

GOOD ENOUGH TO TALK TO?

EXPLORING THE ACCEPTANCE AND SOCIAL PRESENCE OF AI CHATBOTS FOR HUMAN-CENTERED TASK TRAINING IN ELECTRICAL ENGINEERING EDUCATION

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1. Introduction

Engineering graduates often lack strong communication skills despite the importance of working with non-technical stakeholders in professional practice. Recent advances in large language models (LLMs) enable AI role-play chatbots that simulate clients or stakeholders, offering scalable communication training through simulation-based learning. However, concerns remain about realism, bias, empathy, and the risk of students developing only AI-specific communication skills rather than transferable human-centered abilities.

2. Research Question

- What are the pedagogical implications of using a generative AI chatbot as a simulated non-technical stakeholder for human-centered task training in engineering education?
 - SQ1: To what extent do students perceive a generative AI chatbot as useful and easy to use for practising with a simulated non-technical client?
 - SQ2: How do electrical engineering students perceive the social presence of the simulated client during chatbot-based stakeholder practice?
- What do electrical engineering students' reflective responses and interaction patterns reveal about the requirements for using a generative AI chatbot for training?

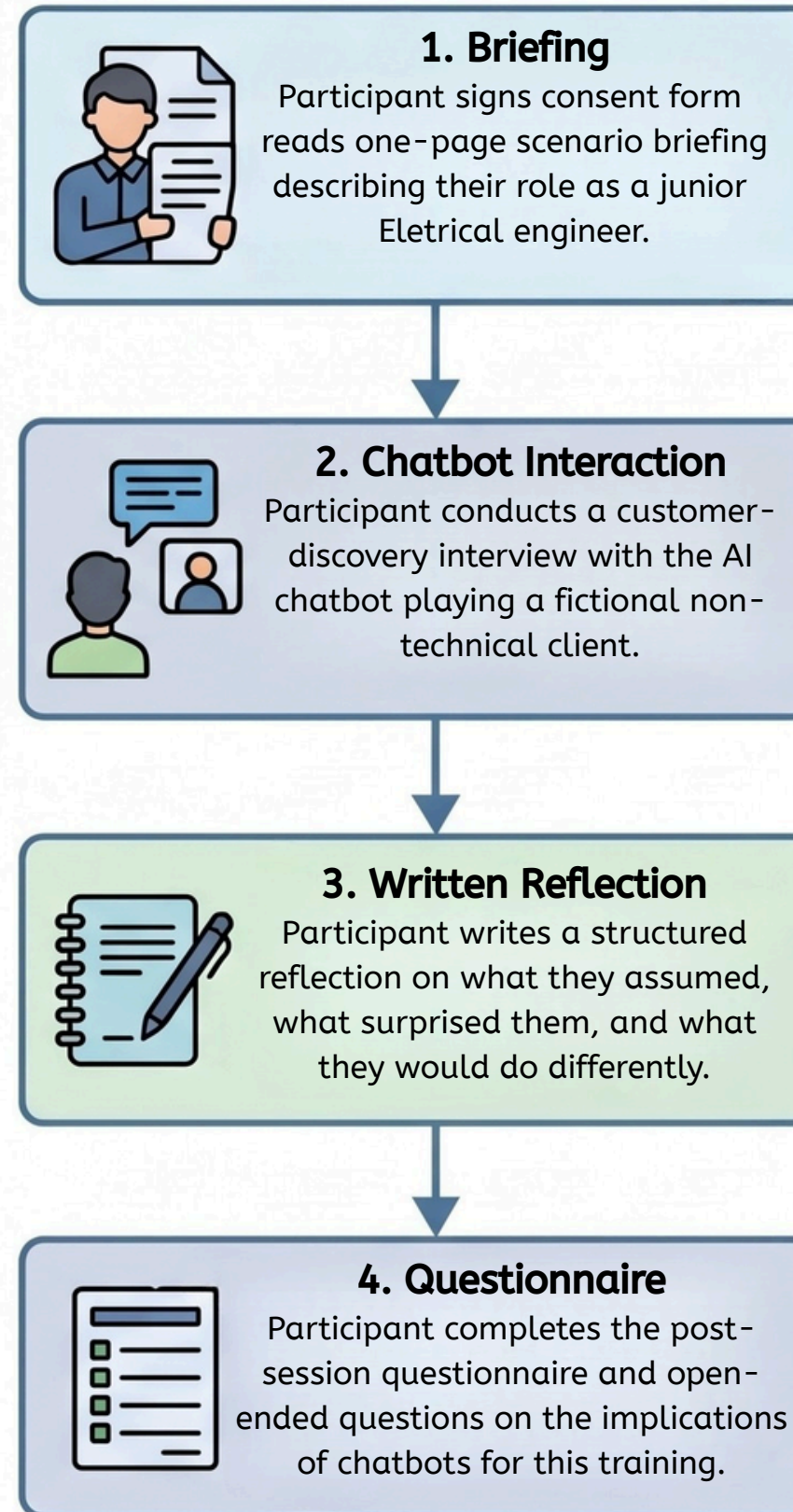
3. Measured Constructs

- Effort Expectancy (EE): the degree of ease associated with using the chatbot.
- Relevance (R): the degree to which the practice is perceived as relevant to professional engineering practice. (SQ1)
- Performance Expectancy (PE): the degree to which a student believes that using the chatbot will help them perform the communication task better. (SQ1)
- Behavioural Intention (BI): the strength of a student's intention to use the chatbot for future practice. (SQ1)
- Social Presence (SP), the salience of the other party in the interaction and the consequent salience of the interpersonal relationship. (SQ2)

Social presence matters because it shapes how far the practice approximates a real stakeholder encounter, where too little leaves the rehearsal hollow and too much risks students mistaking the simulation for the real thing.

Interaction transcripts, written reflections, and open-ended answers were coded inductively for interaction patterns, the recurring ways students opened and steered the interview, and for how they appraised the chatbot, then grouped into themes through **reflexive thematic analysis**. (RQ2)

4. Experiment Flow

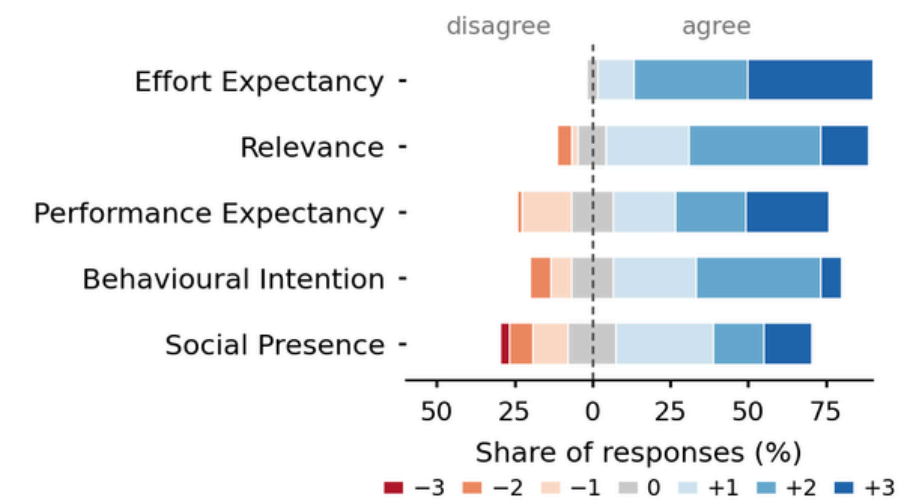


15 Electrical Engineering Students

- BSc Year 2, 2 participants.
- BSc Year 3, 5 participants.
- MSc Year 1, 3 participants.
- MSc Year 2, 3 participants.
- Extended track (Year 5 or later), 2 participants.

5. Results

Quantitative



Spearman correlations between subscales



- Acceptance was endorsed more strongly and uniformly than Social Presence. Effort Expectancy and Relevance were positive, while Social Presence was the lowest and most variable.
- Intention to keep using the chatbot tracked usefulness and relevance (BI-PE $\rho = 0.79$, BI-R $\rho = 0.81$) more than ease of use (BI-EE $\rho = 0.41$).
- Social Presence was only weakly tied to usefulness (SP-PE $\rho = 0.34$), so a more present chatbot did not register as a more useful one.

Qualitative

Theme 1: A Practical Stepping Stone

Theme 2: Where the interlocutor fell short

Theme 3: Concerns on reliance and trust

6. Takeaways and Future

- Use the chatbot as a stepping stone toward real stakeholder contact, not a substitute for it. (Simulation with real people is still more effective)
- Brief students to converse naturally so practice targets communication, not prompt engineering.
- Pair the session with a debrief that surfaces where the simulation fell short.
- Treat realism as a double-edged feature and flag the overtrust risk explicitly.
- Widen future work across faculties and consult educators and industry, not students alone.

Students' Own Words

"A LOW-LEVEL WAY OF SPARRING"
"IT LACKS THE EMPATHY OF A REAL HUMAN CONNECTION"
"ALL QUESTIONS LEAD TO THE SAME THING, REPEATING QUESTIONS LEAD TO THE SAME THING"
"IT WOULD ALSO MAKE ME LAZY BECAUSE MY BRAIN WOULD NOT BE STIMULATED"
"IT FELT MORE LIKE E-MAILING"

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