

The Role of AI Chatbots in Developing Soft Skills in Pre-Service Teacher Education

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Abstract

Artificial intelligence (AI) is playing an increasingly influential role in higher education by offering innovative tools for instructional support, professional development, and pedagogical enhancement (Atlas, 2023; Mishra & Varshney, 2024). While AI chatbots have been widely used for content delivery and assessment (Labadze et al., 2023), their potential to function as conversational agents that foster interpersonal and emotional competencies remains in its early stages. The present study seeks to examine the contribution of AI chatbots in facilitating soft skills instruction, with a particular focus on students' mastery of empathic competencies.

An AI-powered chatbot was developed to simulate emotionally charged discourse through structured role-play scenarios involving a novice teacher and an experienced classroom educator. These simulations were incorporated into a learning assignment within a course specifically designed to cultivate empathy. Twenty-four pre-service teachers participated in the study, engaging first in conversations with the AI chatbot and subsequently analyzing the discourse to identify verbal empathic patterns using the EPIC model (Weinberger et al., 2022).

A mixed-methods research approach (McKim, 2017) was employed to assess participants' ability to recognize and apply empathic patterns. Qualitative analysis focused on determining the accuracy of pattern identification and the specific types of patterns utilized in the dialogues. Quantitative analysis involved calculating the frequency of empathic pattern recognition and usage. Additionally, inferential statistical tests, including Pearson correlations and t-tests, were conducted to explore relationships between these dependent variables and demographic factors such as age, gender, and prior academic background, using SPSSX software.

The analysis of student-chatbot interactions provided a comprehensive assessment of participants' empathic competencies. Students identified between 4 and 15 empathic patterns and applied between 2 and 13 patterns during their conversations, indicating significant variability across the sample. A paired-sample t-test revealed a statistically significant difference between the mean number of recognized patterns and those actively applied ($p < .001$) – see table 1.

Table 1: Comparison Between the Use and Recognition of Empathic Patterns

Variable	N	M	SD	t
Use of empathic patterns	24	5.54	2.48	
Recognition of empathic patterns	24	8.58	3.31	-4.64**

$p < .001$.

Gender-based analysis (table 2) suggested that female participants used empathic patterns more frequently ($p = .098$) and demonstrated a stronger ability to recognize them, though this finding was not statistically significant.

Table 2: Differences in Recognition and Application of Empathic Patterns Between Female and Male Students

	Female Students (N= 13)		Male Students (N= 11)		t
	M	SD	M	SD	
Recognition of empathic patterns	9.38	3.50	7.64	2.94	1.33
Application of empathic patterns	6.15	2.51	4.82	2.36	1.33*

$p = .098$