Vol. 3 No. 2 (2026): Secundus
https://doi.org/10.69760/jales.2026002011

Practical Applications of AI-Assisted Assessment in Cambridge Primary Classrooms

[1] Turkan Hasanzada
[1] Nakhchivan State University, Azerbaijan

Abstract

Artificial intelligence (AI) is increasingly influencing educational assessment through automated, adaptive, and data-driven approaches. In primary education, where assessment plays a key role in supporting learning and development, AI-assisted tools offer new opportunities to enhance efficiency and personalisation. This article examines the benefits, risks, and implications of AI-assisted assessment in primary education, with particular reference to the Cambridge Primary curriculum framework. It highlights advantages such as immediate feedback, reduced teacher workload, personalised learning, and improved progress monitoring. At the same time, it addresses challenges including data privacy, algorithmic bias, validity concerns, and ethical considerations in assessing young learners. The discussion emphasises that AI should complement rather than replace teacher judgment. The article concludes that responsible and balanced integration of AI is essential for maintaining effective and ethical assessment practices in primary education.

Keywords: *artificial intelligence; AI-assisted assessment; primary education; Cambridge Primary; formative assessment; personalised learning; teacher judgment; educational technology*

Introduction

The rapid advancement of artificial intelligence (AI) has transformed numerous sectors of society, including education. Over the past decade, AI-powered technologies have increasingly been integrated into teaching, learning, and assessment processes, offering innovative solutions to longstanding educational challenges. From intelligent tutoring systems and adaptive learning platforms to automated feedback and learning analytics, AI has become an important component of contemporary educational environments (Luckin et al., 2016). As schools continue to adopt digital technologies, the use of AI to support assessment practices has attracted growing interest among educators, researchers, and policymakers.

Assessment is a fundamental element of primary education. It enables teachers to monitor learners' progress, identify strengths and areas for improvement, and make informed instructional decisions. Effective assessment not only measures learning outcomes but also supports the learning process by providing feedback that guides students toward achieving educational objectives. In primary school settings, assessment plays a particularly significant role because it helps establish the foundational knowledge and skills that learners need for future academic success. However, traditional assessment practices often require substantial time and effort from teachers, especially when designing assessment tasks, evaluating student performance, and providing individualized feedback.

Recent developments in artificial intelligence offer new possibilities for addressing these challenges. AI-assisted assessment systems can generate assessment tasks, analyze student responses, provide immediate feedback, and identify learning patterns through data analysis (Holmes et al., 2019). These capabilities have the potential to enhance assessment efficiency while supporting more personalized learning experiences. By automating routine assessment tasks, AI may reduce teachers' administrative workload and allow them to devote more time to instructional planning and student support. Furthermore, AI technologies can help educators identify learning difficulties at an early stage and implement timely interventions that address individual learner needs.

Despite these potential benefits, the integration of AI into primary education assessment raises several important concerns. Issues related to data privacy, algorithmic bias, transparency, and the reliability of AI-generated feedback continue to be widely debated (Williamson & Eynon, 2020). The assessment of young learners presents additional challenges, as primary education involves not only the evaluation of academic achievement but also the development of creativity, critical thinking, communication skills, and social-emotional competencies. These aspects of learning are often complex and context-dependent, making them difficult to assess accurately through automated systems alone. Consequently, questions remain regarding the appropriate balance between technological innovation and professional teacher judgment.

Although a growing body of research has examined the role of AI in educational assessment, much of the existing literature focuses on secondary and higher education contexts (Zawacki-Richter et al., 2019). Comparatively less attention has been given to the implications of AI-assisted assessment in primary education, where learners have distinct developmental and educational needs. Understanding both the opportunities and the limitations of AI within primary school assessment is therefore essential for ensuring its responsible and effective implementation.

This article explores the benefits, risks, and implications of AI-assisted assessment in primary education, with particular attention to the Cambridge Primary curriculum context. It examines how AI technologies can support assessment practices, discusses the challenges associated with their use, and considers the evolving role of teachers in AI-enhanced learning environments. By analyzing current developments and practical applications, the article aims to contribute to ongoing discussions regarding the future of assessment in primary education.

Benefits of AI-Assisted Assessment in Primary Education

The integration of artificial intelligence into assessment practices offers several advantages for primary education. As classrooms become increasingly diverse and technologically supported, AI-assisted assessment tools provide opportunities to enhance the efficiency, accuracy, and personalization of assessment processes. These technologies can assist teachers in monitoring student progress, delivering timely feedback, and adapting instruction to meet individual learning needs.

One of the most significant benefits of AI-assisted assessment is its ability to support personalized learning. Primary school classrooms often consist of learners with varying levels of knowledge, skills, and learning preferences. Traditional assessment methods may not always address these differences effectively. AI-powered systems can analyze student performance data and generate assessments that correspond to individual learning levels. Such adaptive assessment approaches enable teachers to provide more targeted support and ensure that students receive appropriate challenges based on their

abilities. As a result, learners can progress at their own pace while receiving assessment tasks that align with their developmental needs.

Another important advantage is the provision of immediate feedback. Feedback plays a crucial role in the learning process, particularly for young learners who benefit from timely guidance and reinforcement. Conventional assessment methods often involve delays between task completion and feedback delivery due to the time required for grading and evaluation. AI-assisted systems can provide instant responses, allowing students to recognize mistakes, understand correct answers, and improve their performance more efficiently. Immediate feedback not only supports learning but also encourages student engagement and motivation by creating a more interactive educational experience.

AI-assisted assessment can also contribute to reducing teacher workload. Assessment-related tasks such as creating quizzes, marking assignments, and analyzing student performance consume a considerable portion of teachers' time. AI tools can automate many routine processes, enabling educators to focus more on instructional planning, classroom interaction, and individualized support. For example, generative AI applications can assist teachers in developing multiple versions of assessment tasks, creating differentiated worksheets, and producing rubrics aligned with curriculum objectives. Such support can increase efficiency while maintaining the quality of assessment materials.

In addition, AI technologies facilitate the collection and analysis of learning data. Through learning analytics, AI systems can identify patterns in student performance that may not be immediately apparent through traditional assessment methods. Teachers can use this information to monitor progress, identify learning gaps, and make evidence-based instructional decisions. Early identification of difficulties is particularly valuable in primary education because timely intervention can prevent minor learning challenges from developing into more significant academic problems. By providing detailed insights into student achievement, AI can support a more proactive and responsive approach to teaching and assessment.

AI-assisted assessment also promotes differentiated instruction. Meeting the needs of learners with diverse abilities remains one of the central challenges of primary education. AI tools can help teachers design assessments at varying levels of complexity while targeting the same learning objectives. This flexibility enables educators to accommodate individual differences and create more inclusive learning environments. Students who require additional support can receive appropriately scaffolded tasks, while more advanced learners can engage with activities that provide greater challenge and extension opportunities.

Furthermore, AI can support formative assessment practices that focus on improving learning rather than simply measuring achievement. Through continuous monitoring of student performance, AI systems can provide ongoing information about learner progress and suggest areas for improvement. This allows assessment to become an integral part of the learning process rather than a separate evaluative activity. Such an approach aligns with contemporary educational perspectives that emphasize assessment for learning and the development of learner autonomy.

Overall, AI-assisted assessment offers considerable potential for enhancing assessment practices in primary education. Through personalized learning, immediate feedback, reduced teacher workload, learning analytics, differentiated instruction, and strengthened formative assessment, AI technologies can contribute to more efficient and responsive educational environments. However, despite these advantages, the implementation of AI-assisted assessment also presents important challenges and concerns that must be carefully considered.

Risks and Challenges of AI-Assisted Assessment

Despite its potential benefits, AI-assisted assessment in primary education presents several significant challenges that must be carefully addressed. One of the most critical concerns is data privacy and security. AI systems often rely on large amounts of student data to function effectively, including performance records, learning behaviors, and interaction patterns. In primary education, where learners are minors, the collection and storage of such sensitive data raise serious ethical and legal questions (UNESCO, 2021). Ensuring that student information is securely managed and used responsibly is essential for maintaining trust in educational systems.

Another important issue is algorithmic bias and fairness. AI systems are designed based on data sets that may reflect existing inequalities or limitations. As a result, there is a risk that AI-generated assessments or feedback may unintentionally disadvantage certain groups of learners. In primary classrooms, where fairness and equal opportunity are fundamental principles, such bias can have a negative impact on student development and self-esteem. Therefore, continuous monitoring and evaluation of AI tools are necessary to ensure equitable assessment practices.

Reliability and validity also remain key concerns. While AI can efficiently generate assessments and feedback, questions arise regarding the accuracy and pedagogical quality of these outputs. AI systems may not fully understand curriculum objectives, developmental stages, or the contextual nuances of student learning. As a result, AI-generated assessments may sometimes fail to accurately measure complex skills such as creativity, problem-solving, and communication. This limitation highlights the need for human oversight in all stages of AI-assisted assessment.

Overreliance on technology is another challenge that must be considered. If teachers depend excessively on AI systems, there is a risk that professional judgment and pedagogical expertise may be weakened. Assessment in primary education is not only a technical process but also a deeply human one that involves understanding learners' emotions, motivations, and developmental needs. Maintaining a balanced approach where AI supports rather than replaces teacher decision-making is therefore essential.

Finally, ethical considerations play a central role in the use of AI with young learners. Primary school students are still developing cognitively, socially, and emotionally, which requires careful attention to how assessment is designed and implemented. The use of automated systems in evaluating children raises questions about transparency, accountability, and the appropriate role of technology in shaping early educational experiences (OECD, 2021). These concerns underline the importance of establishing clear ethical guidelines for AI use in schools.

Implications for Teachers and Classroom Practice

The integration of AI-assisted assessment has significant implications for teachers, whose roles are gradually evolving in response to technological change. Rather than being replaced by AI, teachers are increasingly expected to act as facilitators who interpret AI-generated data and make informed pedagogical decisions. This shift requires teachers to develop a strong understanding of how AI tools function and how their outputs should be critically evaluated (Ng et al., 2021).

AI literacy has therefore become an important professional competency. Teachers need to understand both the potential and the limitations of AI systems in order to use them effectively in assessment

practices. Professional development programs should support educators in developing these skills, enabling them to integrate AI tools responsibly into their classrooms.

Despite the growing role of technology, human judgment remains central to effective assessment. Teachers are uniquely positioned to interpret student behavior, understand contextual factors, and evaluate aspects of learning that cannot be captured by automated systems. Therefore, AI should be viewed as a supportive tool that enhances, rather than replaces, professional expertise.

In practical terms, AI can be effectively used in primary classrooms to support assessment design and implementation. Teachers can use AI tools to generate differentiated worksheets, create quizzes aligned with curriculum objectives, design rubrics for writing and speaking tasks, and provide formative feedback. In Cambridge Primary contexts, for example, AI can assist in aligning assessment tasks with specific learning objectives while ensuring variety and differentiation across learner levels. However, all AI-generated materials should be reviewed by teachers to ensure accuracy, appropriateness, and pedagogical value.

A balanced approach that combines technological efficiency with human expertise is essential. By integrating AI into assessment practices in a thoughtful and controlled manner, teachers can enhance learning outcomes while maintaining educational quality and ethical standards.

Conclusion

AI-assisted assessment is emerging as a powerful development in primary education, offering significant opportunities to enhance teaching and learning processes. This article has explored the benefits, risks, and implications of integrating AI into assessment practices. The findings suggest that AI can support personalized learning, provide immediate feedback, reduce teacher workload, and improve data-driven decision-making. These advantages have the potential to make assessment more efficient, responsive, and learner-centered.

However, the study also highlights important challenges, including concerns related to data privacy, algorithmic bias, reliability, overreliance on technology, and ethical considerations. These issues emphasize that AI cannot fully replace the professional judgment of teachers, particularly in primary education where learners require holistic and developmentally appropriate assessment approaches.

The role of teachers remains central in AI-assisted assessment environments. Educators must act as informed decision-makers who critically evaluate AI outputs and ensure that assessment practices remain fair, valid, and pedagogically sound. With appropriate training and support, teachers can effectively integrate AI tools into their practice while maintaining control over assessment processes.

In conclusion, AI-assisted assessment should be viewed as a complementary approach rather than a replacement for traditional assessment methods. When used responsibly, it can enhance educational practice and support more inclusive and effective learning environments in primary education. Future practice should focus on developing ethical frameworks, strengthening teacher AI literacy, and ensuring that technology serves pedagogical goals rather than dictating them.

Declarations

Ethical Approval: This study is a theoretical review based entirely on published scholarly sources. No human participants were involved in data collection. All sources are appropriately cited.

Conflict of Interest: The author declares no conflict of interest.

Funding: This research received no external funding and was conducted as part of the author's academic work at Nakhchivan State University, Azerbaijan.

Data Availability: All sources referenced in this article are publicly available.

Author Contributions: This study was solely conducted by the single author, who is responsible for conceptualization, literature review, analysis, and writing of the manuscript.

References

Holmes, W., Bialik, M., & Fadel, C. (2019). *Artificial intelligence in education: Promises and implications for teaching and learning*. Center for Curriculum Redesign.

Luckin, R., Holmes, W., Griffiths, M., & Forcier, L. B. (2016). *Intelligence unleashed: An argument for AI in education*. Pearson.

Ng, D. T. K., Leung, J. K. L., Su, J., Ng, R. C. W., & Chu, S. K. W. (2021). Teachers' AI digital competency and implications for teacher education. *Educational Technology & Society, 24*(2), 58–72.

OECD. (2021). *Artificial intelligence in education: Challenges and opportunities*. OECD Publishing.

UNESCO. (2021). *AI and education: Guidance for policy-makers*. UNESCO Publishing.

Williamson, B., & Eynon, R. (2020). Historical threads, missing links, and future directions in AI in education. *Learning, Media and Technology, 45*(3), 223–235.

Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education. *International Journal of Educational Technology in Higher Education, 16*(1), 39.

Author	**Turkan Hasanzada** Nakhchivan State University, Azerbaijan Email: tthasanzade@gmail.com ORCID: https://orcid.org/0009-0005-7226-1765

Received: 10.05.2026
Revised: 15.05.2026
Accepted: 01.06.2026
Published: 03.06.2026