



Cyprus
University of
Technology

Faculty of
Communication and
Media Studies

Bachelor's Thesis

**Evaluation of an immersive virtual reality application for the
development of critical thinking and problem-solving skills in
nursing students**

Vlad Ott

Limassol, May 2025

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The approval of the thesis by the Department of Communication and Internet Studies does not imply necessarily the approval by the Department of the views of the writer.

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ABSTRACT

This study investigates the effectiveness of an immersive virtual reality (VR) application, ViReTrain, in fostering critical thinking and problem-solving skills among third-year and final-year nursing students enrolled in a palliative care class. As nursing education evolves, innovative teaching methods such as VR-based training are being explored to enhance traditional learning approaches. The study employed a one-group pretest-posttest research, with 13 undergraduate nursing students, who were selected using a convenience sample, and completed pre- and post-test questionnaires before and after engaging with the VR simulation. The study assessed the impact of the VR simulation on students' critical thinking and problem-solving skills. Two research questions guided the study: (1) Can immersive VR improve nursing students' critical thinking across the five steps of the nursing process? and (2) What are students' perceptions of engagement, immersion, and usability after interacting with the VR application? Two data sources were used: pre- and post-tests measuring self-assessed critical thinking using the nursing process framework, and a questionnaire evaluating engagement, immersion, and usability after the VR experience. The findings revealed a general increase of mean scores across all five steps of the nursing process (assessment, diagnosis, planning, intervention, and evaluation). However, the only result that showed a statistically significant improvement was the 'Assessment' ($t(12) = -2.46, p = 0.03$) step of the nursing process, while other steps showed a slight (but not significant) increase. Questionnaire results indicated high emotional engagement ($M = 6.11/7$) but low usability ($M = 4.42/7$), suggesting technical barriers may affect learning outcomes. The findings contribute to a deeper understanding of how immersive VR technologies can be integrated into nursing education to better prepare students in developing specific aspects of critical thinking, particularly, assessment skills, while also fostering student engagement and emotional involvement, and complex clinical situations. The study also highlights the potential of VR-enhanced training as a complementary tool for developing essential competencies in future healthcare professionals.