

# Virtual Reality for Clinical Education in the Department of Communication Sciences & Disorders: A Student-Driven Evaluation

**Background:** This project investigates the impact of immersive virtual reality (VR) simulations compared to traditional online simulations in clinical education. VR offers interactive environments shown to be effective for student education in allied health fields such as physical and occupational therapy. This study aimed to improve student learning outcomes, confidence, and perceived clinical competence. The project aligns with departmental commitments to evidence-based education, inclusive assessment practices, and continuous program improvement

## Research Question/Objectives:

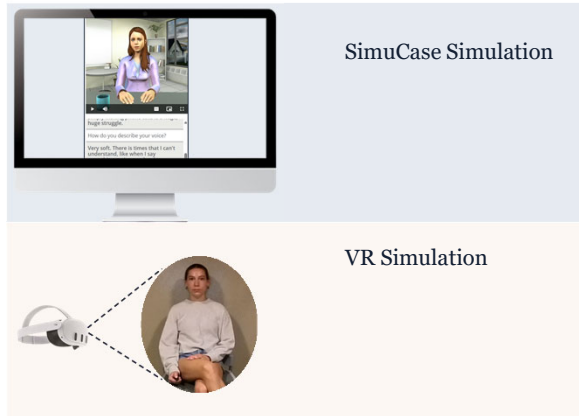
Do VR-based clinical case simulations yield measurable differences in learning compared to computer-based, SimuCase simulations?

- Evaluate changes in student knowledge, confidence, and self-reported competence through pre- and post-intervention surveys.
- Compare the relative effectiveness of VR-based and online simulations in preparing students for clinical encounters.
- Generate student-informed recommendations to guide future use of simulation technologies in departmental curricula.

## Methods

Protocol approval: IRB #25-190

**Participants:** Master's-level students were assigned to one of two groups: a **SimuCase simulation** or a **VR-based case simulation**



## Data Collection and Analyses:

### Pre- and post-surveys:

- Likert-scale ratings
- Open-ended reflections

### Quantitative analyses:

- Clinical decision accuracy using a mixed-effects logistic regression model
- Pre/Post confidence ratings using a mixed-effect linear regression model

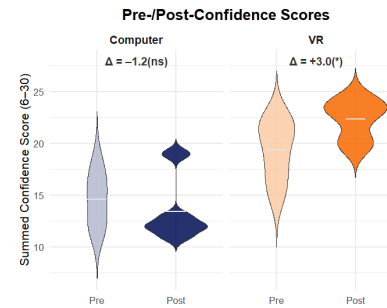
### Qualitative analyses:

- Reflections on the case simulations using structured thematic coding (codebook)

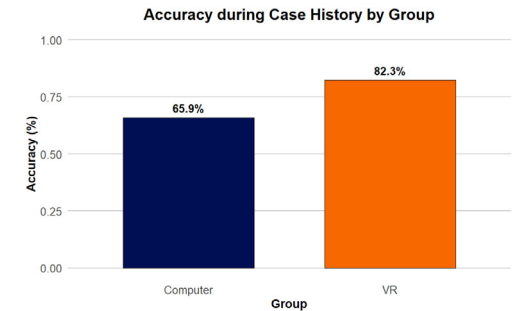
## Student Roles:

- Completing a clinical case history simulation.
- Engaging in pre- and post-assessments.
- Offering recommendations to refine future simulations and curricular practices.

**Results (Quantitative):** VR group reported significant increases in confidence post-simulation.



**Results (Quantitative):** VR group demonstrated significantly higher clinical decision accuracy.



**Results (Qualitative):** Students reported issues with the SimuCase on open-ended post-surveys.

Theme	Codebook definition	n
SimuCase Deficiencies	Students critiqued the SimuCase platform, noting barriers to learning such as limited feedback (potentially due to completing in assessment mode instead of learning mode), lack of interaction, or difficulty applying material to authentic scenarios.	4
Change in Confidence	Students described a shift (positive or negative) in their confidence after completing the learning activity. Decreased confidence often reflected greater awareness of clinical complexity, while increased confidence reflected improved understanding or skill acquisition.	3
Pro VR Case History	Students provided positive feedback about the VR component of the activity, describing it as immersive, realistic, and beneficial for clinical engagement. They often mentioned that VR enhanced their focus, recall, or understanding of case history taking.	2
Applied Learning	A student discussed integration of classroom learning into practice during the simulation. The reflection highlights how the activity helped them connect evaluation and treatment processes.	1
Desire for Continued Learning	A student expressed motivation to improve their understanding of voice evaluation and treatment beyond the activity. This reflection included interest in more feedback, in-class discussion, and continued exposure to real or simulated clients.	1

## Limitations

- Small sample limiting statistical power and generalizability.
- Possible response bias (voluntary surveys).
- Single-course (limited external validity).
- Scoring asymmetry between SimuCase and VR groups
- Only immediate outcomes measured, no evidence of long-term skill retention.

## Conclusions

- VR showed potential for case studies.
- VR group students reported gains in confidence.
- Successful implementation of student-driven assessment to shape teaching practices.