

Emotional Intelligence In Online And Blended Learning: A Systematic Review of Its Role In Student Engagement and Learning Outcomes

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ABSTRACT

The rapid growth of online and blended learning has reshaped how students learn and interact in higher education. Alongside these changes, there is increasing interest in the role of emotional intelligence (EI) in supporting students as they navigate more independent and digitally mediated learning environments. While EI is widely recognised as important for academic and personal success, its role in online and blended contexts is still not fully understood. This systematic review brings together existing research to examine how emotional intelligence influences student engagement, academic performance, and overall learning experiences in online and blended settings. Following PRISMA guidelines, peer-reviewed studies published between 2010 and 2025 were identified from major databases, including Scopus, Web of Science, and ERIC, and analysed to identify key patterns and gaps in the literature. The findings suggest that emotional intelligence plays a meaningful role in helping students adapt to online learning. Students with higher levels of EI tend to show stronger motivation, better self-regulation, and greater resilience when facing the challenges of remote and technology-mediated learning. EI also appears to support more effective communication and collaboration in virtual environments, contributing to richer learning interactions in blended formats. At the same time, the review highlights ongoing challenges, particularly the inconsistent ways in which EI is measured and the limited number of studies that examine the impact of targeted EI interventions.

Overall, this review underscores the importance of emotional intelligence in digital learning environments and suggests that integrating EI-informed approaches into online pedagogy may enhance student outcomes. It also points to the need for more consistent measurement and stronger intervention-based research to better understand how EI can be effectively developed in technology-supported learning contexts.

Keywords:

Emotional Intelligence; Online Learning; Blended Learning; Student Engagement; Self-Regulated Learning; Digital Education; Higher Education; Systematic Review

Introduction

The increasing integration of digital technologies into higher education has reshaped the way teaching and learning are delivered. Online and blended learning environments are now widely adopted, offering greater flexibility, accessibility, and opportunities for student-centred learning [1,2]. At the same time, these learning modes place greater responsibility on students to manage their own learning processes, sustain engagement, and navigate academic demands with reduced direct support from instructors [3]. Compared to traditional face-to-face settings, students in online and blended environments often experience lower levels of social interaction, rely more heavily on asynchronous communication, and are expected to demonstrate a higher degree of autonomy and self-management [4]. These shifts raise important questions regarding the personal and psychological factors that support successful learning in digitally mediated educational environments.

1.1 Emotional Intelligence in Education

One construct that has received increasing attention in this regard is emotional intelligence (EI). Originally conceptualised by Mayer and Salovey as the ability to perceive, understand, regulate, and utilise emotions effectively, EI has since become an important area of educational and psychological research [5]. The concept gained broader recognition through Goleman's work, which highlighted the importance of emotional competencies for personal, social, and professional success [6]. Subsequent developments, including Petrides' distinction between trait emotional intelligence and ability emotional intelligence, have further expanded the ways in which EI is understood and measured [7].

Within educational settings, emotional intelligence has consistently been associated with positive learning outcomes. Students with higher levels of EI tend to demonstrate stronger academic performance, greater psychological well-being, improved stress management, and more effective coping strategies when faced with academic challenges [8,9]. These emotional competencies become particularly important in learning environments that require students to manage uncertainty, maintain motivation, and adapt to changing educational demands.

1.2 Online and Blended Learning in Higher Education

The rise of online and blended learning has introduced both opportunities and challenges for university students. Blended learning, which combines face-to-face instruction with online learning components, has been shown to increase flexibility and encourage active learning when implemented effectively [1]. Fully online learning environments, meanwhile, provide students with opportunities for self-paced learning but often require greater levels of self-discipline, time management, and independent learning behaviours [10].

Despite these advantages, students in digital learning environments frequently report difficulties related to reduced motivation, feelings of isolation, and challenges in maintaining consistent engagement [2]. The absence of physical presence and immediate interpersonal interaction may make it more difficult for students to remain emotionally connected to their learning experiences. Consequently, scholars have increasingly argued that cognitive ability alone cannot fully explain student success in online learning environments and that emotional and self-regulatory factors may play an equally important role [11].

1.3 Emotional Intelligence in Digital Learning Contexts

The role of emotional intelligence in online and blended learning environments has attracted growing scholarly attention in recent years. EI is believed to support important learning processes such as self-regulated learning, motivation, resilience, and adaptability, all of which are critical for success in technology-mediated educational settings [12,13]. Students with higher emotional intelligence are generally better able to regulate emotions, cope with academic challenges, maintain motivation, and engage meaningfully with both learning content and peers in virtual environments.

In addition, emotional intelligence may contribute to more effective communication and collaboration in online learning contexts, where interactions are often mediated through digital platforms rather than face-to-face encounters. The ability to recognise, interpret, and express emotions appropriately may enhance the quality of online discussions, group projects, and collaborative learning experiences [14]. Despite these potential benefits, existing research remains fragmented, with studies examining different dimensions of EI, using diverse measurement approaches, and focusing on a wide range of educational outcomes.

1.4 Research Gap and Study Objective

Although interest in emotional intelligence has grown substantially over the past two decades, its role in online and blended learning environments has not yet been comprehensively synthesised. Existing studies often focus on isolated outcomes such as engagement, academic performance, self-regulation, or learner satisfaction without examining how these dimensions collectively contribute to students' learning experiences in digital environments. As a result, current understanding remains fragmented and lacks a coherent overview of the field.

Another challenge concerns the conceptualisation and measurement of emotional intelligence itself. Researchers have adopted different theoretical models, including ability-based, trait-based, and mixed models of EI [5,7,15]. This diversity has contributed to inconsistencies in findings and has made cross-study comparisons more difficult. Furthermore, while emotional intelligence has been widely investigated in traditional educational settings, relatively fewer studies have examined its specific role within fully online and blended learning environments, where learning dynamics differ considerably.

There is also limited evidence regarding the effectiveness of interventions designed to develop emotional intelligence in digital learning contexts. Although some studies suggest that EI may support student engagement, resilience, and self-regulated learning, intervention-based research remains relatively scarce and inconclusive [16].

Given these gaps, this study aims to systematically review the literature on emotional intelligence in online and blended learning environments. Specifically, the review examines how EI relates to student engagement, academic performance, self-regulated learning, collaboration, and overall learning experiences. It also identifies methodological trends, measurement approaches, and gaps in current research. By synthesising existing evidence, this review seeks to provide a clearer understanding of the role of emotional intelligence in digital education and to inform future research and educational practice.

1.5 Research Questions

This study is guided by the following research questions:

1. What is the relationship between emotional intelligence and student engagement in online and blended learning environments?
2. How does emotional intelligence influence academic performance and learning outcomes in digital education contexts?
3. What role does emotional intelligence play in shaping students' learning experiences, including motivation, self-regulated learning, resilience, and collaboration?
4. What are the prevailing methodological approaches and measurement tools used in studying emotional intelligence within online and blended learning environments?

2. Methodology

2.1 Review Design

This study employed a systematic review methodology to examine the role of emotional intelligence (EI) in online and blended learning environments within higher education. A systematic review was considered appropriate because it enables the identification, evaluation, and synthesis of existing evidence in a transparent and replicable manner [17]. The review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, which are widely recognised as a rigorous framework for conducting and reporting systematic reviews [18].

The review focused on studies investigating the relationship between emotional intelligence and various learning outcomes in online and blended learning environments, including student engagement, academic performance, self-regulated learning, collaboration, motivation, and overall learning experiences.

2.2 Search Strategy

A comprehensive literature search was conducted using three major academic databases: Scopus, Web of Science, and ERIC. These databases were selected due to their extensive coverage of peer-reviewed literature in education, psychology, and educational technology.

The search included studies published between January 2010 and December 2025. This timeframe was chosen because it reflects the period during which online and blended learning became increasingly prominent within higher education institutions globally.

The search strategy combined keywords related to emotional intelligence and digital learning environments. The following search terms and Boolean operators were used:

("emotional intelligence" OR "emotional competence")

AND

("online learning" OR "e-learning" OR "distance learning" OR "blended learning" OR "hybrid learning")

AND

("student engagement" OR "academic performance" OR "self-regulated learning" OR "motivation" OR "collaboration")

Additional manual searches were conducted through reference lists of relevant articles to identify studies that may not have been captured through database searches.

2.3 Inclusion and Exclusion Criteria

To ensure consistency and relevance, predefined inclusion and exclusion criteria were applied.

Inclusion Criteria

Studies were included if they:

1. Examined emotional intelligence as a primary or significant variable.
2. Focused on online, blended, hybrid, or technology-mediated learning environments.
3. Involved participants enrolled in higher education institutions.
4. Were empirical studies employing quantitative, qualitative, or mixed-method approaches.
5. Were published in peer-reviewed journals.
6. Were written in English.
7. Were published between 2010 and 2025.

Exclusion Criteria

Studies were excluded if they:

1. Focused exclusively on primary or secondary school students.
2. Examined emotional intelligence outside educational contexts.
3. Were conference proceedings, dissertations, editorials, book reviews, or conceptual papers.
4. Lacked sufficient methodological information.
5. Did not report findings related to student engagement, learning outcomes, or learning experiences.

2.4 Study Selection Process

The study selection process followed the four stages recommended by the PRISMA framework: identification, screening, eligibility, and inclusion [18].

During the identification stage, all records retrieved from the databases were exported into a reference management system and duplicate records were removed. The remaining studies were screened based on titles and abstracts to determine their relevance to the review objectives.

Studies that met the initial screening criteria proceeded to full-text review. During the eligibility stage, full articles were assessed against the predefined inclusion and exclusion criteria. Only studies that directly investigated emotional intelligence within online or blended learning contexts were retained for the final review.

The overall selection process was documented using a PRISMA flow diagram to ensure transparency and replicability.

2.5 Data Extraction

A structured data extraction matrix was developed to ensure consistency in recording information from the selected studies. The following information was extracted:

- Author(s) and publication year
- Country of study
- Research design
- Sample characteristics
- Educational context
- Emotional intelligence framework or instrument used
- Type of online or blended learning environment
- Key findings
- Study limitations

The extracted information enabled systematic comparison across studies and facilitated the identification of recurring themes and research trends.

2.6 Data Analysis

The selected studies were analysed using thematic synthesis. This approach allowed findings from diverse methodologies to be integrated and interpreted systematically [19].

The analysis focused on identifying recurring themes related to:

1. Emotional intelligence and student engagement.
2. Emotional intelligence and academic performance.
3. Emotional intelligence and self-regulated learning.
4. Emotional intelligence and collaboration in online learning environments.
5. Emotional intelligence interventions and learner outcomes.

Through this process, common patterns, methodological trends, and research gaps were identified, providing a comprehensive understanding of the role of emotional intelligence in online and blended learning environments.

3. Emotional Intelligence And Student Engagement In Online And Blended Learning

Student engagement is widely recognised as one of the most important predictors of success in online and blended learning environments. Engagement refers not only to students' participation in learning activities but also to their emotional investment, cognitive involvement, and behavioural commitment to the learning process [20]. In technology-mediated learning environments, maintaining engagement can be particularly challenging due to reduced face-to-face interaction, feelings of isolation, and increased demands for self-directed learning [21]. Consequently, researchers have increasingly examined emotional intelligence (EI) as a factor that may support sustained engagement in digital learning contexts.

The literature reviewed consistently suggests a positive relationship between emotional intelligence and student engagement. Students with higher levels of emotional intelligence appear better equipped to manage the emotional demands associated with online learning, including frustration, uncertainty, and academic stress [22]. Their ability to recognise and regulate emotions enables them to remain focused on learning tasks and maintain motivation even when faced with technological difficulties or limited social interaction.

Several studies indicate that emotionally intelligent students demonstrate higher levels of behavioural engagement in online courses. These students are more likely to participate actively in discussion forums, complete learning activities on time, and interact constructively with peers and instructors [23]. Such behaviours contribute to stronger learning experiences and may help reduce the disengagement that is commonly reported in fully online environments.

Beyond behavioural engagement, emotional intelligence also appears to influence emotional engagement. Emotional engagement refers to students' sense of interest, enjoyment, belonging, and connection to their learning experiences [24]. In online learning environments, where students may experience feelings of isolation or disconnection, emotional intelligence can help learners maintain positive attitudes toward learning and develop stronger emotional connections with course content and learning communities. Students who can effectively manage emotions are often more resilient when encountering setbacks and are better able to maintain enthusiasm for learning over time.

The review further indicates that emotional intelligence supports cognitive engagement through enhanced self-awareness and emotional regulation. Cognitive engagement involves the willingness to invest mental effort in learning, apply deep learning strategies, and persist in solving complex problems [25]. Students with higher EI are generally more capable of monitoring their emotional responses to academic challenges and adjusting their learning strategies accordingly. This ability contributes to more sustained attention, deeper learning, and greater persistence in online learning environments.

Research also highlights the relationship between emotional intelligence and students' sense of belonging in virtual learning communities. Social presence is often considered a critical component of successful online learning because it helps learners feel connected to others despite physical separation [26]. Students with stronger emotional intelligence tend to communicate more effectively, demonstrate greater empathy, and build more positive relationships with peers. These skills contribute to stronger social connections and increased engagement in collaborative learning activities.

However, the review also reveals some inconsistencies within the literature. While most studies report positive associations between emotional intelligence and engagement, the strength of these relationships varies considerably across contexts. Differences in emotional intelligence models, measurement instruments, learning platforms, and student populations make direct comparison difficult [27]. Furthermore, much of the existing research relies on self-report surveys, which may be influenced by social desirability and subjective interpretation.

Another notable limitation is the relatively small number of intervention studies. Although many studies demonstrate correlations between emotional intelligence and engagement, fewer studies investigate whether emotional intelligence can be deliberately developed to

improve student engagement in online and blended learning environments. This limits the ability to establish causal relationships and highlights an important direction for future research.

Overall, the evidence suggests that emotional intelligence plays a meaningful role in supporting student engagement in online and blended learning environments. Students with higher levels of emotional intelligence are generally more capable of managing emotional challenges, maintaining motivation, participating actively, and developing positive learning relationships. These findings support the argument that emotional competencies should be considered alongside cognitive abilities when designing and evaluating digital learning experiences in higher education.

4. Emotional Intelligence And Academic Performance In Digital Learning Environments

Academic performance remains one of the most frequently examined outcomes in research on emotional intelligence (EI) within higher education. While academic success has traditionally been associated with cognitive ability, growing evidence suggests that emotional and psychological factors also play a significant role in shaping students' learning outcomes. In online and blended learning environments, where students must navigate greater levels of autonomy and reduced direct support, emotional intelligence may become even more important in influencing academic achievement [28].

The studies reviewed generally indicate a positive relationship between emotional intelligence and academic performance. Students with higher levels of EI tend to achieve better academic results, demonstrate stronger learning persistence, and adapt more effectively to the demands of digital learning environments [22]. Emotional intelligence contributes to academic success by enabling students to manage stress, regulate emotions, maintain motivation, and respond constructively to academic challenges.

One of the most frequently reported mechanisms linking EI to academic performance is emotional regulation. Online learning environments often require students to cope with various challenges, including technological difficulties, workload pressures, limited interaction with instructors, and uncertainty regarding academic expectations. Students who possess stronger emotional regulation skills are generally better able to manage frustration and anxiety, allowing them to remain focused on learning tasks and academic goals [29]. Consequently, these students are more likely to sustain effort and perform effectively throughout their courses.

Motivation also emerges as an important pathway through which emotional intelligence influences academic outcomes. Research suggests that emotionally intelligent students are more capable of maintaining intrinsic motivation and sustaining commitment to learning activities despite setbacks or obstacles [30]. This ability is particularly valuable in online learning contexts where external monitoring and immediate feedback may be less frequent than in traditional classroom environments. Students with higher EI often demonstrate greater perseverance and are more likely to complete learning tasks successfully.

Several studies further highlight the relationship between emotional intelligence and academic resilience. Resilience refers to an individual's ability to recover from difficulties and adapt positively to challenging situations. In digital learning environments, resilience

becomes essential because students frequently encounter disruptions, changes in learning conditions, and varying levels of social support. The literature suggests that students with stronger emotional intelligence are generally better equipped to cope with these challenges, resulting in more positive academic outcomes and reduced risk of course withdrawal [31].

The review also indicates that emotional intelligence contributes to effective learning behaviours that support academic achievement. Students with higher EI are more likely to demonstrate effective time management, goal setting, self-monitoring, and adaptive learning strategies [32]. These behaviours are particularly important in online and blended learning environments where learners must take greater responsibility for organising and directing their own learning activities.

Despite these positive findings, the relationship between emotional intelligence and academic performance is not always straightforward. Several studies report moderate rather than strong correlations, suggesting that EI is one of multiple factors contributing to academic success [33]. Variables such as prior academic ability, self-efficacy, learning design, technological access, and institutional support may also influence learning outcomes. As a result, emotional intelligence should be viewed as a complementary factor rather than a standalone predictor of academic achievement.

Another challenge identified in the literature concerns the measurement of academic performance. Different studies employ varying indicators, including grade point average (GPA), course grades, self-reported achievement, learning satisfaction, and perceived learning effectiveness. These differences make it difficult to compare findings across studies and may partly explain variations in reported results [34].

Furthermore, while many studies establish associations between emotional intelligence and academic outcomes, relatively few employ longitudinal or experimental designs that allow causal relationships to be examined. Most research relies on cross-sectional data collected at a single point in time. Consequently, it remains unclear whether emotional intelligence directly enhances academic performance or whether successful learning experiences contribute to the development of emotional competencies.

Overall, the evidence suggests that emotional intelligence contributes positively to academic performance in online and blended learning environments. Through its influence on emotional regulation, motivation, resilience, and adaptive learning behaviours, EI appears to support students in navigating the demands of digital education. However, the review also highlights the need for more rigorous and longitudinal research to better understand the mechanisms through which emotional intelligence influences learning outcomes and to determine the effectiveness of interventions aimed at strengthening emotional competencies among university students.

5. Emotional Intelligence, Self-Regulated Learning, And Learner Resilience

One of the most consistent themes emerging from the literature is the close relationship between emotional intelligence (EI), self-regulated learning (SRL), and learner resilience in online and blended learning environments. Unlike traditional face-to-face education, digital learning often requires students to take greater responsibility for planning, monitoring, and evaluating their own learning. As a result, success in online learning depends not only on cognitive ability but also on students' capacity to manage emotions, maintain motivation, and adapt to challenges independently [35].

Self-regulated learning refers to the process through which learners actively control their cognitive, motivational, and behavioural strategies to achieve academic goals [25]. Students who demonstrate strong self-regulation are more likely to set learning goals, monitor their progress, manage time effectively, and adjust their learning strategies when difficulties arise. These skills are particularly important in online and blended learning environments, where learners typically receive less direct supervision and must exercise greater autonomy [36].

The reviewed studies suggest that emotional intelligence supports self-regulated learning through several interconnected mechanisms. First, students with higher levels of EI are generally better able to recognise and understand their emotional states during learning activities. This emotional awareness allows learners to identify feelings such as frustration, anxiety, or lack of motivation before these emotions negatively affect academic performance [37]. By recognising emotional challenges early, students are better positioned to adopt appropriate coping strategies and maintain engagement with learning tasks.

Second, emotional regulation appears to play a central role in supporting effective self-regulation. Students frequently encounter setbacks in online learning environments, including technical difficulties, unclear instructions, heavy workloads, and limited interaction with instructors. Learners with stronger emotional regulation skills are often more capable of managing these challenges without becoming overwhelmed or disengaged [38]. This ability contributes to greater persistence and more effective learning behaviours over time.

Motivation represents another important connection between emotional intelligence and self-regulated learning. The literature indicates that emotionally intelligent students are more likely to maintain positive attitudes toward learning and sustain effort despite obstacles [39]. In online learning environments, where external sources of motivation may be limited, internal motivational resources become increasingly important. Students who can regulate their emotions effectively are generally better able to maintain focus and commitment to long-term academic goals.

In addition to supporting self-regulation, emotional intelligence appears to contribute significantly to learner resilience. Resilience refers to the capacity to adapt positively when confronted with adversity, stress, or unexpected challenges [31]. The rapid transition to online learning during and after the COVID-19 pandemic highlighted the importance of resilience as students were required to adjust to new learning technologies, altered routines, and increased uncertainty [40].

Several studies suggest that emotional intelligence functions as a protective factor that enhances resilience in digital learning environments. Students with higher EI are generally more capable of managing stress, maintaining optimism, and recovering from academic setbacks [41]. These learners are often better able to view challenges as opportunities for

growth rather than as barriers to success. Consequently, they demonstrate greater persistence and adaptability when facing disruptions or changes in their learning experiences.

The review also indicates that emotional intelligence may support resilience through social and interpersonal pathways. Even in online learning environments, peer support and meaningful social interaction remain important sources of emotional encouragement. Students with stronger emotional competencies are often more effective at seeking support, maintaining relationships, and participating in collaborative learning activities [42]. These social resources can help buffer the negative effects of stress and isolation commonly associated with online learning.

Despite these positive findings, several gaps remain in the literature. Most studies rely on cross-sectional designs, limiting the ability to determine causal relationships between emotional intelligence, self-regulation, and resilience. Furthermore, there is considerable variation in how these constructs are defined and measured across studies. Some researchers treat resilience as an outcome of emotional intelligence, while others conceptualise it as a mediating or moderating variable. These inconsistencies complicate efforts to develop a unified understanding of the relationships among these constructs [43].

Another limitation concerns the relatively small number of intervention studies. Although the literature consistently suggests that emotional intelligence is associated with stronger self-regulation and resilience, fewer studies have investigated whether targeted EI development programmes can produce measurable improvements in these areas within online and blended learning contexts. This represents an important avenue for future research.

Overall, the evidence indicates that emotional intelligence plays a crucial role in supporting self-regulated learning and learner resilience in online and blended learning environments. Through enhanced emotional awareness, emotional regulation, motivation, and adaptability, emotionally intelligent students appear better equipped to navigate the challenges of digital learning. These findings reinforce the argument that emotional competencies should be viewed as essential components of student success in contemporary higher education and should be considered in the design of online and blended learning experiences.

6. Emotional Intelligence And Online Collaboration In Digital Learning Environments

Collaboration has become a central component of contemporary online and blended learning environments. Advances in educational technology have enabled students to engage in group discussions, collaborative projects, peer feedback activities, and virtual teamwork regardless of geographical location. While digital platforms provide opportunities for interaction and knowledge sharing, effective collaboration in online environments requires more than technological access alone. Students must also possess interpersonal and emotional competencies that enable them to communicate effectively, manage relationships, and work productively with others [44]. In this context, emotional intelligence (EI) has emerged as an important factor influencing the quality of online collaboration and student interaction.

The literature reviewed suggests that emotional intelligence contributes significantly to effective communication in digital learning environments. Online communication often lacks many of the non-verbal cues available in face-to-face interactions, such as facial expressions, body language, and tone of voice. As a result, misunderstandings, misinterpretations, and communication difficulties may occur more frequently in virtual settings [45]. Students with

higher levels of emotional intelligence appear better equipped to recognise emotional cues, interpret messages accurately, and respond appropriately during online interactions. These abilities facilitate clearer communication and reduce the likelihood of interpersonal conflict.

Several studies indicate that emotionally intelligent students are more likely to participate actively in collaborative learning activities. They tend to demonstrate greater empathy, respect for differing perspectives, and willingness to engage in constructive dialogue with peers [46]. Such behaviours contribute to more positive group dynamics and create learning environments where students feel comfortable sharing ideas and participating in discussions. In blended learning contexts, these interpersonal skills support both online and face-to-face collaboration, enhancing the overall learning experience.

A recurring theme in the literature is the relationship between emotional intelligence and social presence. Social presence refers to the extent to which learners perceive others as "real" and emotionally connected within digital learning environments [47]. Strong social presence has been associated with increased student satisfaction, engagement, and learning effectiveness. Emotional intelligence may enhance social presence by enabling students to express emotions appropriately, build rapport with peers, and maintain meaningful interpersonal relationships despite physical separation. Consequently, emotionally intelligent learners often report stronger feelings of belonging and connectedness within virtual learning communities.

The review also highlights the role of emotional intelligence in managing interpersonal challenges that arise during collaborative learning. Group work frequently involves negotiation, decision-making, conflict resolution, and coordination among team members. These processes can generate frustration, disagreement, or tension, particularly when communication occurs through digital platforms. Students with higher emotional intelligence are generally more capable of regulating emotional reactions, managing conflicts constructively, and maintaining productive working relationships [48]. Such competencies contribute to more effective teamwork and improved group performance.

Furthermore, emotional intelligence appears to support collaborative problem-solving and knowledge construction. Effective collaboration requires students to listen actively, consider alternative viewpoints, and integrate diverse perspectives into shared solutions. The ability to recognise and respond to the emotions of others can facilitate these processes by encouraging mutual understanding and fostering a supportive learning environment [49]. This is particularly important in online and blended learning settings, where collaboration often relies heavily on written communication and virtual interaction.

Despite the positive associations reported in the literature, several challenges remain. Many studies focus on self-reported perceptions of collaboration rather than objective measures of collaborative effectiveness. As a result, it is often difficult to determine the extent to which emotional intelligence directly influences collaborative outcomes [50]. Additionally, differences in learning platforms, communication tools, and instructional designs may affect how emotional intelligence manifests in online collaborative activities.

Another limitation concerns the relatively limited number of studies examining emotional intelligence interventions specifically designed to enhance collaborative skills in digital learning environments. Although emotional intelligence is frequently associated with improved teamwork and communication, there remains a lack of experimental evidence

demonstrating how targeted EI development programmes influence collaborative learning outcomes. Future research should therefore explore intervention-based approaches that examine the causal relationship between emotional intelligence and online collaboration.

Overall, the evidence suggests that emotional intelligence plays an important role in supporting communication, social presence, teamwork, and collaborative learning in online and blended educational environments. Students with stronger emotional competencies appear better able to establish positive relationships, manage interpersonal challenges, and contribute meaningfully to collaborative learning activities. These findings reinforce the importance of considering emotional intelligence as a key factor in the design and facilitation of digital learning experiences, particularly as collaborative learning continues to occupy a central place in higher education pedagogy.

7. Methodological Trends, Research Gaps, And Future Directions

The growing body of research on emotional intelligence (EI) in online and blended learning environments has generated valuable insights into how emotional competencies influence student engagement, academic performance, self-regulated learning, and collaboration. However, the systematic review also reveals several methodological patterns, limitations, and gaps that continue to shape the development of this field. Understanding these issues is important for interpreting existing findings and guiding future research efforts.

7.1 Methodological Trends in Existing Research

One of the most noticeable trends in the literature is the dominance of quantitative research designs. The majority of studies employ survey-based approaches to examine relationships between emotional intelligence and various educational outcomes [51]. These studies typically use correlational analyses, regression models, or structural equation modelling to investigate associations between EI and variables such as engagement, academic achievement, motivation, and self-regulated learning.

While quantitative methods have contributed significantly to understanding broad patterns and relationships, they often provide limited insight into how emotional intelligence is experienced and applied by students within online learning environments. Comparatively fewer studies utilise qualitative approaches such as interviews, focus groups, reflective journals, or case studies. As a result, the nuanced ways in which students use emotional competencies to navigate digital learning challenges remain underexplored.

A smaller but growing number of studies have adopted mixed-methods approaches, combining quantitative data with qualitative insights. These studies offer a more comprehensive understanding of emotional intelligence by capturing both measurable outcomes and students' lived experiences. The review suggests that mixed-methods research may be particularly valuable for examining complex emotional processes within technology-mediated learning environments.

7.2 Variations in Emotional Intelligence Measurement

Another significant methodological issue concerns the measurement of emotional intelligence. The literature reveals considerable variation in the instruments and theoretical frameworks used to assess EI. Researchers have drawn on ability-based models, trait-based

models, and mixed models of emotional intelligence, each reflecting different conceptualisations of the construct [52].

Commonly used instruments include:

- Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT)
- Trait Emotional Intelligence Questionnaire (TEIQue)
- Wong and Law Emotional Intelligence Scale (WLEIS)
- Emotional Quotient Inventory (EQ-i)

While each instrument offers valuable insights, differences in underlying theoretical assumptions often make direct comparison between studies difficult. Some measures assess emotional abilities through performance tasks, whereas others rely on self-reported perceptions of emotional competencies. Consequently, variations in findings may partly reflect differences in measurement rather than genuine differences in emotional intelligence itself.

The absence of a universally accepted measurement framework remains one of the major challenges in this field. Greater consistency in measurement practices would facilitate more reliable comparisons across studies and strengthen the cumulative evidence base.

7.3 Limitations of Current Research

Several limitations consistently emerge across the reviewed studies. First, many investigations rely heavily on self-report questionnaires. Although self-report instruments are practical and widely used, they are vulnerable to social desirability bias and subjective interpretation. Students may overestimate or underestimate their emotional competencies, potentially affecting the accuracy of findings [53].

Second, most studies employ cross-sectional research designs. Data are typically collected at a single point in time, limiting the ability to establish causal relationships between emotional intelligence and educational outcomes. While positive associations are frequently reported, it remains difficult to determine whether higher emotional intelligence leads to improved learning outcomes or whether successful educational experiences contribute to the development of emotional competencies.

Third, the geographical distribution of studies remains uneven. Much of the existing literature originates from North America, Europe, and selected regions of Asia. Relatively limited research has been conducted in developing countries or within culturally diverse higher education contexts. This limits the generalisability of findings and highlights the need for more cross-cultural investigations.

7.4 Research Gaps

The review identifies several important gaps that warrant further attention. One notable gap is the limited number of intervention-based studies. Although many studies establish positive relationships between emotional intelligence and learning outcomes, fewer studies investigate whether emotional intelligence can be deliberately developed through structured educational interventions within online and blended learning environments.

Another gap concerns the rapid emergence of new educational technologies. Much of the existing literature predates the widespread adoption of generative AI tools, intelligent tutoring systems, and AI-enhanced learning platforms. Consequently, relatively little is known about how emotional intelligence interacts with emerging technologies that increasingly shape students' learning experiences.

Furthermore, there remains limited research exploring the experiences of specific student populations, including international students, first-generation university students, students with disabilities, and learners from culturally diverse backgrounds. These groups may face unique emotional and social challenges within digital learning environments that are not adequately captured in current studies.

7.5 Future Research Directions

Based on the findings of this review, several directions for future research are proposed.

First, researchers should conduct more longitudinal studies to examine how emotional intelligence develops over time and how it influences students' long-term academic outcomes in online and blended learning environments. Longitudinal research would provide stronger evidence regarding causality and developmental processes.

Second, greater emphasis should be placed on intervention studies designed to enhance emotional intelligence among university students. Such studies could evaluate the effectiveness of emotional intelligence training programmes, reflective learning activities, coaching approaches, and socio-emotional learning interventions in improving engagement, resilience, and academic performance.

Third, future research should explore the relationship between emotional intelligence and emerging educational technologies, including artificial intelligence, adaptive learning systems, virtual reality environments, and learning analytics platforms. Understanding how emotional competencies influence interactions with these technologies will become increasingly important as higher education continues to evolve.

Fourth, there is a need for greater methodological diversity. Qualitative and mixed-methods studies can provide richer insights into how students experience and apply emotional intelligence within digitally mediated learning contexts. Such approaches may reveal processes and mechanisms that are difficult to capture through quantitative surveys alone.

Finally, more cross-cultural and comparative research is needed. Emotional expression, regulation, and communication are influenced by cultural norms and values. Investigating emotional intelligence across diverse educational settings would contribute to a more globally relevant understanding of its role in online and blended learning.

Overall, while substantial progress has been made in understanding emotional intelligence within digital education, the field remains in an important stage of development. Addressing these methodological limitations and research gaps will help strengthen future scholarship and provide a more comprehensive understanding of how emotional intelligence can support student success in increasingly technology-mediated learning environments.

8. Conclusion

This systematic review examined the role of emotional intelligence (EI) in online and blended learning environments and synthesised evidence published between 2010 and 2025. As higher education increasingly adopts digital and technology-mediated learning models, understanding the factors that support student success has become increasingly important. While online and blended learning offer greater flexibility and accessibility, they also require students to manage learning independently, regulate emotions effectively, and remain engaged despite reduced face-to-face interaction. Against this backdrop, emotional intelligence has emerged as a potentially important factor influencing students' academic and learning experiences.

The findings of this review indicate that emotional intelligence plays a significant role in supporting student engagement in online and blended learning environments. Students with higher levels of EI generally demonstrate stronger behavioural, emotional, and cognitive engagement, allowing them to participate more actively in learning activities and maintain motivation throughout their studies. Emotional intelligence also appears to contribute positively to academic performance by enhancing emotional regulation, persistence, resilience, and adaptive learning behaviours. These competencies enable students to cope more effectively with the challenges associated with digitally mediated learning environments.

The review further highlights the close relationship between emotional intelligence, self-regulated learning, and learner resilience. Students with stronger emotional competencies are generally better able to monitor their learning progress, regulate emotional responses, maintain motivation, and adapt to academic difficulties. These capabilities are particularly valuable in online learning environments where learners are expected to assume greater responsibility for their educational experiences. In addition, emotional intelligence contributes to more effective communication, stronger social presence, and improved collaboration within virtual learning communities, supporting meaningful interaction among students and instructors.

Despite these positive findings, the review identifies several important limitations within the existing literature. Research in this area remains fragmented, with considerable variation in theoretical frameworks, measurement instruments, and research methodologies. Most studies rely on self-report data and cross-sectional designs, limiting the ability to establish causal relationships between emotional intelligence and learning outcomes. Furthermore, intervention-based research remains relatively scarce, making it difficult to determine how emotional intelligence can be intentionally developed to support student success in digital learning environments.

From a practical perspective, the findings suggest that emotional intelligence should be considered an important component of online and blended learning design. Higher education institutions may benefit from incorporating emotionally supportive learning practices that promote self-awareness, emotional regulation, resilience, and effective communication. Educators can play a key role by creating learning environments that encourage reflection, collaboration, and meaningful social interaction alongside academic development. Integrating emotional intelligence into student support initiatives and curriculum design may further enhance student engagement and learning outcomes.

The review also contributes to the broader literature by bringing together evidence from diverse studies and highlighting the multidimensional role of emotional intelligence in digital education. Rather than functioning solely as a personal characteristic, emotional intelligence appears to influence multiple aspects of students' learning experiences, including engagement, performance, self-regulation, resilience, and collaboration. These findings reinforce the view that student success in online and blended learning environments depends not only on cognitive abilities but also on emotional and social competencies.

As digital learning continues to evolve, particularly with the emergence of artificial intelligence, adaptive learning technologies, and increasingly personalised educational environments, the importance of emotional intelligence is likely to become even more pronounced. Future research should therefore move beyond correlational investigations and explore how emotional intelligence can be systematically developed and integrated into digital learning practices. Longitudinal, experimental, and cross-cultural studies will be particularly valuable in advancing understanding of how emotional intelligence contributes to student success in diverse educational contexts.

In conclusion, this review demonstrates that emotional intelligence is a meaningful contributor to student engagement, learning outcomes, self-regulation, resilience, and collaboration in online and blended learning environments. As higher education continues to navigate ongoing technological transformation, fostering emotional competencies alongside academic skills may be essential for supporting effective, inclusive, and sustainable learning experiences in the digital age.

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