AI-ENHANCED COMMUNICATION MANAGEMENT IN THE EDUCATIONAL PROCESS

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Abstract: Effective communication is essential for coordinating teaching, assessment, student support and administrative processes in modern education. The rapid expansion of digital learning environments has increased the complexity of communication flows, often leading to information overload and inconsistent feedback. This paper proposes a model for AI-enhanced communication management, drawing on current research and practical developments. Artificial intelligence tools—such as chatbots, learning analytics, predictive systems and automated feedback mechanisms—offer new opportunities for improving engagement, personalisation and learning efficiency. The paper analyses the pedagogical, managerial and ethical dimensions of AI implementation, highlighting transparency, data protection and the irreplaceable role of the teacher. The proposed framework supports more coherent communication strategies in general, vocational and higher education institutions.

Keywords: artificial intelligence, communication management, digital education.

Introduction

Communication management plays a central role in structuring how educational organisations function. It defines how information is exchanged among teachers, students, administrators and external partners, influencing engagement, clarity of expectations and learning outcomes. Traditional education often relies on fragmented communication flows, which reduces timely feedback and limits personalised support (Sun & Chen, 2016).

Digital transformation has expanded communication channels, increasing both opportunities and challenges. Learning management systems, electronic diaries, institutional e-mails and messaging applications have multiplied the volume of interactions and created a need for strategic coordination. Without effective management, these systems may overwhelm learners and educators.

Artificial intelligence (AI) provides new mechanisms for structuring, analysing and optimising communication. Research indicates that AI-enhanced analytics, intelligent tutoring systems, and chatbots can support decision-making, identify student needs early and automate routine communication tasks (Holmes et al., 2019; Zawacki-Richter et al., 2019). AI does not replace the teacher's role; instead, it strengthens the communication ecosystem by providing data-driven insights (Luckin et al., 2016). The purpose of this paper is to

propose and justify an AI-enhanced communication management model applicable to secondary schools, vocational education and universities.

Theoretical foundations of communication management in education

Communication management in education refers to the organised and purposeful planning, execution and monitoring of communication activities that support instruction, learning and governance. It includes three major domains:

- Pedagogical communication: interaction related to teaching, tasks, feedback, assessment and motivation.
- Administrative communication: information about schedules, regulations, attendance, grades and organisational processes.
- External communication: interactions with parents, employers, local authorities and partner institutions.

Effective institutions ensure structured communication channels aligned with strategic educational goals (Bush, 2020). However, digitalisation has intensified communication demands and highlighted the need for intelligent systems capable of filtering and prioritising information.

AI tools provide opportunities for tackling this complexity. For example, early-warning analytics tools enable timely identification of struggling learners, supporting proactive communication (Siemens & Long, 2011). Similarly, natural language processing (NLP) techniques facilitate automated summarisation, interpretation, and feedback generation (Shute, 2008).

AI tools supporting communication management

AI in education encompasses conversational agents, analytics dashboards, intelligent tutoring systems, recommendation engines and automated feedback mechanisms (Luckin et al., 2016). The following categories are central to communication management:

1. Conversational chatbots

AI chatbots deliver immediate responses to student questions regarding deadlines, assignments, school rules and administrative processes. Studies demonstrate that chatbots reduce teacher workload and improve response time and student satisfaction (Winkler & Söllner, 2018).

2. Automated feedback systems

AI-supported feedback on quizzes, programming tasks or writing assignments offers instant guidance and scaffolding. Formative feedback is a critical factor in learning efficiency and student persistence (Shute, 2008).

3. Learning analytics and predictive systems

AI-driven dashboards analyse learning behaviour, attendance, participation and performance patterns. Predictive analytics help detect at-risk students and prompt timely communication interventions (Siemens & Long, 2011).

4. Adaptive communication and personalisation

AI can tailor messages, recommendations and notifications to individual learners

based on preferences, prior behaviour and performance data (Kovanović et al., 2016).

A model for AI-enhanced communication management

The proposed model integrates pedagogical principles, technological infrastructure and management processes through four stages:

1. Planning

Educators define goals, target groups and appropriate channels. AI supports planning by analysing historical engagement data to recommend communication patterns (Holmes & Tuomi, 2022).

2. Implementation

Communication is executed through LMS, e-diaries, chatbots and automated notification systems. The teacher retains final authority over pedagogical messages.

3. Monitoring

Learning analytics tools monitor interactions and visualise patterns such as response time, unread messages, participation frequency and correlations with learning performance (OECD, 2021).

4. Improvement

AI-generated insights inform adjustments in communication style, timing, content and frequency. This continuous improvement loop enhances engagement and learning outcomes.

Ethical and pedagogical considerations

The use of AI raises ethical challenges related to transparency, privacy, autonomy and fairness. AI systems must uphold data protection standards and avoid algorithmic biases that could disadvantage certain student groups (Williamson & Eynon, 2020).

AI should support—not replace—the relational and motivational functions of teachers. UNESCO (2023) emphasises the need for teacher digital competence and ethical awareness when deploying AI tools.

Professional development is essential to ensure that educators can interpret analytics appropriately and integrate AI tools in pedagogically sound ways.

Conclusions

AI-enhanced communication management offers transformative opportunities to support teaching, learning and administration. By using AI-powered chatbots, analytics, predictive systems and automated feedback tools, institutions can optimise communication flows, improve student engagement and support evidence-based educational decisions.

The proposed model provides a structured approach to planning, implementing and refining communication strategies. While AI strengthens the efficiency and personalisation of communication, teachers remain central to guiding and moderating the educational process.

Future research should examine the impact of specific AI tools on communication outcomes across different school contexts and compare pre- and post-implementation results.

References

1. Bush, T. (2020). Theories of Educational Leadership and Management (5th ed.). Sage.
2. Holmes, W., Bialik, M., & Fadel, C. (2019). Artificial Intelligence in Education: Promises and Implications for Teaching and Learning. Center for Curriculum Redesign.
3. Holmes, W., & Tuomi, I. (2022). AI in education: Drivers, trends, and policy implications. European Journal of Education, 57(4), 623–640.
4. Kovanović, V., Joksimović, S., Gašević, D., Siemens, G., & Hatala, M. (2016). What public media reveals about MOOCs. British Journal of Educational Technology, 47(3), 580–597.
5. Luckin, R., Holmes, W., Griffiths, M., & Forcier, L. B. (2016). Intelligence Unleashed: An Argument for AI in Education. Pearson.
6. OECD. (2021). Digital Education Outlook 2021: Pushing the Boundaries with AI. OECD Publishing.
7. Shute, V. J. (2008). Focus on formative feedback. Review of Educational Research, 78(1), 153–189.
8. Siemens, G., & Long, P. (2011). Penetrating the fog: Analytics in learning and education. EDUCAUSE Review, 46(5), 30–40.
9. UNESCO. (2023). AI Competency Framework for Teachers. UNESCO Publishing.
10. Winkler, R., & Söllner, M. (2018). Unleashing the potential of chatbots in education. Academy of Management Annual Meeting Proceedings.