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THE ROLE OF ARTIFICIAL INTELLIGENCE IN DEVELOPING EMOTIONAL INTELLIGENCE AMONG STUDENTS: A REVIEW IN EDUCATIONAL CONTEXTS

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ABSTRACT

One of the areas where the application of Artificial Intelligence (AI) has become more relevant is in the field of education, not only for the acquisition of knowledge, but also for the emotional intelligence of the students. This review will discuss how AI can be used as a tool to support student emotional intelligence in education. The review focuses on five areas: Emotion recognition, personalized/ adaptive learning systems, emotional wellbeing and stress management, motivation and engagement, and conversational AI for emotional support. The analyzed findings in the reviewed studies show that AI systems can detect students' emotions, customize students' learning experiences, relieve students' stress, and provide students with emotional and academic support when needed. Emotion-aware and adaptive AI tools can improve students' self-awareness and emotional regulation, motivation, engagement, and persistence in learning. Conversational AI also benefits students through its empathetic interactions, fostering reflection and emotional wellness. Yet, there are issues that need to be tackled, such as data privacy, ethical issues, transparency and access equality. To conclude, the benefits of AI in advancing EI for students have been highlighted in the review.

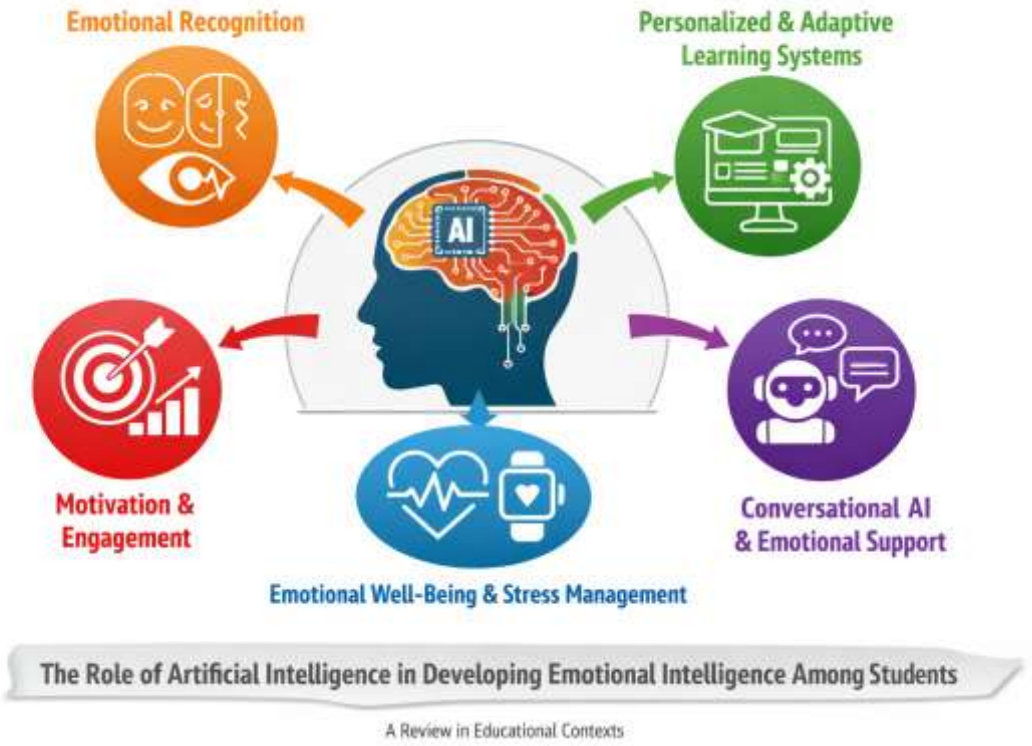
KEYWORDS: *Artificial Intelligence, Emotional Intelligence, Students, Emotion Recognition, Adaptive Learning.*

INTRODUCTION

In the realm of education, using Artificial Intelligence (AI) in learning can positively impact students' emotional intelligence (EI) by identifying emotions, providing personalized learning experiences, and offering supportive interventions. The ability to detect affective responses such as engagement or frustration in real-time can help AI systems adjust teaching in a way that boosts student learning, motivation, and persistence (Yuvaraj, 2025; Zhang, 2025). Personalized and adaptive learning systems, multimodal analytics, wearable devices, and conversational agents are used to support emotional well-being and stress management and self-regulation (Merino Campos, 2025; Peng & Li, 2025; Ben Chaabene, 2025; Weidlich, 2024; Choksi, 2024; Park, 2025).

This personalized content, feedback and Autonomy support with AI can enhance motivation and engagement, resulting in long-term effort and emotional regulation (Singh 2025; Jain 2025; Zhang 2025; Mehlan 2025). Conversational AI can provides empathetic, reflective and contextually appropriate interaction that builds trust, coping strategies and emotional regulation (Beneito-Montagut, 2025; Kim, 2024; Lee, 2025; Patel, 2025). Overall, the potential of AI in education to support students' EI competencies is promising, but ethical considerations to be addressed include privacy, transparency, and equitable access.(Indhirapratha et al., 2024)

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Source: Author's own conceptualisation

Emotion Recognition: AI can detect the emotions of students via facial expressions, tone, body language, and other methods, creating a positive learning environment.Personalized Learning: AI can customize learning experiences to meet the needs of each student, their emotional needs and preferences, and maximize learning outcomes. AI systems can determine affective outcomes, such as engagement or frustration, and make real-time adjustments to instruction to improve learning, motivation, and persistence (Yuvaraj, 2025; Zhang, 2025). Emotional well-being, stress management, and self-regulation are facilitated by personalized and adaptive learning systems, multimodal analytics, wearable devices, and conversational agents (Merino Campos, 2025; Peng & Li, 2025; Ben Chaabene, 2025; Weidlich, 2024; Choksi, 2024; Park, 2025).

Consistent effort and emotional management is achieved through personalized content, feedback and autonomy support with AI tools, thus enhancing motivation and engagement (Singh, 2025; Jain, 2025; Zhang, 2025; Mehlan, 2025). Emperor (2025), Kim (2024), Lee (2025), and Patel (2025) all believed that conversational AI can assist in empathetic interaction, reflection and appropriateness, increase confidence, provide coping strategies, and support emotional regulation. Overall, the use of AI in education holds the potential for improving students' EI, yet it introduces a number of ethical considerations and challenges that include privacy, transparency, and equitable access.(Vanessa.KA et al., 2026)

METHODOLOGY

A systematic literature synthesis of empirical and theoretical research on the relationship between Artificial Intelligence (AI) and Emotional Intelligence (EI) in education was used for this review. We have used databases like Scopus, Web of Science, Springer, Elsevier, Frontiers, and arXiv to select peer-reviewed articles, conference papers and open access reports from 2024–2025. The studies focused on students as respondents, and on AI interventions in emotion recognition, personalized and adaptive learning systems, emotional well-being and stress management, motivation and engagement, and conversational AI for emotional support. Relevance and rigor were assessed and data were collected regarding the methods used for AI, emotional and cognitive outcomes, algorithms, and pedagogical implications. The findings were thematically synthesized by the five domains and included evidence of student emotional intelligence, engagement, resilience, and academic achievement.

REVIEW OF LITERATURE

1. EMOTIONAL RECOGNITION

AI's ability to identify, understand, and react to student emotions is a vital component in the field of education, allowing systems to gauge student engagement, boredom, frustration, or joy (Yuvaraj, 2025). Emotions affect attention, memory, and problem-solving, and AI can help tailor instruction in learning environments to promote engagement and performance (Zhang, 2025).

Theory of Achievement Emotions is used as a basis and AI is used to track students' emotions and provide instant feedback, which allows for adjustments in difficulty and the recommendation of resources for managing negative emotions (Salloum, 2025).

Multimodal data (facial expression, voice, keystrokes, physiological measures) are more accurate for emotional assessments and it can support motivation and self-regulation (Pereira, 2024). Machine learning and deep neural network can be applied in online and blended learning to recognize the emotion in real-time (Wang, 2022).

The evidence suggests that AI emotion recognition is related to increased motivation, persistence and emotional regulation, which is linked to broader emotional intelligence goals in education (Vistorte, 2024). However, there are still challenges to address, including privacy, consent, cultural bias, and the varying reliability of the data in different contexts (Pereira, 2024). Despite these, emotion recognition in affect-aware learning environments (Yuvaraj, 2025) supported by AI is a key component.

2. PERSONALIZED AND ADAPTIVE LEARNING SYSTEMS

Personalized and Adaptive Learning Systems (PALS) are AI-driven learning systems designed to adjust learning content, pacing, and feedback based on the student's responses and preferences to achieve optimal learning outcomes (Merino Campos, 2025). Personalized learning is a new paradigm of education, which is based on the learning-centered teaching paradigm, and it is a new teaching model that moves away from “one size fits all” to “one student fits one teaching mode” according to the cognitive and emotional differences of students (Peng & Li, 2025).

AI-powered adaptive systems combine multimodal analytics, reinforcement learning, deep learning and machine learning to automatically categorize learners, forecast performance and adaptively sequence learning content, which boosts learner autonomy and engagement (Springer, 2025). According to the cognitive load theory, adaptive learning adapts the difficulty of the learning task to the learner's state, thereby minimizing the extraneous cognitive load and facilitating the acquisition of schemas (Vorobyeva et al., 2025).

The personalization of learning through the use of Artificial Intelligence has proven to benefit students' engagement, motivation, persistence, and learning outcomes by offering intelligent learning routes and timely interventions for students (Merino Campos, 2025). Predictive analytics also help identify students who are at risk of disengagement or failure in a timely manner to provide focused instructional support and ongoing learner growth (Sun et al., 2024).

PALS also help students develop metacognition by providing students with dashboards and analyses, offering students a way to monitor their progress, learn about strengths and weaknesses, and learn to engage in self-regulated learning practices (Peng & Li, 2025). However, there are several challenges, such as data privacy, model interpretability, scalability, and equity of access, that underscore the importance of developing explainable and ethically sound AI frameworks (Springer, 2025).

To conclude, PLSs are a combination of educational psychology, learner analytics, and advanced AI techniques that have significant potential to improve the learning paths of learners but also raise several ethical, pedagogical, and institutional concerns (Peng & Li, 2025).

3. EMOTIONAL WELL-BEING AND STRESS MANAGEMENT

Emotional well-being and stress management is relevant to personalized and adaptive learning because students' emotional states are very important in motivating, engaging, and learning. AI-driven educational platforms are now introducing emotional and physiological data to help offer tailored assistance, stress management, and fostering resilience in education. (Ben Chaabene, 2025). Emotion-aware AI systems detect emotional patterns and signals, and intervene at an opportune time to enhance emotional awareness and regulation. Emotion sensitive learning analytics is not as common as predictive analytics, but Zhang (2025) has shown how it is an important part of the socioemotional competence and full development of the learner.

A multimodal learning system that integrates physiological signals, facial expressions, gaze information, and interaction logs offers more precise characterizations of students' affective states and allows for adaptive feedback in real time (Weidlich, 2024). Continuous monitoring and immediate emotional support are provided by wearable devices and AI-powered chatbots, further enhancing stress management. Park (2025) demonstrates that self-disclosure chatbots can positively influence engagement, emotional regulation, and self-reflection, while Choksi (2024) illustrates how emotion recognition on smartwatches can lead to adaptive responses and alleviate anxiety.

Self-Determination Theory is used as the basis for designing AI that provides emotional support and places emphasis on autonomy, competence and relatedness as the basis for emotional resilience. According to De Ruig (2023), AI interventions that are in line with these principles are effective in boosting stress coping and maintaining motivation and persistence. Emotion-aware AI also has established evidence to support its ability to improve emotional regulation, engagement, and well-being through meta-analysis (Zhang, 2025). Adaptive emotional scaffolding also helps to reduce cognitive overload and promote psychological health (Journal of Information Systems Engineering and Management, 2025).

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Overall, emotion-aware systems based on AI can contribute to the emotional health of students, as they combine cognitive, behavioral, and affective elements, thus promoting learner-centered and adaptive learning environments.

4.MOTIVATION AND ENGAGEMENT

Motivation and engagement are key factors in the success of personalized and adaptive learning systems because they directly impact the persistence, efforts, and learning outcomes of learners. For AI enhanced learning, motivation is defined as intrinsic and extrinsic factors that prompt the initiation, regulation, and continuation of learning activities, and engagement is defined as behaviour, cognitive, and emotional involvement in learning activities (Singh, 2025). Adaptive learning systems use AI to adjust content, pacing, feedback to each learner's individual needs, providing a personalised learning experience that maintains engagement and active learning.

The use of AI tools such as real-time feedback systems, differentiated instruction, and personalized learning platforms enhances learners' motivation and engagement. The application of AI tools can empower students to take ownership of their learning, set their objectives, monitor their progress, and adjust their learning strategies, fostering a sense of independence and engagement. The implementation of AI tools allows students to have a say in their learning goals, track their progress, and make decisions about the learning strategies they use, thereby promoting independent and engaged learning. This is consistent with self-determination theory (SDT) which sees autonomy, competence and relatedness as key factors in motivation and engagement.

Adaptive learning technologies have also been found to improve the engagement by adapting the learning content to learners' preferences and learning styles, making learning activities more relevant and meaningful to them. As reported by Li (2025), when learners have the digital literacy skills needed to effectively access AI systems, adaptive systems that deliver personalized feedback and interactive interfaces have been proven to increase engagement. Personalised feedback, scaffolding and changes to tasks enhance engagement and helps to strengthen learners' sense of competence and progress.

Studies have found that there is correlation between motivation and engagement with AI acceptance. This is supported by empirical evidence showing the significant relationship between motivation and engagement in the context of accepting AI. According to Zhang (2025), students who accept AI tools demonstrate higher levels of motivation, which leads to a higher degree of behavioral engagement, such as lengthening attention spans, engaging in tasks more actively, and maintaining task persistence. The findings indicate that the motivation of AI is cognitively embedded and possessing an emotional component in the learning process, thus enhancing the learner agency.

The other advantage of AI personalisation is its ability to motivate learners by contextualising the content to their goals and purpose. Mehlan (2025) said that the potential of generative AI systems to tailor learning experiences to individual learners' interests can bring a higher level of satisfaction, cognitive engagement, and longer session length, as learners feel the learning is relevant and on target. Adaptive systems involve learning within personally relevant frames and encourage sustained efforts and persistent learning. In conclusion, motivation and engagement are closely intertwined concepts in the context of adaptive learning using AI, and all three factors - adaptive feedback, personalized learning paths, and learner autonomy - play a crucial role in fostering rich, engaging learning experiences. By enabling students to have more autonomy over their learning process, personalizing feedback, and engaging with relevant content, AI systems help maintain students' interest and enhance learning outcomes, leading to greater engagement and effectiveness.

5. CONVERSATIONAL AI AND EMOTIONAL SUPPORT

Conversational AI refers to the application of AI systems that can interact with students in human-like language, provide real-time feedback, guidance, and emotional support. These are now increasingly adopted in (educational) environments to enhance socioemotional learning, engagement, and mental well-being. Conversational AI capabilities include affective computing, NLP and machine learning, which enable identification of the learner's emotions, understanding of their sentiment and responding accordingly to motivate, build confidence and help regulate emotions (Beneito-Montagut, 2025).

One area where these AI systems are particularly beneficial is in satisfying emotional requirements, where they can react in time and personalised ways, like human teachers. Kim (2024) reported that empathetic feedback by conversational agents could decrease the frustration and anxiety of the learners and improve their engagement and task persistence. These systems provide a secure space for students to explore feelings, try out problem-solving and get encouragement without fear of judgement.

Another benefit of conversational AI is the ability to foster socioemotional skills through reflective dialogue and scaffolding. Lee (2025) discovered that dialogue-based AI has the potential to encourage learners to engage in self-reflection on their emotions, track their stress, and learn strategies to manage it, thus enhancing emotional awareness and regulation. It is integrated with the socio-cognitive theory of learning which emphasizes the inter-relationship of emotions, metacognition and learning outcomes.

Emotional support is just one of the ways conversational AI enhances personalized learning. Agents are able to customize answers to the learner's performance, engagement and emotional state, offering support to the learner that is appropriate to his or her needs.

It has been found by Patel (2025) that the adaptive conversational agents can increase the learners' confidence, reduce their cognitive load, and increase their motivation by offering personalized encouragement and guidance based on their emotional state at the moment.

However, the theoretical frameworks such as Human-Centered Learning Analytics and Affective Tutoring System emphasize that in using conversational AI in education, besides cognitive learning outcomes, there is a need to take into account the health of the student, the ethical issue, and emotional factors. Adding in affective feedback and reflective questions allows for an all-round approach to the learners' growth, both in terms of academic and emotional development, with AI-mediated interactions.

In conclusion, the use of conversational AI for providing emotional support in adaptive learning systems is well suited. These systems offer empathetic, context-sensitive, and personalized interactions that promote emotional regulation, resilience, and engagement, highlighting the potential of AI to support human educators in cultivating socioemotional skills.

CONCLUSION

The review emphasizes the potential for using AI to effectively assist students in the learning of their emotional intelligence through providing affect-aware and personalized interventions. Emotion recognition through AI can facilitate real-time monitoring and adaptive support, and personalized and adaptive learning systems can improve motivation, engagement, and academic achievement. Emotion-aware platforms support well-being and stress management, and conversational AI provides empathetic guidance to reinforce resilience and self-reflection. AI tools have been shown to improve the SEL skills, self-regulation, and perseverance. But ethical, data privacy, bias and access to fair opportunities remain concerns. Future research needs to focus on human-centered, culturally responsive pedagogical applications of AI that will enable the development of emotionally intelligent, adaptive, and personalized learning environments that foster both cognitive and affective student learning.

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