

The Impact of an AI-Based Communication Program on School–Family Partnerships in UAE Primary Education: An Action Research Study

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ABSTRACT:

This research investigates the effectiveness of an AI-driven smart communication program in enhancing the quality of school–family partnerships at Umair Bin Abi Waqqas School in Kalba, UAE. Using an action research design, 376 participants (354 parents and 22 teachers) engaged with a Telegram-based chatbot throughout the third term of the 2024–2025 academic year. Data were collected through a validated online questionnaire covering transparency, partnership, and communication tools, and analyzed using SPSS (T-test, ANOVA). Results indicated significant improvements in communication clarity, parental engagement, and satisfaction, with no statistically significant differences based on gender or grade level.

Qualitative feedback highlighted increased responsiveness and reduced teacher workload, along with challenges related to digital literacy and message overload. The study recommends systematic adoption of AI communication tools, targeted training for all stakeholders, and further research into long-term educational impacts.

Keywords: Artificial Intelligence, School–Family Communication, Parental Engagement, UAE, Action Research, Digital Education..

1. Introduction

The digital transformation of the educational sector in the United Arab Emirates has fundamentally changed how schools and families interact. Traditional communication methods—such as paper notes and periodic meetings—are being replaced by smart, AI-driven systems that enable real-time information-sharing, data analysis, and personalized support (Ministry of Education UAE, 2023). This is especially important in primary education, where strong school–family partnerships are essential for student development.

Despite this shift, limited research exists on the actual impact of AI-based communication tools on parental involvement and communication quality in Arab educational contexts. This study addresses this gap by evaluating a smart communication program in a UAE primary school, focusing on its impact on transparency, engagement, and teacher workload.

2. Literature Review

AI integration in education has been shown to foster more effective communication, timely feedback, and greater parental involvement (Holmes et al., 2019; Kumar et al., 2022). Tools such as adaptive learning platforms, learning

analytics dashboards, and AI chatbots enhance personalization and responsiveness (Lee & Kim, 2020). However, the success of these tools depends on user training, cultural adaptation, and ongoing support (D'Souza & Patel, 2023).

3. Research Objectives and Questions

This study aims to:

- Assess the impact of an AI-based communication program on school–family communication quality.
- Evaluate user satisfaction and engagement with the system.
- Examine demographic variables affecting user responses.

3.1 Research Questions:

1. To what extent does the AI-based program improve communication transparency and partnership?
2. What is the level of user satisfaction?
3. Are there significant differences in responses by gender or grade?

4. Methodology

4.1 Research Design

An action research approach was used, combining quantitative and qualitative data to evaluate the real-world effects of the smart communication program (Kemmis et al., 2014).

4.2 Participants

The study involved 354 parents and 22 teachers from Umair Bin Abi Waqqas School during the third term of 2024–2025.

4.3 Instrument

A structured online questionnaire was developed, with three main sections:

- Transparency of communication
- Partnership and parental engagement
- Effectiveness of communication tools

Reliability was confirmed (Cronbach's Alpha > 0.86). The instrument included closed-ended (Likert scale) and open-ended questions.

4.4 Data Collection and Ethics

Participants used the AI-based program for one term, then completed the questionnaire. Participation was voluntary, confidential, and in line with ethical standards.

4.5 Data Analysis

- Quantitative data: SPSS (means, SDs, T-tests, ANOVA)
- Qualitative data: Thematic content analysis of open responses

5. Results

5.1 Descriptive Statistics

Dimension	Mean SD	
Transparency	4.59	0.48
Partnership	4.53	0.52
Communication Tools	4.57	0.49

5.2 Inferential Analysis

- **Gender Differences (T-Test):** No significant differences ($p = 0.180$).
- **Grade Differences (ANOVA):** No significant differences ($p = 0.869$).

5.3 Qualitative Findings

Participants highlighted:

- Fast and clear communication
- Ease of use
- Suggestions to reduce message overload and further support Arabic language

6. Discussion

The study confirms that AI-based communication tools improve transparency, parental engagement, and communication quality, while reducing teacher workload. The lack of significant demographic differences demonstrates the inclusivity of the system. These findings align with previous research on smart

educational communication (Kumar et al., 2022; Lee & Kim, 2020).

7. Conclusion and Recommendations

AI-driven communication programs can transform school–family relations, shifting from traditional, one-way contact to dynamic, data-driven partnerships. It is recommended that:

- Schools institutionalize smart communication platforms.
- Stakeholders receive regular training.
- Content is tailored to users’ needs and local culture.

Further research explores long-term educational impacts and diverse user experiences.

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