INTERNATIONAL MULTI DISCIPLINARY JOURNAL FOR RESEARCH & DEVELOPMENT
eISSN 2394-6334 Impact factor: 8.854 Volume 13, issue 04 (2026)

ANALYZING STUDENTS' EMOTIONAL INTELLIGENCE AND SOCIAL SKILLS THROUGH DIGITAL DIAGNOSTICS

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Abstract:

This study explores the role of digital diagnostics in assessing students' emotional intelligence (EI) and social skills. Emotional intelligence, comprising self-awareness, self-regulation, motivation, empathy, and social skills, is crucial for students' academic success and interpersonal development. The integration of digital diagnostic tools allows educators to collect real-time, objective data on students' emotional and social competencies, providing insights for personalized interventions. By leveraging technology, schools can enhance assessment accuracy, track developmental progress, and promote socio-emotional learning in a systematic, data-driven manner.

Keywords: Emotional intelligence, social skills, digital diagnostics, socio-emotional learning, educational technology.

Emotional intelligence (EI) has emerged as a pivotal component of students' holistic development, influencing both academic performance and interpersonal relationships. Social skills, closely linked to EI, enable students to navigate complex social environments effectively, fostering collaboration, empathy, and conflict resolution. Traditional assessment methods, including teacher observations and self-report questionnaires, are often subjective and limited in scope. Digital diagnostics, encompassing web-based platforms, mobile applications, and AI-powered assessment tools, offer a novel approach to evaluating EI and social skills. These tools allow for continuous monitoring, immediate feedback, and adaptive testing, which are essential for capturing the dynamic nature of emotional and social development in students. The current study investigates how digital diagnostics can be effectively employed to analyze students' emotional intelligence and social skills. Emphasis is placed on the reliability, validity, and educational applicability of digital assessment methods, as well as the potential challenges related to data privacy, technological accessibility, and ethical considerations.

The concept of emotional intelligence was popularized by Daniel Goleman, who identified five core domains: self-awareness, self-regulation, motivation, empathy, and social skills. Research consistently demonstrates that students with higher EI exhibit better academic outcomes, more effective problem-solving abilities, and stronger interpersonal relationships. Social skills, which include communication, cooperation, adaptability, and conflict management, are critical for functioning in both academic and social contexts.

Digital diagnostics can be grounded in several theoretical frameworks, including:

1. **Mayer-Salovey-Caruso Emotional Intelligence Model (MSCEIT):** Focuses on the ability to perceive, understand, manage, and utilize emotions effectively.
2. **Social-Emotional Learning (SEL) Framework:** Emphasizes the development of self-awareness, self-management, social awareness, relationship skills, and responsible decision-making.
3. **Technology-Enhanced Assessment Theory:** Highlights the advantages of digital platforms in offering adaptive, interactive, and personalized evaluation experiences.

Empirical studies show that digital diagnostics can improve measurement precision, reduce rater bias, and facilitate longitudinal monitoring of socio-emotional competencies. For instance, AI-driven platforms can analyze student interactions in collaborative tasks to assess empathy, leadership, and conflict resolution skills in real time.

The methodology of this study integrates both quantitative and qualitative approaches to provide a comprehensive analysis of students' emotional intelligence and social skills through digital diagnostics. The research sample consisted of students aged 10 to 16, drawn from multiple educational institutions with diverse socio-economic backgrounds to ensure representativeness. Participation was voluntary, and informed consent was obtained from both students and their guardians. Digital diagnostic tools were selected based on their validity, reliability, and compatibility with educational standards. The tools employed in this study include:

1. **Web-based EI Assessments:** Platforms such as the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) online adaptation allow for standardized evaluation of students' emotional perception, understanding, and regulation.
2. **Mobile Applications for Social Skills Monitoring:** Applications like ClassDojo and SocioMeter provide real-time tracking of social interactions, cooperative behaviors, and peer communication.
3. **AI-Driven Interactive Scenarios:** Simulated scenarios present students with social dilemmas or emotional challenges, and AI algorithms analyze responses to determine emotional and social competencies.

Data collection occurred over a 12-week period, allowing for repeated measures and trend analysis. Each student participated in weekly digital exercises, interactive quizzes, and social interaction simulations. The software automatically logged response times, choice patterns, and behavioral indicators, which were later aggregated for analysis.

Quantitative data included EI scores, social skill ratings, and behavioral metrics such as frequency of collaborative engagement, empathy scores, and conflict resolution effectiveness. Qualitative data were gathered through reflective journals, feedback forms, and teacher observations recorded within the digital platforms. This mixed-methods approach ensured triangulation of data and enhanced the robustness of findings. To ensure data validity, all digital tools were pre-tested for internal consistency using Cronbach's alpha, with acceptable thresholds above 0.80. Inter-rater reliability for observational inputs within the platforms was also verified, achieving an average agreement coefficient of 0.87. Ethical considerations, including data anonymization, secure storage, and compliance with educational privacy regulations, were strictly adhered to throughout the study.

Digital diagnostic tools offer a multi-dimensional perspective on students' emotional and social development. Unlike traditional paper-based assessments, these tools provide dynamic interaction, adaptability to individual student profiles, and instantaneous feedback. For example, AI-driven emotional scenario simulations not only evaluate emotional understanding but also assess adaptive decision-making in real-time contexts.

1. **Emotional Intelligence Modules:** These modules typically assess five domains: self-awareness, self-regulation, motivation, empathy, and social skills. Students respond to situational prompts, and algorithms generate scores reflecting their emotional competencies. Studies indicate that such modules have a high predictive validity for academic engagement and social adjustment.
2. **Social Skills Tracking Platforms:** Applications allow teachers and researchers to monitor peer interactions, collaborative behaviors, and leadership tendencies. Automated dashboards provide visualizations of behavioral trends, highlighting strengths and areas for intervention.
3. **Behavioral Analytics and AI Interpretation:** Advanced tools analyze response latency, choice consistency, and emotional expression patterns. For instance, students who consistently select empathic responses and engage in cooperative tasks are flagged as exhibiting higher social competence.

The integration of these tools allows for longitudinal monitoring of socio-emotional development, facilitating early identification of students requiring targeted support. Furthermore, the digital format enhances engagement, as interactive interfaces are more motivating for students compared to static assessments.

The data collected from the digital diagnostic tools were systematically processed to identify patterns in students' emotional intelligence and social skills. Quantitative data, including EI scores and behavioral metrics, were analyzed using descriptive and inferential statistics. Descriptive statistics provided insights into the mean, median, and standard deviation for each emotional intelligence domain, while inferential statistics, including correlation and regression analyses, explored the relationships between EI components and social skill performance. Qualitative data, such as reflective journals and teacher observations, were coded using thematic analysis. Themes included empathy expression, conflict resolution strategies, peer collaboration, and emotional regulation. Triangulation of quantitative and qualitative data ensured a comprehensive understanding of students' socio-emotional competencies. Additionally, longitudinal trend analysis was performed to track changes in EI and social skills over the 12-week study period. This approach allowed for the identification of both gradual developmental improvements and situational fluctuations influenced by classroom dynamics or peer interactions.

The analysis revealed significant variation in students' emotional intelligence across the five domains. Self-awareness scores were moderately high, indicating that most students could identify their own emotions accurately. However, self-regulation scores were lower, suggesting challenges in controlling impulsive reactions during social interactions. Motivation scores correlated positively with academic engagement, highlighting the importance of intrinsic drive for both emotional and cognitive development. Empathy scores demonstrated meaningful differences across age groups. Older students (14–16 years) exhibited more consistent empathetic responses in digital scenarios, while younger students (10–12 years)

showed variable patterns, suggesting developmental progression in perspective-taking abilities. Social skills assessments indicated that collaboration, communication, and leadership tendencies were strongly associated with higher overall EI scores, particularly in empathy and social awareness.

Behavioral analytics from AI-driven platforms revealed that students who engaged more actively in peer interactions demonstrated superior conflict resolution strategies. Conversely, students with lower engagement frequencies often exhibited avoidance behaviors or difficulty navigating peer disagreements. Interactive modules provided immediate feedback, allowing students to adjust their responses in subsequent exercises, which contributed to measurable improvements in social competence over time.

The findings of this study highlight the efficacy of digital diagnostics in providing a nuanced understanding of students' emotional and social development. The integration of AI-driven assessment tools with real-time analytics offers several advantages over traditional evaluation methods:

1. **Objectivity:** Automated scoring reduces subjective bias inherent in teacher-based assessments.
2. **Adaptivity:** Digital platforms can tailor scenarios to individual skill levels, ensuring that each student is appropriately challenged.
3. **Longitudinal Tracking:** Continuous monitoring enables the identification of trends, early interventions, and personalized learning plans.
4. **Engagement:** Interactive modules increase student motivation, which correlates with better socio-emotional outcomes.

The study also underscores the relationship between emotional intelligence and social skills, confirming prior research that students with higher EI exhibit stronger interpersonal competencies. Empathy, social awareness, and self-regulation emerged as key predictors of successful peer interactions, reinforcing the importance of incorporating EI development into curricula. Challenges identified include technological accessibility, particularly in under-resourced schools, and ethical concerns related to data privacy. Despite these challenges, the results indicate that digital diagnostics can serve as a powerful tool for fostering socio-emotional learning, enhancing both academic performance and interpersonal development.

The findings of this study highlight the transformative potential of digital diagnostics in assessing and developing students' emotional intelligence and social skills. Digital tools, including AI-driven platforms, web-based assessments, and interactive applications, provide an innovative means of monitoring students' socio-emotional competencies in real time. Based on the research outcomes, several key recommendations can be drawn for educational practice.

Firstly, the integration of digital diagnostic tools into the standard curriculum is essential. By embedding socio-emotional assessments alongside academic evaluations, schools can systematically identify students' strengths and areas needing support. Continuous monitoring through digital platforms allows educators to detect early signs of emotional or social difficulties and provide timely interventions. For instance, students demonstrating lower self-regulation can be engaged in mindfulness exercises or structured behavioral

programs, while those with limited empathy or social awareness can benefit from collaborative projects, peer mentoring, or scenario-based simulations that enhance interpersonal understanding.

Secondly, teacher training is critical to maximize the benefits of digital diagnostics. Educators should receive professional development focused on emotional intelligence, social skills assessment, and interpretation of digital data. Such training ensures that teachers can use diagnostic results to design personalized learning plans, provide meaningful feedback, and track developmental progress effectively. Additionally, involving students in self-reflection exercises within digital platforms encourages them to evaluate their own emotional and social responses, fostering metacognitive growth and self-awareness.

Thirdly, ethical and responsible use of technology must be prioritized. Student data collected through digital diagnostics should be anonymized, securely stored, and accessed only by authorized personnel in compliance with privacy regulations. Schools must adopt clear policies on data usage, storage, and sharing, maintaining transparency with parents and students to build trust and ensure responsible practice. Fourthly, collaborative engagement among stakeholders—teachers, parents, administrators, and technology providers—is essential. Open communication and coordination ensure that interventions are aligned with educational goals, technological capacity, and students' socio-emotional needs. Moreover, ongoing research and innovation in digital diagnostics should continue to explore cross-cultural applications, evaluate effectiveness compared to traditional assessment methods, and develop tools that adapt to diverse learning environments.

Conclusion

This study demonstrates that digital diagnostics provide a reliable, objective, and engaging approach to analyzing students' emotional intelligence and social skills. By integrating AI-driven assessments, web-based platforms, and mobile applications, educators can gain real-time insights into students' socio-emotional development, identify strengths and weaknesses, and implement targeted interventions. Key findings indicate that self-awareness and empathy are relatively strong among students, while self-regulation requires additional support. Social skills, particularly collaboration and conflict resolution, are closely linked to emotional intelligence, highlighting the importance of incorporating socio-emotional learning (SEL) into educational curricula. Longitudinal tracking through digital tools allows for monitoring developmental progress over time, enabling early intervention and personalized support strategies.

The study also emphasizes the advantages of digital diagnostics, including objectivity, adaptability, longitudinal monitoring, and increased student engagement. While challenges related to technology access and ethical data management exist, the benefits of using digital assessment tools to foster emotional and social competencies are substantial. Ultimately, the findings support the integration of digital diagnostics into modern educational practice, contributing to the holistic development of students and preparing them for both academic and social success.

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