The Role Of AROMAZA-Based Educational Information Systems in Increasing Parental Involvement

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Abstract :
This study explores the role of the MA ZAHA Robot Assistant (AROMAZA) in increasing parental involvement in the educational process. The research investigates how digital tools can improve communication between schools and parents, fostering a stronger partnership supporting student academic development. The significance of this study lies in addressing the gap in the literature regarding integrating educational technology in Islamic schools, particularly focusing on how tools like AROMAZA can enhance parent-school relationships. Using a qualitative case study approach, data were collected through interviews with parents, teachers, and administrative staff, as well as direct observation and review of school policies and academic records. The study finds that AROMAZA significantly improves the speed of information delivery, enhances parent participation in school activities, and provides real-time access to students' academic progress. Despite challenges related to technology adoption, the findings suggest that AROMAZA plays a crucial role in promoting transparency, supporting parental engagement, and reducing administrative burdens. The implications of this research highlight the potential of digital platforms in strengthening school-parent partnerships, offering valuable insights for educational institutions seeking to implement similar technologies to enhance parental involvement and improve academic outcomes.

INTRODUCTION

Parental involvement has long been recognized as a critical factor in students' academic success (Kong & Yasmin, 2022; Ribeiro et al., 2021; Vadivel et al., 2023). Research consistently shows that when parents engage in their children's education, students tend to perform better academically, display improved behavior, and develop stronger motivation (Lemessa et al., 2023; Mensah et al., 2024; Zhang et al., 2024). However, despite its importance, many schools struggle to engage parents effectively, often due to barriers such as time constraints, geographical distance, and communication breakdowns (Bachtsiavanou et al., 2023; Bowe & Johnson, 2022; Francis et al., 2021). In response to these challenges, educational technology has emerged as a promising solution. Tools like learning management systems and communication platforms are increasingly used to bridge the gap between parents and schools (Al-Hail et al., 2021; Machusky & Herbert-Berger, 2022; Topping et al., 2022). One such tool is the MA ZAHA Robot Assistant (AROMAZA), a chatbot-based application that facilitates real-time communication between schools and parents. This study explores how AROMAZA enhances parental involvement, focusing on its impact on communication, student monitoring, and participation in school activities.

Previous research has explored various dimensions of parental involvement in education, particularly focusing on the role of technology. Previous research has examined how digital platforms could improve parent engagement, highlighting that technology-enabled communication fosters stronger relationships between parents and educators (Lin & Ardoin, 2023; Uzorka & Kalabuki, 2024; Xalxo et al., 2025). Similarly, another research the increased parental involvement during the COVID-19 pandemic, noting that digital tools helped maintain educational continuity while facilitating greater interaction between parents and schools (Lawrence & Fakuade, 2021; León-Nabal et al., 2021; Sosa Díaz, 2021). In contrast, some studies explored the challenges low-income families face in accessing such digital tools, underscoring the potential inequities that could arise in implementing technology-driven solutions (Djatmiko et al., 2025; Imran, 2023; Menberu, 2024). While these studies have provided valuable insights into the role of technology in education, limited research examines explicitly how tools like AROMAZA, which integrates real-time notifications with parental engagement features, enhance parental involvement in the context of Islamic education.

Despite the recognized benefits of parental involvement, schools still face significant challenges in effectively engaging parents, particularly in contexts where technology adoption is limited or inconsistent. While existing studies have highlighted the positive effects of educational technology on parent-school communication, there is a gap in understanding how specific systems, like AROMAZA, influence parental involvement within the unique context of Islamic schools. This research addresses this gap by focusing on the role of AROMAZA in increasing parental participation at MA Zainul Hasan 1 Genggong. The study investigates how this application facilitates real-time communication, improves transparency, and promotes active participation in school activities, particularly religious education. The findings will provide insights into how technology can be leveraged to overcome the barriers to parental involvement and how it can be adapted to meet the needs of specific educational settings.

While existing literature provides valuable insights into the role of educational technology in fostering parental involvement, there is a distinct gap in research examining the intersection of Islamic education and digital communication tools. This study is novel in its focus on AROMAZA, a chatbot-based system designed to improve the interaction between Islamic schools and parents. Unlike broader studies on educational technology, this research contextualizes the use of digital tools within the framework of Islamic values and practices. By investigating how AROMAZA enhances communication, transparency, and involvement in Islamic schools, this study contributes new knowledge to educational technology. It expands our understanding of how digital platforms can improve parent-school relations in Islamic education. It highlights how these systems can be tailored to address specific cultural and pedagogical needs, offering insights that can be applied to similar educational settings. This research aims to explore the role of the MA ZAHA Robot Assistant (AROMAZA) in increasing parental involvement at MA Zainul Hasan 1 Genggong, Indonesia. Specifically, the study will examine how this educational technology tool enhances communication between parents and the school, facilitates real-time monitoring of student progress, and promotes greater parental participation in school activities.

Through a qualitative case study approach, the research will gather insights from parents, teachers, and administrative staff to understand the effectiveness of AROMAZA in fostering a stronger partnership between schools and parents. The study will contribute to the growing body of literature on educational technology, offering a deeper understanding of how digital tools can support parental involvement in Islamic education and provide a model for other institutions seeking to improve parent engagement through technology.

RESEARCH METHOD

The study was conducted in MA Zainul Hasan 1 Genggong, Indonesia, and focused on implementing the MA ZAHA Robot Assistant (AROMAZA) within the school's Education Management Information System (SIMDIK). This setting is chosen because of its relevance to the ongoing digitalization efforts in schools, particularly in improving communication and parental involvement through technology. The school's adoption of AROMAZA provides a unique opportunity to examine the practical application of educational technology and its impact on enhancing parent engagement in a real-world setting. This study employs a case study approach, which is well-suited for understanding the intricacies of a specific phenomenon, in this case, the role of a digital tool in increasing parental involvement (Busetto et al., 2020; Isoaho et al., 2021; Saldaña, 2020). The inductive nature of this research approach allows for the exploration of emerging patterns and insights from the data, offering a comprehensive understanding of the phenomenon through rich, contextual details.

Data for this study were gathered using a combination of direct observation, interviews, and documentation, ensuring a multifaceted perspective on the phenomenon under investigation. Observations were conducted over four weeks to capture the interactions between parents and the AROMAZA application, providing insights into how the system was used in practice and its impact on parent involvement (Ang et al., 2022; Antony et al., 2023; Köhler et al., 2022). Semi-structured interviews were held with 10 parents, five teachers, and three administrative staff to gather diverse viewpoints on the effectiveness of AROMAZA in improving communication and engagement. These primary data sources were complemented by secondary data, including school policies, academic records, and administrative reports, which offered additional context and a broader understanding of the system's implementation—combining these methods allowed for a more holistic view of the factors influencing parental involvement and how AROMAZA plays a role in shaping this dynamic.

Data analysis follows the approach outlined by Miles and Huberman (Cole, 2023; Renjith et al., 2021; Santos et al., 2020), utilizing a three-step process: data reduction, data presentation, and conclusion drawing. Initially, data reduction involved filtering and organizing the collected information to focus on the most relevant aspects, such as parent interactions with AROMAZA and its impact on their involvement in school activities. Data presentation was then used to systematically arrange the reduced data, often in thematic categories, to facilitate understanding and interpretation. Finally, conclusions were drawn based on the patterns and themes that emerged during the analysis, helping to identify key insights about the role of AROMAZA in fostering increased parent involvement. This analytic approach allowed for the development of a straightforward narrative, providing robust and reliable findings that contribute to understanding how digital tools can enhance school-parent communication.

RESULT AND DISCUSSION
Result

This study shows that MA ZAHA Robot Assistant (AROMAZA) not only accelerates the delivery of academic information efficiently but also encourages increased participation of parents in various school activities. Through direct observation, interviews with parents, teachers, and administrative staff, and existing documentation, this study explores how this technology transforms communication and parental involvement in supporting children's education, although some users still face technical challenges.

Increasing Parental Involvement in School Activities Through AROMAZA

This study found that it is related to increasing parent involvement in school activities through AROMAZA. It shows that most parents have positive opinions from several parents who gave their opinions, including expressing that they feel more involved in various activities organized by the school after this application. One parent stated, "I not only receive information about my child's grades, but I can also participate in school activities virtually, such as parent meetings or seminars held online." This shows that AROMAZA facilitates the presence of parents in school activities without time and place constraints, allowing them to be more involved despite physical or time limitations.

In addition, one of the teachers added, "With AROMAZA, we can invite parents to school activities more easily. We send invitations through the application, and they can join immediately." Increasing accessibility to participate in school activities is one of the main factors influencing the level of parent involvement. AROMAZA makes it easier for parents to attend activities that they might have previously found difficult to participate in due to physical or time limitations. Not only that, there are also opinions among schools, not only from teachers but also from staff and administration. The results of interviews with administrative staff also stated, "We often get positive feedback from parents who feel closer to the school. AROMAZA allows them always to follow the development of their children's activities."

The statement above can be underlined that AROMAZA does not only improve communication between schools and parents. It also significantly increases parent involvement in school activities through easy access to information and participation. This exposure is consistent with previous studies that state that information technology can increase parental participation in their children's education, both in person and virtually. In general, parents responded positively to the implementation of this application, although there were some challenges related to technology adoption. One parent said, "I was initially hesitant to use the application, but after trying it, I felt very helped by the convenience provided." This shows a change in parents' attitudes from hesitating to being more open to technology to support their children's education process. Parents' responses to AROMAZA were mostly positive, indicating that the application was well received despite initial technological challenges because it facilitates communication and involvement in children's education. To illustrate these findings, the following table shows the perceptions of parents, teachers, and administrative staff regarding the effectiveness of AROMAZA according to Table 1.

Table 1 Involvement of Several Parties

Aspect	Parents' Response	Teacher Response	Administrative Staff Response
Speed of Information Delivery	Information is received faster	Improve communication efficiency	Reducing information delays
Involvement in School Activities	Easy to follow school activities	Facilitate communication for school activities	Increasing parent attendance
Response to AROMAZA Use	Despite technical challenges	Assist in coordinating with parents	The response from parents was very supportive despite some technical difficulties.
Student Performance Monitoring	It makes it easier to monitor child development	Assist in monitoring student achievement	Provides a complete picture of student performance
Information Transparency	Get information directly and transparently	Improve Clarity in communication between teachers and parents	Provides more precise and more organized data
Ease of Use	Easy to access with adequate devices.	Easy-to-use system for reporting	The use of efficient systems reduces administrative workload.
Involvement in Decision Making	Can provide direct input via communication features	Make it easier to share information related to student development	Enables active participation of parents in administrative decisions

This table presents the responses from parents, teachers, and administrative staff regarding their involvement in various school activities and the use of the AROMAZA system. Overall, the table highlights a positive trend in how the system has facilitated communication, transparency, and involvement across these stakeholders. Notably, parents have expressed that the system allows for quicker information delivery and easier monitoring of student performance, which could suggest an improvement in the overall engagement with their children's education. Teachers have noted the system's role in improving communication efficiency and providing Clarity, enhancing their ability to collaborate with parents. Similarly, administrative staff emphasized the system's role in reducing their workload, potentially indicating a more streamlined administrative process. While some technical difficulties were acknowledged, the responses generally suggest that AROMAZA supports a more integrated approach to school management and communication, albeit with room for further refinement.

Operation of MA ZAHA Robot Assistant (AROMAZA)

One of the main features of AROMAZA is the direct notification of student attendance. Every time a student is absent, the system will automatically send an attendance report to the registered guardian, complete with details such as the student's name, subject, teacher's name, and attendance status (present, sick, permission, or alpha). This allows parents to monitor their child's attendance more effectively and make necessary interventions if there is a suspicious absence. This system is integrated with the Mumtaz Information System (SIMUMTAZ), which manages the school's academic and administrative data. With AROMAZA, guardians can easily access this information without waiting for manual reports, which usually take longer. In addition, AROMAZA also provides information related to the student's academic development, such as exam scores and lesson schedules, and sends reminders for tuition and infaq payments. These features make it easy for guardians to know their child's academic development and ensure that the school's administrative obligations can be met on time. This process supports parental involvement in their child's education, as they can directly provide support if there is a decline in academic performance or unusual absences.

The implementation of AROMAZA has had a significant positive impact, especially in reducing teachers' administrative burden. Before AROMAZA, the attendance process was carried out manually, which was time-consuming and laborious, often leading to data inaccuracy. As expressed by the AROMAZA manager, "Before AROMAZA, teacher tasks such as taking attendance had to be done manually by bringing thick attendance sheets and calculating student attendance status. This process is very troublesome. However, with AROMAZA, this system has automated the attendance process, with automatic data recaps per week, per month, and semester." This shows how AROMAZA improves data management efficiency and ensures the accuracy and transparency of information provided to parents. AROMAZA's success in increasing parent involvement cannot be separated from its effective implementation strategy. The school's socialization process is one of the key factors. The school carries out socialization through parent meetings, class WhatsApp groups, and tutorial guides in the form of writing and videos so that parents can understand how to use the application properly. However, there are challenges, especially for parents unfamiliar with technology and limited internet access in some areas. To overcome this, the school provides additional training and collaborates with internet service providers to ensure a stable network in the school area. This shows that despite the challenges in implementing AROMAZA, the efforts made by the school have helped minimize existing technical barriers. Another positive impact obtained from implementing AROMAZA is increased information transparency. With AROMAZA, parents receive information about their children's attendance and academic progress and can be more involved through the online counseling feature and question-and-answer forum. Parents can discuss their child's development directly with teachers or the school and find solutions to possible problems through this feature. This strengthens the role of parents in their child's education because they not only receive information but can also provide direct support through more intensive two-way communication.

Overall, AROMAZA is an effective tool for increasing parent involvement, strengthening the relationship between schools and families, and optimizing the management of academic and administrative data in schools. With a more efficient and transparent system, AROMAZA facilitates better communication and enriches the learning experience for students. This innovation provides evidence that technology in education can bring significant changes, especially in strengthening cooperation between schools and parents for the success of children's education. With these advanced features, the MA ZAHA Robot Assistant (AROMAZA) supports effective communication between schools and families and strengthens parental involvement in the educational process. The appearance of the MA ZAHA Robot Assistant is as follows.
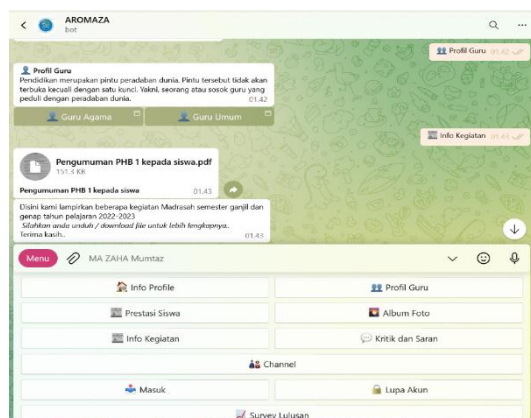

Figure 1. MA ZAHA (AROMAZA) Robot Assistant Menu Display

Figure 2. Attendance Display Sent in Real Time to Parents

Figures 1 and 2 illustrate that the AROMAZA (Automated Robot MA Zaha) system offers an innovative digital interface to streamline school communication and monitor student attendance. Figure 1 presents a structured menu display that allows users, teachers, and administrators to access various modules, including student profiles, academic achievements, and activity announcements. Figure 2 exemplifies how student attendance is recorded and forwarded to parents in real time via a chat application. Notably, the immediate transmission of attendance information may foster increased parental involvement and student accountability. This real-time feedback mechanism is particularly salient, potentially reducing information delays and enhancing trust in school reporting systems. However, it should be noted that the effectiveness of such systems could vary depending on digital literacy levels and internet access across user demographics. Thus, while preliminary impressions suggest high usability and transparency, further empirical validation is required to assess the broader pedagogical impact of such digital tools.

The Role of MA ZAHA Robot Assistant (AROMAZA) in Increasing Active Participation of Parents

In education, parental involvement must encompass a broader scope than just financing (Chima Abimbola Eden et al., 2024). Parental involvement can be a motive for increasing good cooperation between parents and educators in achieving goals for children's education (Milosavljević Đukić et al., 2022).

Parental involvement is an important thing that can influence success in children's education. Parental involvement in children's education and forms of responsibility are as follows: Fulfilling the facilities and infrastructure needed by children, supervising learning activities at home, supervising learning activities at school, and providing motivation (Nopiyanti & Husin, 2021). The presence of the MA Robot Assistant significantly supports parental involvement, especially in "supervising learning activities at school." Through the Robot Assistant, parents can receive real-time notifications regarding their children's attendance, achievements, and activities at school. This allows parents to remain involved in their child's education process even though they are not physically present at school, thus meeting the criteria for parental involvement.

The results of an interview with Ustadz Yanto, the manager of AROMAZA, emphasized several key factors determining the success of AROMAZA's implementation in increasing guardians' involvement. First, the socialization carried out by the madrasah is one of the important factors. This socialization process is carried out mainly at the beginning of the new school year when the madrasah holds a meeting with all guardians of new students to introduce AROMAZA. The socialization does not stop here; the madrasah also actively utilizes homeroom groups to provide further explanations and Help if guardians are confused about AROMAZA. Second, the features presented by AROMAZA and tutorials on how to use it also play an important role in ensuring the success of this system. AROMAZA offers various features that make it easy for guardians to monitor their children's development, but a good understanding of how to access and use these features is essential. Finally, he also said that the success of AROMAZA cannot be separated from the devices or facilities needed, such as Android phones and data packages. Without adequate devices and stable internet access, parents will not be able to make the most of AROMAZA.

Pros

1 Real-time updates
Provides instant notifications on attendance, achievements, and activities at school.

2 Enhanced communication
Facilitates direct interaction between schools and parents through online counselling.

3 Academic monitoring
Allows parents to track academic progress and intervene when needed.

4 Increased transparency
Enhances trust by providing transparent access to student information.

Cons

1 Digital divide
Requires devices and internet access, excluding those without.

2 Privacy concerns
Raises concerns about data security and privacy of student information.

3 Over-reliance on tech
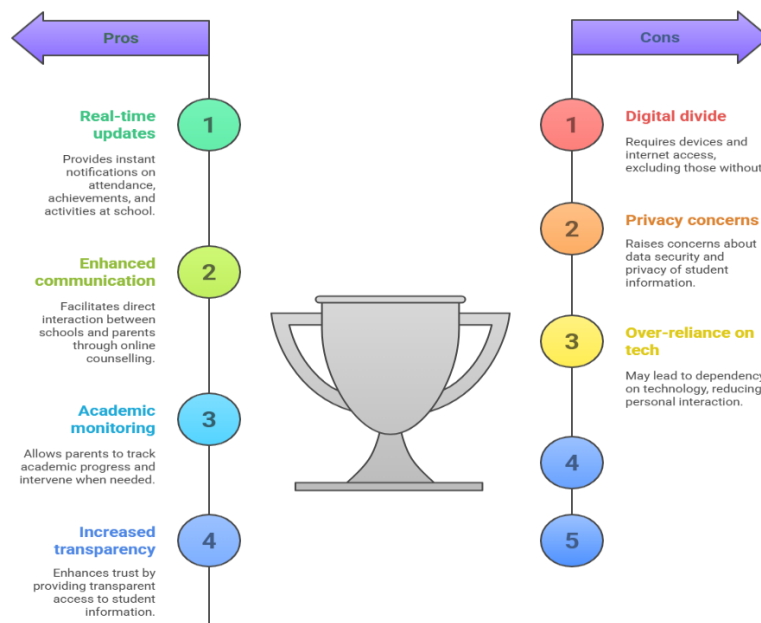May lead to dependency on technology, reducing personal interaction.

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Figure 3 Adequate Devices And Internet Access

Figure 3 visually compares the advantages and limitations of using digital platforms in education, particularly regarding parental access and school transparency. On the left, the infographic outlines key benefits, such as real-time updates, enhanced communication, academic monitoring, and increased transparency, all critical for fostering parental involvement and institutional accountability. Conversely, the right side highlights substantial drawbacks, most notably the digital divide, which may inadvertently marginalize students lacking access to adequate devices or stable internet. Additionally, concerns around data privacy and over-reliance on technology signal potential risks that merit serious consideration. The juxtaposition in this figure underscores a tension between opportunity and risk. While integrating digital tools can arguably strengthen educational engagement, its success likely depends on ensuring equitable access and robust data protection measures. Thus, policymakers and educators may need a more nuanced, inclusive implementation strategy.

In addition to the communication aspect, AROMAZA also functions as a monitoring tool that allows parents to monitor their children's academic progress periodically. Automatically updated data allows parents to see trends in their children's attendance and academic performance and provide necessary support and intervention. Consistent parental supervision increases students' independence and discipline, directly impacting academic success (Onia, 2024; Putri et al., 2024). This proves that the presence of AROMAZA increases access to information and creates an environment that supports improving the quality of learning. Various studies reveal that such support significantly improves students' discipline, independence, and academic achievement.

Discussion

This study highlights the important role of AROMAZA in increasing parental involvement in school activities, as reflected in several in-depth findings. AROMAZA, a chatbot-based application integrated with Telegram, allows parents to receive real-time information about their child's attendance, achievements, and academic activities (Andreenkova et al., 2022; Flury & Geiss, 2023; Diordieva et al., 2024).

One of the main findings is that AROMAZA makes it easier for parents to participate in school activities without time and place constraints. As expressed by one of the parents, they receive information about their child's grades and can participate in virtual parent-teacher meetings or seminars (Holotescu et al., 2020; Kent et al., 2022). This shows that AROMAZA opens up opportunities for parents to be more involved in the educational process despite being constrained by physical or time constraints, previously significant barriers to their participation.

In addition, interviews with teachers and administrative staff revealed that AROMAZA makes it easy to invite parents to attend various school activities. Teachers stated that they can invite parents to school activities more easily through this application, which increases parental participation in activities that may have previously been difficult to reach. From the administrative staff side, they noted an increase in the presence of parents in school activities after the implementation of AROMAZA, indicating that the application has succeeded in improving communication and strengthening the relationship between the school and parents. This also aligns with previous research showing that educational technology can increase parental participation in supporting children's education in person and virtually (Kim & Padilla, 2020; Tao et al., 2020; Abdissa & Sileshi, 2023).

It is important to note that although most of the responses to AROMAZA were positive, there were challenges related to technology adoption, especially for parents who were less familiar with the application or had limited internet access. One parent stated they were initially hesitant about using the application, but after trying it, they felt immensely helped by its convenience. This shows a change in attitude from parents who were initially skeptical to being more open to using technology to support the educational process (Bylieva et al., 2023; Eliyahu-Levi, 2023). The support provided by the school in the form of tutorials and training for parents, as well as collaboration with internet service providers to ensure a stable connection, played a significant role in minimizing these barriers and maximizing the benefits of AROMAZA.

Overall, AROMAZA not only functions as a communication tool that facilitates the delivery of information but also acts as an effective monitoring tool for parents. Through features such as sending student attendance reports, grades, and administrative reminders, AROMAZA allows parents to be more involved in monitoring their children's academic progress and discipline (Nechitaylo et al., 2022; Majitol & Yunus, 2023). With faster and more transparent access to information, AROMAZA creates an environment that supports improving the quality of learning and parental involvement in their children's education. In addition, this application also reduces the administrative burden teachers face, allowing them to focus more on teaching (Qushwa, 2023). With these various positive impacts, AROMAZA has proven to be a significant innovation in education, strengthening collaboration between schools and parents in supporting the success of children's education.

CONCLUSION

This study found that implementing MA ZAHA Robot Assistant (AROMAZA) in the educational environment significantly impacts parents' involvement, especially in supervising children's learning activities at school. AROMAZA facilitates communication

between schools and parents through real-time notifications regarding student attendance, achievement, and academic development, strengthening the relationship between parents and schools. The scientific contribution of this study lies in the renewal of perspectives on the use of digital technology, especially in the form of chatbot-based applications, which can facilitate parental involvement in their children's education. In addition, the implementation of AROMAZA provides a new picture of efficient ways to reduce the administrative burden in schools so that teachers can focus more on developing the quality of learning. However, this study also has limitations in terms of location and variation of respondents, so further research is needed with a broader survey method involving various types of schools, ages, and genders to obtain a more comprehensive picture. Further research can provide a more appropriate policy basis for increasing parental involvement in children's education in the digital era.

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