What is Generative Agent for Teacher Training?

RQ1. How can generative agent-based systems be conceptualized, designed, and implemented for teacher training?

- Teacher Training programs have often faced criticism for placing greater emphasis on theoretical knowledge at the expense of practical experiences.
- This study proposed "Generative Agent Design for Teacher Training." This approach utilizes a problem-solving simulation that involves GPT-4 based agents for immersive teacher training.
- By integrating the GPT-4 model with the widely used gaming platform Roblox, we developed more realistic educational scenarios which provide pre-service teachers.

RQ2. How are the personas for generative agents conceptualized and developed?

- Persona definition in the research refers to specific and fictional depictions of target users that guide the behaviors and responses of generative agents.
- Nine personas were created for the generative agents, each characterized by various attributes.
- The construction of these personas involved four stages: (1) creating an initial seed persona, (2) researching challenges in flipped learning classes, (3) generating eight additional drafts using GPT-4 based on the seed persona and challenges, and (4) filtering and refining the drafts to create the final personas.

RQ3. What design considerations have in-service teachers suggested to improve the developed generative AI driven simulation?

Interview

- Teachers experienced a more immersive and authentic learning environment. This was attributed to the AI's ability to generate spontaneous and unpredictable conversations, unlike typical rule-based interactions.
- Participants found it difficult to differentiate between various problem causes and the characters of virtual agents.
- Unclear if the issue was due to the AI's performance or the limited time in the test.
- While the realism provided by the AI was beneficial, it also posed a risk of distracting pre-service teachers from the main learning goals.

Key Design Considerations Identified by Teachers

Enhanced Embodiment of Agents:

- Need for realistic sounds, actions, and movements in agents.
- Evidence shows physically well-embodied agents improve learning experiences (e.g., gestures, facial expressions).

Balance Between Authenticity and Distraction Management:

- Essential to provide clear guidance to keep students focused on primary learning objectives while engaging with realistic interactions.
- Research highlights the benefits of reducing distractions in virtual learning environments for improved learning performance.

Alignment with Established Learning Theories:

- VR simulations must be consistent with core educational theories.
- Integration of pedagogical models like inquiry-based, discovery learning, and experiential learning is crucial.
- Content should integrate domain-specific learning theories into experiential models to ensure relevance and effectiveness.