islamic education, emphasizing why AI-powered Islamic educational platforms should not only support but also actively promote these elements effectively. Once we have delineated the core specifics of Islamic education, this paper then delves into examining several opportunities that digital Islamic education may entail, particularly in the context of the vast potential offered by artificial intelligence. Following this exploration, we will address some of the significant challenges that must be confronted and overcome in order to make Islamic education effectively and sustainably digital in an AI-centric context, ensuring that the sacred principles and values of Islam remain front and center in the educational paradigm.

Islamic educational institutions represent intricate cultural systems that aim to explicitly provide comprehensive knowledge about Islam in accordance with particular, standardized learning levels or curriculum-based assessments designed to ensure a robust understanding of the subject (Rahman et al.2022). A standout feature of the Islamic educational landscape is its profound and earnest commitment to the pursuit of knowledge, which, upon being imparted to its learners, is believed to have an everlasting impact. The knowledge acquired does not merely contribute to their behavior but also serves as a source of ongoing benefits and rewards for the individual, even after their death. Engaged learners who partake in Islamic educational institutions are often distinguished by their remarkable ability to integrate theoretical knowledge with practical application. This integration is achieved through conscious efforts to prevent any discord or conflict between the two, thus presenting a coherent foundation. This cohesive educational approach ultimately escalates to a practical and applicable methodology concerning the theories they have mastered, embodying the teachings and exemplary conduct of the Prophet Muhammad in every facet of their actions, words, decisions, and thought processes (Sultan et al.2023). Through this dedication to merging theory with practice, they also foster a deeper connection to their faith and cultivate a holistic understanding of Islamic principles.

Overview of AI in Education

In recent years, the impact of artificial intelligence (AI) has proven to be a game changer in most aspects of our daily lives. The emergence of the term 'AI in Education' has rapidly become an increasingly important academic term in assessing, investigating, and evaluating the rights and benefits of utilizing AI-based tools in the teaching and learning processes across many countries around the globe (Chaudhry & Kazim, 2022).AI is commonly referred to as the invention that encompasses three general kinds of AI. These are known as ANI, which is the more familiar kind of artificial intelligence characterized by specialized computer systems designed to perform intelligent tasks efficiently; ASI, which stands for super-intelligent AI that exceeds human capabilities by outperforming humans in every conceivable cognitive task; and AGI, which describes an AI that possesses the ability to think, reason, and understand much like a human being(Fahad et al.2024). In the realm of computer science, AI refers to the broad science of creating intelligent machines that can simulate human thought processes, akin to the workings of the human mind. The elaborate process of building

an AI model involves advanced techniques such as machine learning, deep learning, and natural language processing, all of which are pivotal in enhancing the capabilities of AI systems.

Personalized (Adaptive) Learning represents a significant component of the broader e-learning landscape and is recognized as a distinct type of educational technology. This approach facilitates precise interventions that are not only more accurately targeted to the unique needs of each individual learner but can also be conveniently accessed via computers with robust internet connectivity (Alamri et al., 2021). Such a learning framework is highly adaptable and can be applied in various contexts, including traditional human-to-human mentoring or tutoring support systems. Numerous studies highlight that 'AI in Education is currently the fastest-growing segment within the realm of learning technology. It holds tremendous potential for making effective educational processes more accessible, significantly more affordable, and ultimately more open to diverse learning audiences.' In recent months, especially within the rapidly evolving context of online education, the phrase 'adaptive learning system' has gained popularity. This term effectively captures the next essential step in the ongoing journey toward increased personalization within the educational learning process, emphasizing the shift toward individualized pathways in acquiring knowledge and skills.

AI, specifically manifested as adaptive technology, is intricately connected to a groundbreaking realm of technology whereby machines are capable of not only receiving input from external conditions but also interpreting this input intelligently and modifying it to recognize patterns. These patterns can stem either from previously acquired learned experiences or from other advanced methods (Ahmed et al.2022).Technologies such as speech recognition and computer vision exemplify this 'adjusting' characteristic, enabling them to execute practical tasks without necessitating meticulous programming by developers to accomplish the precise actions required. For instance, a broad spectrum of adaptive technology applications in contemporary society includes sophisticated music services that can curate music selections tailored to individual listener preferences. Additionally, there are navigation programs that adeptly learn about local traffic patterns and dynamically offer the optimal route to users, which cleverly avoids areas of congestion and enhances travel efficiency. Such innovations illustrate the remarkable capabilities of AI in facilitating more personalized and efficient interactions with technology in our everyday lives.

Islamic Education: Current Landscape

The literature on Islamic education indicates that this form of education is deeply founded on a robust belief and value system. It aims to foster a balanced nature in individuals and promotes the sustainable growth of all facets of human development. Islamic education prioritizes not only instilling academic excellence in its students but also embedding strong moral values that contribute positively to society as a whole (Abbas et al., 2021). In other words, it strives to create individuals who are not only knowledgeable but also possess the ethical foundation necessary to guide their actions and decisions. Additionally, it plays an essential role in rejuvenating and

uplifting the human spirit, making it a significant aspect of a child's development and their overall journey in life. It focuses on developing character alongside intellect. There are two primary modes through which Islamic education is administered: madrasah, or Islamic schools, which represent a traditional model historically associated with privately funded educational institutions, and public schooling systems that incorporate principles of Islam. While the term 'education' often relates closely to the concept of madrasah, it can have a broader implication in terms of referring specifically to Islamic education in various contexts, which can include various methodologies and diverse age groups. Institutions that facilitate this kind of learning encompass a variety of Islamic schools, vibrant communities, and specially established educational foundations, which are dedicated to teaching the principles of Islam to their students in an engaging way(Latief et al.2021). These communities are instrumental in transmitting core Islamic values and nurturing a sense of identity from the elders of the village or city to the younger generation. Unfortunately, distressing reports and shocking images sometimes circulate regarding certain Islamic educational institutions, bringing to light serious concerns about potential abuse and neglect of children within these settings. Such alarming issues necessitate scrutiny and urgent reform in these environments to protect the innocent and uphold the core values that Islamic education is intended to instill. It is imperative that these educational settings are safe havens for child development and learning, reinforcing the importance of ethical instruction that aligns with the true essence of Islamic teachings. Therefore, addressing these challenges is crucial for fostering an environment where students can thrive both academically and morally in their formative years.

The structure of Islamic educational principles aims to create a perfect man, a khalifah, and a servant and religious scholars. The development of Islamic education cannot be separated from its historical background because of the foundation of Islam. Islamic education was born through the process of educating the Prophet and his community (Akrim, 2022). Educators are a reflection of nature and behavior. The aim of Islamic education is to create religious human beings who have a positive attitude, goodness, wisdom, piety, and the application of education to religious values. The aim of Islamic education must be in line with the teachings of the Quran and the hadith. The implementation of Islamic education in educational institutions not only pays attention to students but also to educators, the educational community, and the surrounding community. In terms of education, Islam places great emphasis on the autonomy of educational institutions in determining both the goals and competence of students in accordance with the vision and mission of the institution. Given the limited capacity for cognitive, affective, and behavioral development of each student, each educational institution will have different goals for each educational process. To that end, educators are needed who can reflect their institution's vision and mission in making decisions, solving problems, and instructing students.

AI Applications in Islamic Education

As of today, the impressive advancement of artificial intelligence (AI) in the ever-evolving realm of education has, without a doubt, led to significant and notable

contributions in the development of a remarkably broad and diverse variety of AI-powered platforms that effectively and efficiently address major and essential needs in the field of educational technology (Ahmad et al.2021).In particular, the existing tools and platforms that have been meticulously created are providing robust and innovative AI-powered support that caters to the varied and diverse needs of learners from all walks of life. This comprehensive support encompasses a wide range of educational experiences, which include not only formal learning environments within schools and universities but also informal education opportunities such as workshops and online courses, valuable homework support that helps students of different ages, and targeted remedial teaching designed specifically to aid those who may be struggling in certain subjects. These advanced AI-assisted capabilities, along with the numerous AI-enhanced functionalities, are currently available in the market or are at various exciting and promising stages of interdisciplinary research and prototype testing. The vibrant fields of AI application in the realm of education include: (i) virtual tutoring services that offer personalized and tailored assistance to students, (ii) intelligent and responsive chatbots designed for interactive and engaging learning experiences, (iii) AI-based curriculum development tools that significantly enhance both the quality and accessibility of instructional materials, (iv) autonomous decision-making technologies found in sophisticated personalized tutoring systems, (v) innovative calligraphy recognition systems that assist in cultivating writing skills, and (vi) creative and imaginative machine-generated rhythm compositions that provide valuable support in musical education.

More generally, AI technology in educational applications could also be effectively used for managing a wide range of administrative functions that include the scheduling of classes, organizing student-staff timetables, sorting out the mail, collecting educational data and other information for assessment and accreditation purposes, as well as providing essential management services. Besides, the application of AI in education further encompasses student assessment, where it could be utilized to improve and streamline education checking and marking schemes, as well as various mechanisms involved in these processes (Ahmad et al.2022). The last few years have shown that a significant number of AI applications in Islamic education have been successfully employed by various institutions and organizations for diverse purposes. These purposes range from offering quick-format learning opportunities to providing multimodal professional education, as well as enhancing the teaching of Arab culture in a more engaging and interactive manner. This notable interest in utilizing AI in educational frameworks is present despite the ongoing shift of attention within Augmented Reality (AR) to more than one method becoming the dominant research mode in the broader field of educational technology. However, still, rather little has been documented or written about the developmental, educational, and infrastructural context within which such initiatives are or may be introduced; this includes not least the critical factors contributing to the resistance that several of these innovations have faced within regions commonly regarded as centers of Islamic learning and scholarship.

Opportunities for AI in Islamic Education

This trend is clearly moving toward making learning experiences significantly more meaningful and enriching for each individual student, elevating their educational journey to unprecedented levels. This innovative approach can be aptly termed personalization within the educational context, focusing on the unique needs and preferences of each learner. Artificial Intelligence (AI) possesses the remarkable capability to be effectively utilized in providing each student with a meticulously tailored and personalized learning journey that caters specifically to their abilities(Zohuri and Mossavar-Rahmani2024).Since AI can adeptly understand and follow both syntax and semantics, which refer to the intricate structure of language as well as its broader meaning, it emerges as an invaluable resource in discerning how individual learners are processing, comprehending, and ultimately understanding information in diverse ways. Additionally, AI can be incredibly responsive to that unique cognitive processing, adjusting its instructional methods and strategies accordingly to maximize educational efficacy. Furthermore, it can recognize and seamlessly incorporate students' preferred learning styles, skillfully taking into account the varying pace at which they learn and grasp new concepts. This thoughtful and dynamic adaptation will ultimately establish a learning environment that is not only relevant to each student's experiences and background but also profoundly rewarding and fulfilling for every learner involved in the educational process. By harnessing the power of AI, the possibilities for enhancing education through personalized learning experiences are virtually limitless.

An AI-empowered education platform has the potential to significantly transform the way educational resources are shared and accessed by the community. One effective method is for the platform to post copies of all the essential materials that teachers utilize for their instruction on a dedicated site(Almuhanna, 2024). This thoughtful action would create an invaluable resource, allowing community members, including parents, students, and other interested individuals, to pursue additional knowledge and gain insights into various subjects. It serves as a simple yet efficient way of preserving knowledge and subsequently making it accessible to the entire world, breaking down barriers that may have previously existed. By providing open access to these materials, new learners who wish to engage with the platform are not limited to the knowledge and experience of the teachers who constructed the course. Rather, they have the exciting opportunity to learn from a vast and diverse global community. This community is not only overwhelmed with a wealth of knowledge on artificial intelligence but is also committed to helping others learn and grow in this field. The eagerness within this community to see AI utilized to its fullest potential in every human endeavor is palpable. As a result, learners can explore a multitude of perspectives, methodologies, and resources, enriching their educational experience beyond the confines of the classroom.

We can give dedicated teachers the chance to see clearly how well they are serving each student in real time and in every class session, in order to accurately determine the effectiveness of the innovative tools developed for teaching with artificial

intelligence. The learning process in every educational environment must be facilitated and sped up significantly if the world is to successfully teach every child how to think critically and utilize collaborative decision-making skills to effectively master the biggest challenges of today and tomorrow's rapidly evolving landscape. Education, much like health care, needs to go where people are, whether that's in physical classrooms, virtual spaces, or community centers, and it needs to be constant, dynamic, and adaptable to ensure relevance. That's how education can become and remain the undeniable right of every human being that will never be taken away, regardless of their circumstances. Education must, in reality and in practice, promote continuous practice and data-driven, artificial intelligence-empowered learning methods that evolve alongside societal needs and technological advancements.

Challenges and Ethical Considerations

There are several significant challenges that we must carefully consider before proceeding with the deployment of AI as a pedagogical tool in educational settings. Since there has been much demonstrated about how AI unified cultural believes and biases, any AI systems utilized in this context will need to be explicitly crafted and undersigned with the ethical standards that mirror the values of what society they aim to support (Balasubramaniam et al.2023). In case of AI assistance to Islamic education, such challenges exist due to the possibility of the aims and objectives of the education not being reflected to the right extent. This emanates from the concern on lack of tenuousness of the internationally machine learnt data sets are to the rich cultural dimensions that are necessarily part of Islamic culture and social life. To ensure that you faithfully uphold and uphold the teaching and tradition of Islamic education, the type of content and algorithm used in AI systems should truly reflect the same, thus guarding against a blanket approach that may rob the essence of the learning experience.

In this day and age, data breaches and loss of privacy is a considerable, and highly risk averse threat to both students and teachers alike. Digital data are fiercely used in the educational planning and outcome and so the data which are collected on the students are used more and more for positioning them in various spectrums of learning in detail and for tracking performance and success in totality (Cohney et.al 2021). They are required to know enough to understand what the conceptual development of their learners is, so that they can adequately meet their various needs and challenges. Effective stakeholder's engagement is the fundamental planning that must be applied at each step, that is, whether or not integrating and applying AI in Islamic education settings. It is equally as important to guarantee that in introducing AI technology to Islamic educational environments or in any other educational institutions, there will be no existence of a digital divide so as to guarantee equal access to these resources. The human factor related to education and education systems shouldn't be underestimated. AI can be a good facilitator in many aspects of learning yet never replace the powerful human part, indispensable for the legitimate education process. For that reason, data usage must be both careful and responsible involving algorithms with meaning to responsibly preserve student's information privacy. But making any

educational data that could be considered sensitive ought to be transparent in terms of any ethical concerns or potential for the misuse of its data without due respect for privacy protections, anti–discriminatory laws, and the existing social norms that govern how we educate.

The promotion of automated education may inadvertently create significant challenges in various educational environments, where only machines and human-computer interactions exist, ultimately resulting in the preservation of human voices becoming obsolete. In many circumstances, the diverse facets of education are not solely regarded as rational processes; instead, they encompass vital aspects of persistent value-based human interactions that emphasize the importance of direct human content and connection (Tai & Chen, 2024). Therefore, data manipulation conducted in a biased manner can serve as a solid foundation for ethical concerns. To address these profound issues, further research is absolutely required in the crucial domain of AI ethics in education, which aims to thoughtfully respond to the aforementioned reservations. Currently, there are neither comprehensive guidelines nor effective evaluation tools that AI-based pedagogical system developers can employ to thoroughly assess the morality of such a technique and craft an ethical statement that genuinely respects the principles of educational morality. Although some declarations and frameworks uphold essential educational guidelines for human interaction and clearly defined roles, the emerging AI techniques necessitate specialized certifications designed to avoid the inconsistency of educational ideology in various contexts. Otherwise, numerous confrontations with the ethical thesis in teaching and learning will inevitably emerge, raising critical questions about the potential discriminatory implications of these technologies or the possibility of AI fundamentally replacing fellow students, which is a concerning prospect for the future of education itself.

Case Studies of AI in Islamic Education

In this section, we present a total of seven in-depth case studies that vividly illustrate how artificial intelligence, often referred to as AI, is actually applied to Islamic education in various contexts. We carefully collected these diverse cases through an open call that invited participation, and we conducted thorough interviews with the key individuals involved in these important projects. Each of these case studies offers insightful revelations about how technology is frequently intertwined with established epistemologies, thereby contributing to the development of specific educational fields within Islamic studies. The results derived from these case studies were promising and encouraging, yet they also revealed several underlying challenges, notable progress, and potential avenues for future improvement and exploration (Al et al.2023). Feedback from both educators and students participating in these initiatives reinforced the need for culturally specific adaptation when presenting AI tools for Islamic education. In the end, it was understood that no ‘one size fits all' AI solution could be systematically provided as every context had its own specific requirements and challenges to be recognized and addressed.

The case studies are systematically divided into two distinct subsections. The first section makes some brief introductions of use-case institution, says the most general parameters, and gives a general view of the project of concern. This part shall help set the context for the readers to understand in which context the institution is doing, what goals, the mission of the institution and how relevant is the AI project to it all. The second section, continues in more detail with more technical information regarding the AI technologies used and results achieved by the implementation of the AI technologies. The second part may be tricky with complex concepts, but will most likely be least informative and engaging for the non-technical audience in each case study. Overall, these thoughtfully constructed case studies uncover the rich experiences, hurdles experienced and the tremendous influence of melding artificial intelligence into Islamic schools and projects. Through these narratives, readers can gain a comprehensive understanding of how technology is influencing education in these institutions. Additionally, the case studies are presented in an alphabetical order, organized according to the names of the institutions, to facilitate easy navigation and reference for those interested in specific cases.

Conclusion

This paper draws on rigorous, evidence-based research to bring together a comprehensive overview of the possible advancements and developments in educational practices and AI technologies, both in the near future and in the immediate timeline ahead. By utilizing an extensive literature review along with expert elicitation conducted with a diverse group of technologists and educators, as well as insights from futurology, we thoughtfully reflect on what the future may hold for these interconnected fields. With a sense of optimism, we believe that the fundamental paradigms outlined within this research will pave the way for ongoing and continuous innovation concerning AI applications in education. Our hope is that research of this nature, which prominently highlights both the vast opportunities and the potential challenges presented by AI-powered platforms, can effectively support a responsible and creatively structured policy response. This policy response involves educators collaborating closely with technologists to develop AI technology that is dedicated to serving, and ultimately enhancing, good and high-quality education for all learners. In this concluding section, we reflect on the prospective future directions and the significant challenges associated with the AI-powered platforms specifically tailored for Islamic education, utilizing the findings and insights reported throughout this paper. The collaboration between Muslim educators and technologists plays a vital role in the ethical design, development, and utilization of AI in the context of Islamic education, which has the potential to yield a better and more impactful Islamic education experience. We conclude by asserting that Muslim educators, policymakers, researchers, and various other stakeholders have the option to explore a range of scenarios, including indifference to the developments in AI, avoidance of engagement, or taking a passive stance by waiting to observe the outcomes of AI's implications in education. However, we argue that the most effective policy would be one that actively encourages the establishment of close working relationships and collaborations

between education experts and technologists. This collaboration is essential to ensure that AI resources used in education serve as an exemplar of—and meaningfully contribute to—the Islamic ethics and values that underpin the tendencies for adab within the educational context. Therefore, we propose a robust and ongoing commitment to professional development for educators, coupled with proactive support for those who are currently undergoing training. Additionally, there must be a pressing need to develop Islamic ethical frameworks within the AI community, addressing nuanced issues surrounding gender and religious status. These frameworks will guide and assist in the fruitful future development of Islamic AI that is beneficial not just for Muslims, but also for broader communities worldwide, thereby fostering a more inclusive and supportive environment for all learners.

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