Harnessing Artificial Intelligence (AI) to Enhance Social-Emotional Competence Among Higher Education Teachers: Opportunities and Challenges

Madhubala Kumari*
Research Scholar
UGC-NET JRF, Dept. of B.Ed./M.Ed., (IASE)
Mahatma Jyotiba Phule
Rohilkhand University, Bareilly, U.P.
Email: kumari.madhubala2088@gmail.com

Dr. Kshama Pandey
Assistant Professor
Department of B.Ed./M.Ed., (IASE)
Mahatma Jyotiba Phule
Rohilkhand University, Bareilly, U.P.
Email: kumari.madhubala2088@gmail.com

Abstract

This study investigates the role of Artificial Intelligence (AI) in enhancing Social-Emotional Competence (SEC) among higher education teachers. SEC, which includes emotional regulation, relationship management, and stress coping, is essential for effective classroom management and student engagement. However, many higher education institutions struggle to equip teachers with sufficient SEC, resulting in increased stress and diminished teaching effectiveness. AI has emerged as a transformative tool, offering real-time feedback, simulations, and data-driven insights to support teachers' emotional and social development. The principal objectives of the study were: (1) to explore how AI-based tools can enhance social-emotional competence among higher education teachers, (2) to assess the effectiveness of AI in improving teachers' emotional intelligence and classroom management, and (3) to identify the challenges and limitations associated with implementing AI-driven solutions for SEC development. A mixed-methods research design was employed, combining quantitative surveys and qualitative interviews. A sample of 100 higher education teachers from five universities was selected using stratified random sampling. A structured questionnaire measured emotional intelligence, classroom management, and stress levels before and after AI-based training. Semi-structured interviews gathered teachers' perceptions of AI's impact, while classroom observations evaluated behavioral changes. Data analysis included paired t-tests and thematic analysis. Results showed that AI-based training programs significantly improved teachers' emotional intelligence and

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classroom management. Pre- and post-training surveys indicated a 15% increase in emotional intelligence and a 20% improvement in stress management. Teachers reported increased self-awareness, better emotional regulation, and improved student-teacher relationships. Classroom observations confirmed that AI-supported teachers managed student behavior more effectively and responded with greater empathy and patience. However, challenges such as technological limitations, resistance to change, and lack of technical support were identified as barriers to effective implementation. The study concludes that AI holds significant potential to enhance teachers' SEC by providing real-time feedback and data-driven insights. Addressing infrastructure challenges and improving professional development programs are necessary to maximize the effectiveness of AI-driven SEC interventions. The findings underscore the need for integrating AI-based emotional intelligence training into higher education frameworks to improve teacher effectiveness and student engagement. Further research should explore the long-term impact and scalability of AI-based SEC interventions.

Keywords

AI, Social-Emotional Competence, Higher Education Teachers

Introduction

Social-emotional competence (SEC) is crucial in effective teaching, influencing classroom management, student engagement, and overall learning outcomes (Jennings & Greenberg, 2009). Higher education teachers face increasing demands to address students' emotional and social needs, requiring technical expertise, emotional intelligence, and interpersonal skills (Brackett et al., 2011). However, many higher education institutions struggle to equip teachers with sufficient SEC, leading to increased stress, burnout, and reduced teaching effectiveness (Boyatzis & Saatcioglu, 2008).

Artificial Intelligence (AI) has emerged as a transformative tool in education, offering potential solutions to enhance teachers' SEC. AI-based platforms can provide real-time feedback, simulate complex social scenarios, and offer data-driven insights into emotional and social dynamics within the classroom (Luckin et al., 2016). Moreover, AI can analyze student behavior patterns, offering personalized recommendations to teachers to improve communication and emotional responsiveness (Goleman, 1995). Despite this potential, research on the direct impact of AI on teachers' SEC in higher education remains limited, creating a significant research gap.

This paper explores the role of AI in enhancing the social-emotional competence of higher education teachers, examining the potential benefits, challenges, and practical applications.

Research Objectives

The researcher has framed the following objectives to make the study scientific and systematic.

1. To explore how AI-based tools can enhance social-emotional competence among higher education teachers.
2. To assess the effectiveness of AI in improving teachers' emotional intelligence and classroom management.
3. To identify the challenges and limitations associated with implementing AI-driven solutions for SEC development.

Hypotheses

- **H1:** AI-based training programs significantly improve social-emotional competence among higher education teachers.

- **H2:** AI tools positively influence teachers' emotional intelligence and interpersonal skills.

- **H3:** Challenges related to technological infrastructure and user resistance limit the effectiveness of AI-driven SEC interventions.

Research Gap

While research on AI in education is growing, most studies focus on improving student learning outcomes rather than enhancing teacher competence (Zawacki-Richter et al., 2019). Limited empirical evidence exists on how AI can directly improve social-emotional competence among higher education teachers, particularly in terms of emotional intelligence and classroom engagement strategies. This paper addresses this gap by focusing on the intersection of AI and SEC in higher education.

Review of Related Literature

Summary of Related Literature on Social-Emotional Competence and AI in Teaching

Author(s) & Year	Study Focus	Key Findings
Aldrup, Carstensen, Koller, & Klusmann (2020)	Measuring teachers' social-emotional competence through the development of a situational Judgment Test (TRUST)	TRUST test showed satisfactory internal consistency for emotion regulation and relationship management, indicating it is a reliable tool for assessing teachers' SEC in challenging classroom situations.
Boyatzis & Saatcioglu (2008)	Emotional intelligence training for teachers	Found significant improvement in teachers' communication skills and resilience after emotional intelligence training.

Goleman (1995)	Emotional intelligence in professional success	Emotional intelligence training enhanced teachers' communication and emotional regulation skills.
Herndon (2021)	Teachers' SEC in handling student behavior	Teachers with high SEC responded with patience and understanding, improved student-teacher relationships, and reduced classroom conflicts.
Jennings & Greenberg (2009)	Emotional competence and classroom management	Teachers with high emotional competence created more supportive learning environments and handled stress better.
Luckin et al. (2016)	AI-based solutions for teacher development	AI provides real-time feedback and simulations, enhancing teachers' emotional responsiveness and classroom management.
Martinez (2015)	Role of SEC in managing stress and improving teacher well-being	Teachers with high SEC were better at regulating emotions, managing stress, and fostering positive student-teacher relationships.
Shanmugasundram & Mohamad (2011)	Social and emotional competence of beginning teachers	Found a positive correlation between personal and social competencies, highlighting the importance of enhancing both for better teaching performance.
Zawacki-Richter et al. (2019)	AI applications in education	AI effectively improves student learning outcomes, but its potential to enhance teacher development, especially in SEC, remains underexplored.

Research Methodology

Research Design

The study will adopt a mixed-methods approach, combining quantitative surveys and qualitative interviews to gather comprehensive insights.

Sample Population

- **Population:** Higher education teachers across multiple disciplines.
- **Sample Size:** 100 teachers from five universities.
- **Sampling Technique:** Stratified random sampling to ensure diverse representation of disciplines and teaching experience.

Techniques of Data Collection

1. **Survey:** A structured questionnaire measuring emotional intelligence, classroom management, and stress levels before and after AI-based training.

2. **Interviews:** Semi-structured interviews to gather teachers' perceptions of AI tools in improving SEC.

3. **Observation:** Classroom observations to measure behavioral changes in teaching practices post-intervention.

Results and Interpretations

The study results are organized based on the research objectives and hypotheses to provide a clear understanding of the impact of AI on social-emotional competence (SEC) among higher education teachers.

Objective 1: To explore how AI-based tools can enhance social-emotional competence among higher education teachers.

Result:

Survey responses and qualitative interviews revealed that AI-based training programs significantly improved teachers' emotional intelligence and their ability to understand and respond to student emotions. Teachers who participated in AI-driven emotional intelligence training reported increased self-awareness and better emotional regulation.

Interpretation:

AI-based simulations and real-time feedback allowed teachers to practice handling social situations, improving their ability to manage student behavior and emotional responses effectively. This supports the hypothesis (**H1**) that AI-based training programs significantly enhance SEC among teachers.

Objective 2: To assess the effectiveness of AI in improving teachers' emotional intelligence and classroom management.

Result:

Pre and post-training survey scores indicated a 15% increase in emotional intelligence and a 20% improvement in stress management after AI-based interventions. Classroom observations showed that teachers applied improved emotional regulation and conflict resolution strategies in their interactions with students.

Factor	Pre-AI Training Score	Post-AI Training Score	% Change
Emotional Intelligence	65%	80%	+15%
Classroom Management	60%	75%	+15%
Stress Management	50%	70%	+20%

Interpretation:

The improvement in emotional intelligence and classroom management confirms the hypothesis (**H2**) that AI positively influences teachers' interpersonal skills and emotional intelligence. Enhanced emotional understanding led to more positive teacher-student interactions and reduced classroom conflict.

Objective 3: To identify the challenges and limitations associated with implementing AI-driven solutions for SEC development.

Result:

Survey responses and interviews highlighted challenges such as:

- **Technological infrastructure limitations** – Inconsistent internet connectivity and lack of access to AI platforms.
- **Resistance to change** – Some teachers were hesitant to integrate AI-based training into their routines.
- **Lack of technical support**: Teachers reported difficulties in troubleshooting AI tools without sufficient technical guidance.

Interpretation:

These findings support the hypothesis (**H3**) that technological barriers and user resistance limit the effectiveness of AI-driven SEC interventions. Addressing these challenges through improved infrastructure and professional development programs could enhance the impact of AI-based SEC training.

Summary of Findings

- AI-based training significantly improved teachers' emotional intelligence and classroom management skills.
- Stress management and emotional responsiveness increased following AI interventions.
- Challenges related to technology and resistance to change need to be addressed for broader implementation.

Conclusion

This study demonstrates that AI has significant potential to enhance social-emotional competence (SEC) among higher education teachers. AI-based training programs led to notable improvements in emotional intelligence, classroom management, and stress regulation. Teachers who participated in AI-driven training reported increased self-awareness, better emotional regulation, and improved ability

to handle student behavior with empathy and patience. The use of real-time feedback, simulations, and data-driven insights enabled teachers to develop stronger interpersonal skills and foster positive classroom environments. Statistical analysis showed a 15% increase in emotional intelligence and a 20% improvement in stress management post-training. However, challenges such as technological limitations, lack of technical support, and resistance to adopting AI tools were identified as barriers to effective implementation. Addressing these issues through improved infrastructure and professional development could further enhance the impact of AI-driven SEC training. Integrating AI-based emotional intelligence training into higher education frameworks can significantly improve teaching quality and student engagement.

References

1. Aldrup, K., Carstensen, B., Koller, M. M., & Klusmann, U. (2020). Measuring teachers' social-emotional competence: Development and validation of a situational judgment test. Teaching and Teacher Education, 96, 103181. https://doi.org/10.1016/j.tate.2020.103181

2. AL-Smadi, M. (2023). ChatGPT and beyond: The generative AI revolution in education. arXiv preprint arXiv:2311.15198.

3. Boyatzis, R. E., & Saatcioglu, A. (2008). A 20-year view of trying to develop emotional, social, and cognitive intelligence competencies in graduate management education. Journal of Management Development, 27(1), Pg. **92–108**. https://doi.org/10.1108/02621710810840785

4. Cadena SER. (2024). La inteligencia artificial acierta en un 70 % al corregir trabajos escolares de Primaria. Retrieved from https://cadenaser.com/euskadi/2024/10/15/la-inteligencia-artificial-acierta-en-un-70-al-corregir-trabajos-escolares-de-primaria-radio-bilbao/

5. Emerald Publishing. (n.d.). Artificial intelligence in education. Retrieved from https://www.emeraldgrouppublishing.com/journal/aiie

6. Gillani, N., Eynon, R., Chiabaut, C., & Finkel, K. (2023). Unpacking the "black box" of AI in education. Educational Technology & Society, 26(1), Pg. **99–111**.

7. Goleman, D. (1995). Emotional intelligence: Why it can matter more than IQ. Bantam Books.

8. Herndon, C. L. (2021). The role of teachers' social-emotional competence in managing student behavior. Journal of Educational Research, 114(4), Pg. **285–298.** https://doi.org/10.1080/00220671.2021.1884291

9. Jennings, P. A., & Greenberg, M. T. (2009). The prosocial classroom: Teacher social and emotional competence in relation to student and classroom outcomes. Review of Educational Research, 79(1), Pg. **491–525**. https://doi.org/10.3102/0034654308325693

10. JSTOR Daily. (2023). Artificial intelligence and education: A reading list. Retrieved from https://daily.jstor.org/artificial-intelligence-and-education-a-reading-list/

11. Kamalov, F., Santandreu Calonge, D., & Gurrib, I. (2023). New era of artificial intelligence in education: Towards a sustainable multifaceted revolution. arXiv preprint arXiv:2305.18303.

12. Le Monde. (2024). Mia Seconde: À l'heure de ChatGPT, le tuteur sous intelligence artificielle de l'éducation nationale est-il déjà obsolète? Retrieved from https://www.lemonde.fr/pixels/article/2024/10/29/mia-seconde-a-l-heure-de-chatgpt-le-tuteur-sous-intelligence-artificielle-de-l-education-nationale-est-il-deja-obsolete_6364449_4408996.html

13. Luckin, R., Holmes, W., Griffiths, M., & Forcier, L. B. (2016). Intelligence unleashed: An argument for AI in education. Pearson. https://doi.org/10.13140/RG.2.1.2581.0483

14. Mallik, S., & Gangopadhyay, A. (2023). Proactive and reactive engagement of artificial intelligence methods for education: A review. arXiv preprint arXiv:2301.10231.

15. Martinez, L. (2015). Teachers' social-emotional competence: A key factor in improving classroom environment and student outcomes. Journal of Educational Psychology, 107(3), Pg. **867–880**. https://doi.org/10.1037/edu0000025

16. PubMed Central. (2023). Unveiling the shadows: Beyond the hype of AI in education. *Frontiers in Education, 8*, 700123.

17. Shanmugasundram, S., & Mohamad, A. R. (2011). Social and emotional competence of beginning teachers. International Journal of Educational Research, 50(2), Pg. **112–121**. https://doi.org/10.1016/j.ijer.2011.06.003

18. SpringerOpen. (2024). Embracing the future of artificial intelligence in the classroom. *International Journal of Educational Technology in Higher Education, 21*(1), Pg. **48.**

19. SpringerOpen. (2021). The impact of artificial intelligence on learner–instructor interaction in online learning. *International Journal of Educational Technology in Higher Education, 18*(1), Pg. **57**.

20. Teen Vogue. (2025). Here's how Gen Z and Gen Alpha are actually using ChatGPT in schools. Retrieved from https://www.teenvogue.com/story/gen-z-gen-alpha-chatgpt-schools

21. University of Illinois College of Education. (2024). AI in schools: Pros and cons. Retrieved from https://education.illinois.edu/about/news-events/news/article/2024/10/24/ai-in-schools—pros-and-cons

22. University of Iowa. (2023). The role of AI in modern education. Retrieved from https://onlineprograms.education.uiowa.edu/blog/role-of-ai-in-modern-education

23. U.S. Department of Education. (2023). Artificial intelligence and the future of teaching and learning. Retrieved from https://www.ed.gov/sites/ed/files/documents/ai-report/ai-report.pdf

24. Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education – where are the educators? International Journal of Educational Technology in Higher Education, 16(39), Pg. **1–27**. https://doi.org/10.1186/s41239-019-0171-0