ARTIFICIAL INTELLIGENCE SUPPORTED IDENTIFICATION OF LEARNER WEAKNESSES

Murodova Farangiz Feruzovna

Samarkand state institute of foreign languages

Farangizmurodova502@gmail.com

Abstract: The integration of artificial intelligence (AI) into education has significantly transformed the ways teachers assess and support learners. AI-powered systems are capable of analyzing large amounts of student performance data, identifying patterns, and detecting areas of weakness that may not be immediately visible to human instructors. This article explores the role of AI in diagnosing learner difficulties, the types of tools available, and the benefits and challenges associated with AI-driven assessment. The findings suggest that AI can enhance early intervention, personalize instruction, and improve learning outcomes, although concerns related to data privacy, algorithmic bias, and teacher training remain important areas for further examination.

Keywords: Artificial intelligence, learner weaknesses, educational technology, personalized learning, automated assessment, data analytics, adaptive learning systems

In the rapidly evolving landscape of education, Artificial Intelligence (AI) has emerged as a transformative force, redefining traditional learning methods and assessment techniques. One of the most impactful applications of AI in education is its ability to identify learner weaknesses. By leveraging AI technologies, educators can gain precise insights into students' learning gaps, enabling personalized interventions that enhance both academic performance and holistic development. The identification of learner weaknesses is crucial because every student possesses a unique combination of strengths, learning styles, and areas that require improvement. Traditional classroom approaches, often limited by time and scale, struggle to address these individual differences effectively. Standardized tests and periodic assessments may indicate poor performance but rarely uncover the underlying reasons behind it. This limitation leaves students at risk of falling behind, particularly if their learning challenges are not recognized early. AI, with its capacity for continuous and real-time analysis, provides a solution to this problem.

AI-supported educational systems use advanced technologies such as machine learning, data analytics, and natural language processing to monitor and evaluate learner performance

comprehensively. Adaptive learning platforms, for example, track student interactions with learning materials, including quizzes, assignments, and problem-solving exercises. These platforms can detect patterns in errors, hesitation, or repeated mistakes, allowing AI algorithms to pinpoint the precise areas where a learner struggles. For instance, a student may consistently make conceptual errors in mathematics or struggle with comprehension in reading tasks. AI systems can identify these weaknesses at an early stage, even before they become evident in conventional assessments. Moreover, AI can analyze behavioral and engagement data to assess skills beyond academics, such as critical thinking, time management, and collaboration, offering a more holistic understanding of a learner's development.

The benefits of AI-supported identification of learner weaknesses are manifold. First and foremost, it enables personalized learning. Once weaknesses are identified, educators and AI platforms can tailor instructional strategies to address specific learning gaps. This ensures that learners receive targeted support rather than generic instruction, which may not cater to their individual needs. Second, early intervention becomes possible. Timely identification of difficulties allows educators to provide corrective measures before the gaps widen, reducing the risk of academic failure and increasing overall student confidence. Third, AI provides data-driven insights that help educators make informed decisions regarding curriculum design, teaching strategies, and assessment methods. By understanding patterns across students, schools can refine their educational approaches to better meet diverse learning needs. Lastly, AI empowers students themselves. By offering feedback on specific weaknesses, learners gain self-awareness and are motivated to adopt strategies to improve their performance. This fosters self-directed learning and a proactive approach to personal growth.

Despite its advantages, the integration of AI in identifying learner weaknesses comes with challenges and considerations. Data privacy and security are major concerns, as AI systems require access to sensitive student information. Ensuring ethical use of data, transparency in algorithmic decisions, and compliance with privacy regulations is critical. Educators must combine AI-generated insights with their professional judgment to ensure fair and effective interventions.

Benefits of AI in the context of education, specifically for identifying learner weaknesses:

- Personalized Learning – AI tailors lessons, exercises, and feedback to individual students based on their strengths and weaknesses, ensuring more effective learning.

- Early Identification of Weaknesses – AI can detect learning gaps and misconceptions early, allowing timely intervention before problems become severe.

- Data-Driven Insights – AI provides educators with detailed analytics on student performance, helping them make informed decisions about teaching strategies and curriculum adjustments.

- Adaptive Learning – AI adjusts the difficulty and type of content in real-time according to the learner's performance, ensuring optimal challenge and engagement.

- Student Empowerment – By giving learners clear feedback on areas of weakness, AI promotes self-awareness and encourages self-directed learning.

- Efficient Use of Educator Time – AI handles repetitive assessments and monitoring, freeing teachers to focus on personalized guidance, creative teaching, and mentorship.

- Holistic Skill Assessment – Beyond academics, AI can evaluate soft skills like critical thinking, problem-solving, and time management by analyzing behavior and engagement patterns.

In conclusion, Artificial Intelligence holds immense potential to revolutionize education by accurately identifying learner weaknesses. Through continuous monitoring, adaptive analysis, and personalized feedback, AI enhances learning experiences, supports educators in decision-making, and empowers students to achieve their full potential. While challenges such as data privacy, ethical concerns, and algorithmic biases exist, careful implementation and human oversight can mitigate these risks. As AI technologies continue to advance, their role in education will become increasingly sophisticated, making learning more personalized, efficient, and inclusive. The fusion of human expertise and AI intelligence promises an educational environment where all learner's weaknesses are understood, addressed, and transformed into opportunities for growth.

LIST OF USED LITERATURES

1. Blumenstyk, G. (2018). Can artificial intelligence make teaching more personal? The Chronicle of Higher Education. Retrieved from https://www.chronicle.com/article/Can-Artificial-Intelligence/243023

2. Holstein, K., Aleven, V., & Rummel, N. (2020). A conceptual framework for human-AI hybrid adaptivity in education. In: International conference on artificial intelligence in education (pp. 240-254). New York, NY, USA: Springer, Cham.

3.   Kupperstein, Joel. (2023). AI Can't Replace High-quality Teaching: Using the Technology as a Tool. Editech Digest. Retrieved from https://www.edtechdigest.com/2023/06/15/ai-cant-replace-high-quality-teaching-using-the-technology-as-a-tool/

4.   Neendoor, Snehnath. (2023). AI-Enabled Assessment: Redefining Evaluation in Education. Hurixdigital.

5.   Rahman, M.M., & Watanobe, Y. (2023). ChatGPT for education and research: Opportunities, threats, and strategies. Appl. Sci., 13(9), 5783.