



## Transformation of The Students Paradigm in Islamic Education Through The Utilization of Artificial Intelligence

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**Abstract** : *This research aims to uncover the transformation of the students paradigm in Islamic education through the utilization of Artificial Intelligence. The approach used in this research is a qualitative approach, relying on literature review as an effective research method in achieving the research objectives. Data collection was conducted systematically and structured through literature analysis focused on the transformation of the students paradigm in Islamic education through the use of Artificial Intelligence. Data analysis was conducted using modified analytical induction techniques to ensure a comprehensive and structured picture, so that the findings are accurate and avoid subjectivity bias. The results of this study describe the transformation of the students paradigm in Islamic education through the use of Artificial Intelligence which can be divided into students models as recipients, collaborators, and leaders. Students as recipients are responsible for responding to predetermined knowledge sequences, following procedures and learning paths, and carrying out learning activities through the use of Artificial Intelligence to achieve predetermined goals. Students as collaborators interact with the Artificial Intelligence system to achieve better and more efficient learning. Meanwhile, students as leaders take the role of controllers to become leaders in their own learning process, manage the risk of Artificial Intelligence decision automation, and develop better and more efficient learning.*

**Keywords** : *Islamic Education; Student Paradigm; Artificial Intelligence.*

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## INTRODUCTION

Artificial intelligence is rapidly changing the world (Sadiku et al., 2022). In an age of information overload, students need quick and precise access to information relevant to their learning needs. The use of artificial intelligence in learning applications allows personalization of learning where the system can analyze individual needs and present appropriate materials and create a more effective learning experience (Mundiri, 2018; Tlili et al., 2023). The ever-increasing volume of data makes it necessary for students to have data analysis skills. Collaboration with artificial intelligence in group tasks or projects enables in-depth exploration of data and application of knowledge gained (Toniolo et al., 2023). The combination of human and artificial intelligence can provide a collaborative advantage where students can maximize their potential by leveraging the analytical power of artificial intelligence (Järvelä et al., 2023).

The paradigm of students who are still fixated on traditional learning models is a serious problem in the midst of rapid technological advances (Karim, 2020). Students who are accustomed to conventional learning approaches tend to experience misalignment with the demands of the times where creativity, active involvement, and problem solving are important keys to facing future challenges. The inability of the traditional paradigm to accommodate these dynamics results in irrelevance in the delivery of learning materials with the development of artificial intelligence technology (Mundiri, 2021; Ariyanto et al., 2023). In addition, teacher-centered and less interactive learning approaches limit students ability to develop skills that are urgently needed in this era (Sugiarto & Farid, 2023). Therefore, it is necessary to transform the students paradigm through the utilization of artificial intelligence as a means to create a learning environment that is more adaptive, innovative, and relevant to future needs.

Islamic education plays an important role in shaping students perspectives on technological advances, especially artificial intelligence. Comprehensive Islamic education teaches moral values, ethics, and social responsibility (Rofiqi et al., 2023) so that it becomes a solid foundation in dealing with the impact of artificial intelligence. Therefore, students are given an understanding of how artificial intelligence technology can be used ethically without harming fellow humans. The principles of justice, inclusiveness, and a sense of responsibility towards technological development become the foundation built by Islamic education (Fitriani & Januari, 2023). In addition, Islamic education also guides students to understand that although artificial intelligence can make a major contribution in various aspects of life, the role of humans as leaders and wise decision makers remains irreplaceable (Taufik, 2020). Thus, Islamic education provides an important moral and spiritual foundation in guiding students to utilize the technological sophistication of artificial intelligence for the common good and welfare of society (Kaawoan et al., 2021).

The utilization of artificial intelligence as an assistive tool in the students role not only meets the demands of the modern educational context, but also equips students with relevant skills to face future challenges (Barua et al., 2022; L. Chen et al., 2020a). The integration of

artificial intelligence technologies in education creates a dynamic and responsive learning environment, creating opportunities for better growth and development for students. Students can use artificial intelligence to optimize processes in projects or teams (Hoey et al., 2018). Predictive analytics can help in strategic decision-making to achieve set goals. Integrating artificial intelligence in leadership signifies innovation. Leaders who are able to understand and utilize artificial intelligence technologies can lead their teams towards success in an ever-evolving environment (Tominc et al., 2023; Wardi et al., 2023).

The utilization of artificial intelligence promises to transform the students paradigm from the conventional role as a recipient of information to an active, collaborative agent and leader in learning. However, a number of issues become the central focus in pioneering this change. How can students effectively become critical and selective recipients of information delivered through artificial intelligence so that the learning process remains focused on developing deep understanding? Furthermore, how can the interaction between students and artificial intelligence technologies be organized in a way that encourages reciprocal learning and productive exchange of ideas? In addition, how to address the challenge of developing leadership skills relevant to the dynamics of artificial intelligence while maintaining inclusivity so that every students has an equal opportunity to become a leader in an increasingly connected and technologically intelligent learning environment? Formulating solutions to these problems is essential in designing competitive and inclusive education in the era of artificial intelligence. Therefore, researchers are interested in exploring further concerning transformation of the students paradigm in Islamic education through the utilization of artificial intelligence.

## **METHOD**

The approach in this research uses a qualitative approach with a type of library research. Data collection is done by understanding and studying theories from various references/literature related to transformation of the students paradigm in Islamic education through the utilization of artificial intelligence. The data collection uses a way of finding sources and constructing from various sources such as journals and research that has been done (Creswell & Poth, 2016). Literature materials obtained from various references are analyzed critically and in depth so as to support propositions and ideas related to transformation of the students paradigm in Islamic education through the utilization of artificial intelligence.

Stages in data collection are carried out systematically and structured through a literature search analysis study that focuses on transformation of the students paradigm in Islamic education through the utilization of artificial intelligence (Darmalaksana, 2020). Then, consideration of the reviewed literature is neatly arranged so as to facilitate the sorting and selection of material that is really relevant so that this study has maximum results. Furthermore, data processing and / or reference quotations are carried out to be displayed as research findings, abstracted to obtain complete information, and interpreted to produce knowledge to draw conclusions. Data analysis was conducted through a modified analytical

induction technique (Ulfatin, 2015) in order to get a complete and structured picture so that the findings are accurate and avoid subjectivity bias.

## RESULT AND DISCUSSION

### 1. Students as Recipients

Students as recipients in the artificial intelligence utilization paradigm reflect a fundamental transformation in the learning approach. In this era, students are no longer just passive objects who receive information from teachers or the education system, but active subjects who are directly involved in the learning process (Ouariach et al., 2023). With the application of artificial intelligence technology, students have a more significant role and can take more control over their learning experience. One of the main aspects of students as recipients is personalized learning. Artificial intelligence technology allows the adaptation of learning content according to students individual needs and preferences. Artificial intelligence systems can analyze learning data to provide recommendations that suit each students learning style, comprehension speed, and specific interests (Gligorea et al., 2023). Thus, students can access materials that are more relevant and appropriate to their level of understanding and improve learning efficiency.

The paradigm of students as recipients and artificial intelligence as directors was actually initiated in 2021 by Fan Ouyang and Pengcheng Jiao from Zhejiang University in China (Ouyang & Jiao, 2021). Artificial intelligence represents domain knowledge and directs the learning process, while students act as recipients of artificial intelligence services to follow a specific learning path. The theoretical foundation of this paradigm is behaviorism, which emphasizes the construction of carefully composed content sequences that lead to correct performance from students (Skinner, 1953). In addition, this paradigm views learning as the reinforcement of knowledge acquisition through programmed instruction that introduces new concepts in a logical and gradual manner, offers appropriate feedback to students on incorrect responses, and maximizes positive reinforcement (Schommer, 1990). Students act as recipients to react to predetermined knowledge sequences, follow procedures and learning paths, and execute learning activities set by artificial intelligence to achieve set goals (Holmes et al., 2019). In this paradigm, artificial intelligence systems inherit the characteristics of teaching machines (Skinner, 1958) to make logical presentations of subject knowledge, require open-ended responses from students, and present direct knowledge of the truth (Burton et al., 2004). Artificial intelligence systems are not centered on the students who is learning, the knowledge and skills that enter the students, nor is the feedback tailored to the students, because the role of artificial intelligence in this paradigm is only as a guide.

The main issue in this paradigm is determined by how much and what kind of information is needed to adequately represent, diagnose, and guide the acquisition of knowledge and skills (Ouyang & Jiao, 2021). In this paradigm, although some systems collect students information to diagnose learning conditions, it is the system that then determines the content, procedures, and learning objectives, while students are "forced" to follow a certain learning path provided by the artificial intelligence system (Du Boulay, 2019). Therefore, expert views can lead to stereotypes regarding the knowledge and skills that the

artificial intelligence system expects students to achieve (Kay, 2000) which should also be taken into consideration.

Self-empowerment of students is key in this paradigm. They can utilize artificial intelligence technologies to conduct self-directed exploration, explore personal interests, and develop their potential more thoroughly. With access to digital resources and artificial intelligence learning tools, students can lead their own learning journey, creating a learning experience that is unique and suited to their personal goals (Muhaemin, 2023). The students-as-recipients paradigm through the utilization of artificial intelligence creates a more adaptive, responsive learning environment that enables students to become active agents in the achievement of their educational goals as well as a solid foundation to prepare future generations to face increasingly complex and diverse challenges.

## **2. Students as Collaborators**

Students as collaborators reflect a paradigm shift in education, where students are not only positioned as passive recipients of information, but also as active contributors in the learning process. The use of artificial intelligence is key in realizing this concept. Therefore, students have a greater role in determining the course of learning. They not only consume the material, but also collaborate with the artificial intelligence system to identify their needs and personalize the learning experience according to their preferences, pace and learning style (Roll & Wylie, 2016). This collaboration further stimulates students active participation in managing their learning process. With artificial intelligence as a partner, students can be involved in content selection, determining learning focus, and even designing creative projects. Students creativity and problem solving skills are enhanced as they can use artificial intelligence as a tool to explore new ideas and gain deeper insights.

This paradigm of students as collaborators and artificial intelligence as supporters is still the idea of Fan Ouyang and Pengcheng Jiao from Zhejiang University in China, that artificial intelligence systems relinquish their controlling power to serve as support tools, while students act as collaborators with the system to focus on the learning process. This paradigm is based on the cognitive and social constructivism view of learning, which reflects the idea that learning occurs when students interact with other humans and information technology in a social context (Vygotsky & Cole, 1978). Specifically, artificial intelligence systems collect individualized students-emergent information as input to adaptively optimize learning models, while students themselves act as collaborators to communicate with artificial intelligence systems to achieve better or more efficient learning (Rosé et al., 2019). Overall, this paradigm makes an important step towards individualized students-centered learning through mutual interaction and continuous collaboration between students and artificial intelligence systems.

The main issue in this paradigm is determined by the extent to which and how students information is integrated in artificial intelligence systems to optimize learning models, reflect various aspects of learning status, and develop adaptive learning and instruction supported by artificial intelligence (Ouyang & Jiao, 2021). A common issue faced is the lack of continuous communication or synergistic human-computer interaction. This interaction is complicated because neither the students information/data nor the system

state is static or simple. Both have complex hierarchical structures and both change dynamically during the learning process. In other words, it is very important for the artificial intelligence system to offer real-time data analysis and immediate feedback to the students and then the students uses the feedback to improve the ongoing learning process. Therefore, it would be beneficial if the artificial intelligence system maintains continuous collection and analysis of data generated by students, and provides real-time exploration opportunities for students to make decisions in the learning process.

Students as collaborators can also stimulate curiosity and exploration of knowledge. Students can use artificial intelligence to explore complex concepts, access vast learning resources, and develop their interests in various fields (Sadiku et al., 2022). Thus, artificial intelligence is not only used as an educational tool, but also as a catalyst to increase students curiosity and motivation towards lifelong learning. The paradigm of students as collaborators through the utilization of artificial intelligence greatly enables the formation of individuals who are adaptive, creative, and ready to face the global challenges faced by the 21<sup>st</sup> century information society (Fitriani & Syarifah, 2023).

### **3. Students as Leaders**

The paradigm of students as leaders is able to create a foundation for students proactive role in dealing with technological developments. Students are directed to have a deep understanding of the fundamentals of artificial intelligence, including the concepts of algorithms, machine learning, and its practical applications (Crowe et al., 2017). With this understanding, they can act as leaders who are able to embrace and understand the technology that is the backbone of the artificial intelligence industrial revolution. In addition to conceptual understanding, this paradigm also emphasizes the use of artificial intelligence for problem solving. Students are encouraged to integrate artificial intelligence in the context of solving real problems, creating innovative solutions, and utilizing technology to improve efficiency so that students do not just become passive consumers of technology, but also become the main actors in designing solutions to complex challenges in various fields (Sadiku et al., 2022).

This paradigm of students as leaders and artificial intelligence as enablers is still the idea of Fan Ouyang and Pengcheng Jiao from Zhejiang University in China, that students as leaders who hold agency as the core of artificial intelligence (Bandura, 2006) and view artificial intelligence as a tool to improve human intelligence (Law, 2019). This paradigm reflects the perspective of complexity theory which views education as a complex adaptive system (Mason, 2013), where synergistic collaboration between various entities in the system is critical to ensure the enhancement of students intelligence. In this complex system, artificial intelligence needs to be designed and implemented with the realization that artificial intelligence techniques are part of a larger system consisting of students, instructors/educators/teachers, and other humans (Riedl, 2019). In order to achieve synergistic collaboration in complex systems, concepts such as human-computer cooperation (Hoc, 2010), human-centered Artificial Intelligence and Machine Learning systems (Riedl, 2019), human and artificial intelligence collaboration (Hwang et al., 2020), and human-centered artificial intelligence in education (Yang et al., 2021) are proposed to

approach artificial intelligence from a human perspective by considering human conditions, expectations, and context. In this paradigm, artificial intelligence helps students and instructors/educators/teachers to achieve enhanced intelligence by providing high levels of transparency, accuracy, and effectiveness (Riedl, 2019). The instructor/educator/teacher is then equipped with support that can be understood, interpreted, and personalized by the artificial intelligence system to promote students-centered learning (Roll & Wylie, 2016). Students take control to act as leaders in their own learning process, manage the risks of artificial intelligence decision automation, and develop better and more efficient learning (Gartner, 2019). Overall, this paradigm as the development trend of artificial intelligence reflects the ultimate goal of applying artificial intelligence in education, which is to improve human intelligence, abilities, and potential (Law, 2019).

The main issues in this paradigm are determined by efforts to adapt the complexity of the learning process to the complexity of artificial intelligence systems and the complexity of the educational context (Ouyang & Jiao, 2021). To develop this paradigm, future artificial intelligence should be designed and operated in such a way that it offers a constant means of communication to gather values and interpretations from all stakeholders, to align artificial intelligence models with human values throughout its operation, and to make goals compatible with students-centered learning (Segal, 2019). This issue not only requires artificial intelligence systems to support emerging and changing learning processes, capitalizing on students tendencies and behaviors while providing interpretable and actionable outputs to students, but also empowering students and instructors/educators/teachers to reflect on learning and instructional processes and goals, informing artificial intelligence systems to adapt and leading to iterative learning development cycles (Riedl, 2019). Finally, this paradigm aims to empower students to take a full role in the learning process, optimize artificial intelligence techniques to provide real-time insights into emergent learning, as well as rethink the learning changes brought by artificial intelligence in complex and interconnected learning systems.

This paradigm certainly encourages team collaboration. Therefore, students are expected to be able to work with fellow students and artificial intelligence experts to enhance collaboration and enrich their understanding, and form future leaders who can bring positive change through the utilization of artificial intelligence so that students are not only as beneficiaries of technology, but also as proactive leaders in shaping the role of artificial intelligence in society.

**Table 1: Transformation of Paradigm and Role of Students through Utilization of AI**

Transformation of Students Paradigm	Role of Students
Students as Recipients (then artificial intelligence as Directors)	<ul style="list-style-type: none"> <li>- Utilizing artificial intelligence learning apps to receive customized learning material recommendations.</li> <li>- Receiving specific feedback from artificial intelligence to better understand learning concepts.</li> <li>- Identifying individual learning needs and utilizing artificial intelligence to obtain additional information.</li> </ul>

<b>Transformation of Students Paradigm</b>	<b>Role of Students</b>
Students as Collaborators (then artificial intelligence as Supporters)	<ul style="list-style-type: none"> <li>- Cooperating with artificial intelligence systems in completing group tasks or projects.</li> <li>- Using artificial intelligence as a deep data analysis tool to explore complex information.</li> <li>- Participating in group projects where artificial intelligence contributes to data processing or provides strategic advice.</li> </ul>
Students as Leaders (then artificial intelligence as Empowerers)	<ul style="list-style-type: none"> <li>- Taking initiative in designing and managing projects utilizing artificial intelligence technology.</li> <li>- Leading research teams that use artificial intelligence to optimize processes or achieve specific goals.</li> <li>- Using artificial intelligence for predictive analysis and making better informed decisions in managing projects.</li> </ul>

Source: (Chassignol et al., 2018; L. Chen et al., 2020b; X. Chen et al., 2022; Karim & Sugianto, 2023; Ouyang & Jiao, 2021; Riedl, 2019; Sadiku et al., 2022)

The educational paradigm involving artificial intelligence (AI) significantly fosters team collaboration, particularly between students and AI experts. This approach encourages students to not only collaborate with their peers but also engage with AI specialists to enhance collaboration and deepen their understanding. Such interdisciplinary collaboration is essential in shaping future leaders who are not just passive beneficiaries of technology but active agents in influencing the role of AI in society. By working closely with AI, students can learn to leverage its capabilities in various contexts, preparing them to drive positive change.

As students' roles evolve in utilizing AI, there is a transformation from being mere recipients to collaborators and ultimately, leaders. In the initial stage, as recipients, students use AI-powered learning applications to receive personalized material recommendations and specific feedback to better grasp learning concepts. Here, AI plays the role of a “director,” guiding the learning process by adapting to individual needs (Chassignol et al., 2018; L. Chen et al., 2020b; X. Chen et al., 2022; Karim & Sugianto, 2023; Ouyang & Jiao, 2021; Riedl, 2019; Sadiku et al., 2022).

When students transition to collaborators and eventually to leaders, their engagement with AI becomes more dynamic and strategic. As collaborators, they work alongside AI systems to complete group tasks, utilize AI for deep data analysis, and participate in projects where AI assists in data processing or provides strategic advice. Finally, as leaders, students take the initiative in designing and managing projects that utilize AI technology, lead research teams, and make informed decisions through predictive analysis. This transition underscores the shift of AI from a mere supporter to an empowerer, enabling students to optimize processes and drive innovation in their fields (Chassignol et al., 2018; L. Chen et al., 2020b; X. Chen et al., 2022; Karim & Sugianto, 2023; Ouyang & Jiao, 2021; Riedl, 2019; Sadiku et al., 2022).

## CONCLUSION

Theoretical implications of this paradigm shift in Islamic education highlight a broader understanding of the role of artificial intelligence (AI) in fostering collaborative and leadership capacities in students. The evolution from students as mere recipients of information to collaborators and leaders aligns with constructivist learning theories, emphasizing active engagement, collaboration, and real-world problem-solving. This approach enriches the traditional didactic methods by integrating AI as a tool that personalizes learning, enhances critical thinking, and develops leadership qualities. By embedding AI in Islamic education, this paradigm could also extend discussions on integrating technology within religious and moral contexts, potentially influencing curriculum designs that align technology with ethical values in Islamic teachings.

However, the study has several limitations that future researchers should address. First, the context is limited to Islamic education, which may restrict generalizability across other educational systems with different cultural and religious values. Future research could explore how AI integration impacts student roles in secular or other religious educational settings. Additionally, there is limited empirical data on the effectiveness of AI in fostering leadership skills, particularly in Islamic education contexts. Subsequent studies should provide more quantitative or longitudinal analyses to measure AI's long-term impact on student collaboration and leadership development. Finally, ethical considerations regarding the use of AI in education, particularly concerning data privacy and the potential for over-reliance on AI systems, should be further examined to ensure responsible AI implementation.

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