Universidad del Desarrollo

TIIKM FUTURE EDUCATION

THE 7TH INTERNATIONAL CONFERENCE ON FUTURE EDUCATION 2024
"Using Modern Technologies to Improve Education"
11TH – 12TH JULY 2024 | BANGKOK, THAILAND

Immersive Virtual Reality Intervention With 360° Videos For Clinical Reasoning Training In Physical Therapy Students: A Pilot Experience

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WHAT IS REALITY?

...WHAT WE CAN FEEL

SIGNAL TRANSDUCTION

WHAT IF...

SIMULATION AND CLINICAL REASONING

- Extensive early exposure benefits
  - Estudents increase confort among patients
  - More efficient clinical skills
  - Active learning
  - Increased perception of importance
  - Less difficulty in practical transition

DeSipio J, Gaughan J, Perlis S, Phadtare S. Use of Real Patients and Patient-Simulation-Based Methodologies for Teaching Gastroenterology to Pre-Clinical Medical Students. *Healthcare (Basel)*. 2018;6(2):61. Published 2018 Jun 12. doi:10.3390/healthcare6020061

IF CLINICAL SIMULATION IS ALREADY USEFUL, WHAT CAN VIRTUAL REALITY PROVIDE?


WE CAN CREATE THE
SCENARIO WE WANT

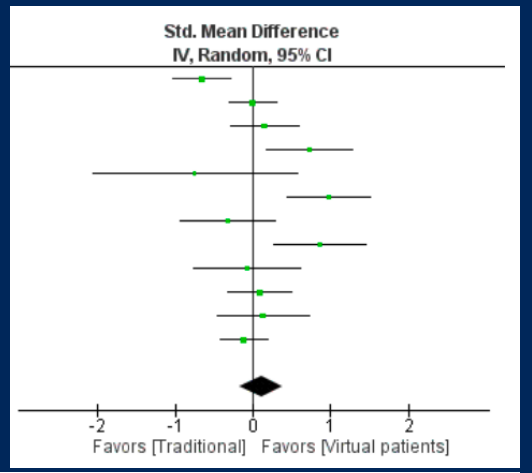
WE CAN CREATE THE SCENARIO WE WANT

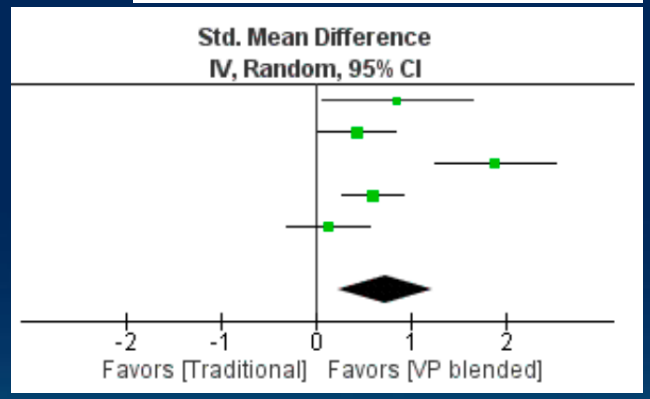
- Speed
- Variability
- Uncommon conditions
- Environments
- *Automatic and individualized data

WHAT DOES THE EVIDENCE SAY?

VIRTUAL PATIENTS VS TRADITIONAL METHODS

- Virtual patients are equally or more effective than traditional methods
- The active component is one of the main differentiating factors
- Variables considered
  - Clinical reasoning
  - Procedural Skills
  - Teamwork

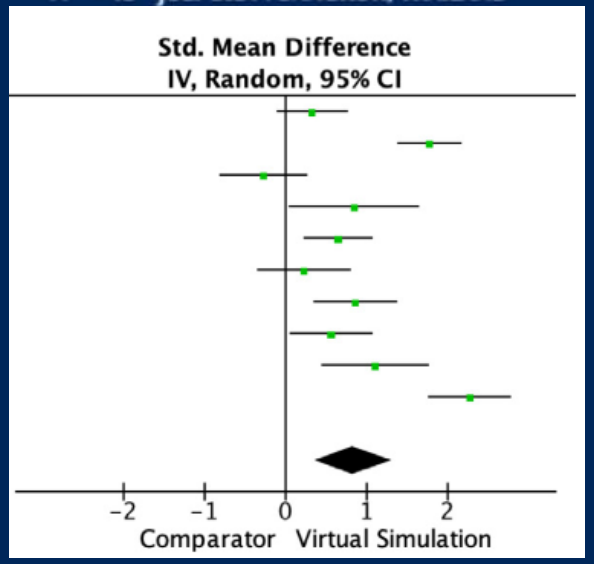


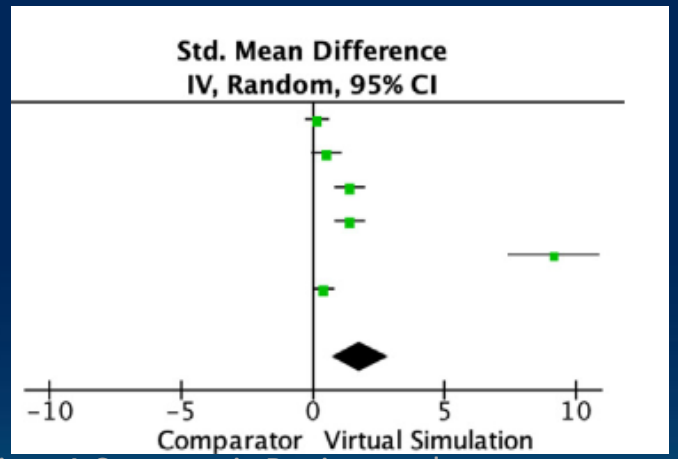


Kononowicz AA, Woodham LA, Edelbring S, et al. Virtual Patient Simulations in Health Professions Education: Systematic Review and Meta-Analysis by the Digital Health Education Collaboration. *J Med Internet Res*. 2019;21(7):e14676. Published 2019 Jul 2. doi:10.2196/14676

WHAT DOES THE EVIDENCE SAY?
IMPROVEMENT OF CLINICAL REASONING

- Significant improvement in applied knowledge (know how)
- Significant improvement in clinical performance (show how)
- Mainly in the context of acute care
- Procedural Skills
- At least 30 minutes
- Immersive and non-immersive environments

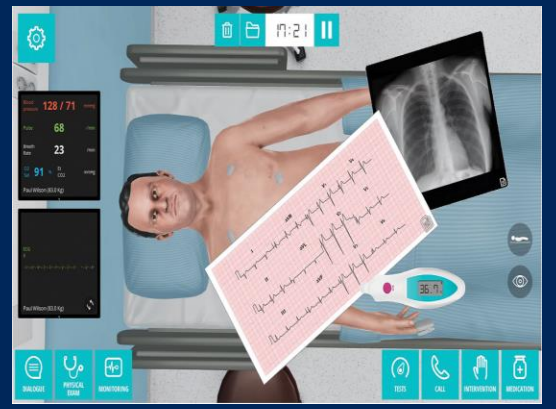


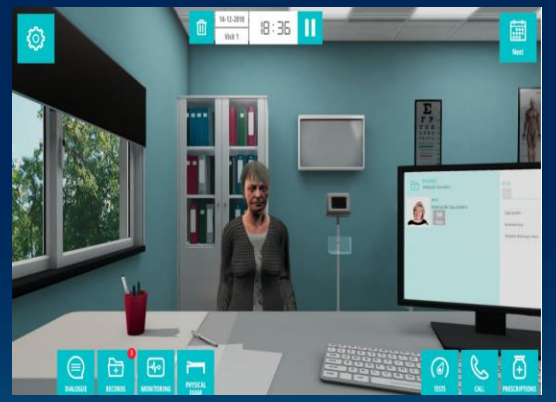


Sim JJM, Rusli KDB, Seah B, Levett-Jones T, Lau Y, Liaw SY. Virtual Simulation to Enhance Clinical Reasoning in Nursing: A Systematic Review and Meta-analysis. *Clin Simul Nurs*. 2022;69:26-39. doi:10.1016/j.ecns.2022.05.006

WHAT DOES THE EVIDENCE SAY?
RETENTION, REASONING AND SATISFACTION

- Significant improvement in clinical reasoning
- Improvement in retention up to 2 months post-intervention
- Improved learning satisfaction
- Combination of instructions, simulation and debrief generates greater impact
- No changes in self-efficacy
- Importance of mixing with other instances





Padilha JM, Machado PP, Ribeiro A, Ramos J, Costa P. Clinical Virtual Simulation in Nursing Education: Randomized Controlled Trial [published correction appears in J Med Internet Res. 2019 Jun 27;21(6):e14155]. *J Med Internet Res*. 2019;21(3):e11529. Published 2019 Mar 18. doi:10.2196/11529

WHAT DOES THE EVIDENCE SAY?
OTHER FACTORS

- Physical laboratory space
- Clinical Scenarios
- Costs
- Individualization
- Safe environment

...VIRTUAL SIMULATION WORKS, WHY?

IT WORKS, WHY?

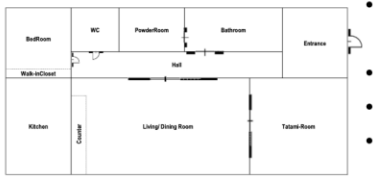
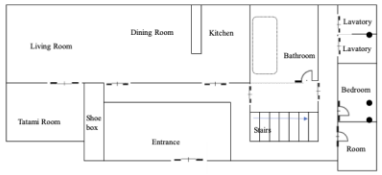
- Student Commitment to Decision-Making
- Troubleshooting in Clinical Scenarios
- Performance feedback
- Effectiveness depends on quality of experience
- * Natural to human beings

IT WORKS, WHY?

- PLANNING!
- Just a strategy to reach an end
- Measurement Tools

Appendix A

Table A1. Outline of the themes of simulation programs.

Subjects	Goals of the Class	The Layout of Each Subject's Home	Scenarios of Simulation
A household of an older person	(1) Understanding the lives of each subject in their homes. (2) Identifying living conditions that will affect the subject's health conditions. (3) Considering concrete questions to identify or understand each subject's health and life.		• An 82-year-old female. • Past health history: acute myocardial infarction, chronic heart failure, hypertension, obesity, and a history of falls at her home. • Hospitalization: no history of heart failure within five years due. • Her daughter informed us that she had recently forgotten to take her medication. • She recently fell and sustained an abrasion on her forehead while walking from the kitchen to the Japanese-style room.
A household of the older couple			• An 80-year-old male. • His past health history: (1) hypertension (since age 55), (2) Parkinson's disease (since age 69): the third grade of Hoehn and Yahr. Medication: (1) L-dopa due to having on-off phenomenon, muscle stiffness, and slowness of movement; (2) antihypertensive medication. • His wife is 79 years old. • Her past health history: (1) type 2 diabetes, (2) a history of falling at home, fracturing her right femoral neck, and undergoing artificial head replacement surgery. After the surgery and rehabilitation, she was discharged from the hospital with a cane.
A household of parents with an infant			• A 41-year-old male and 39-year-old female, and an infant. • Father's work: a firefighter with repeating day and night shifts. • Mother's status: taking on the first maternity leave. • Her past health condition: none. • Her health condition: lack of sleep. • She is almost solely responsible for caring for her infant and doing her best to provide good care for her baby.

UNIVERSIDAD DEL DESARROLLO (UDD) EXPERIENCE: CLINICAL REASONING AND 360° VIDEOS

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TEAM WORK

PT, MSc María Jesus Mena

PT, ScD© Sebastián Lama

PT, MSc Macarena Wainer

Sebastian Bustos & Dante Crovetto

PT, MSc Pablo Suárez

PT, MSc Loreto Durcudoy

PT, MSc Camilo Pávez

futureofedu.co

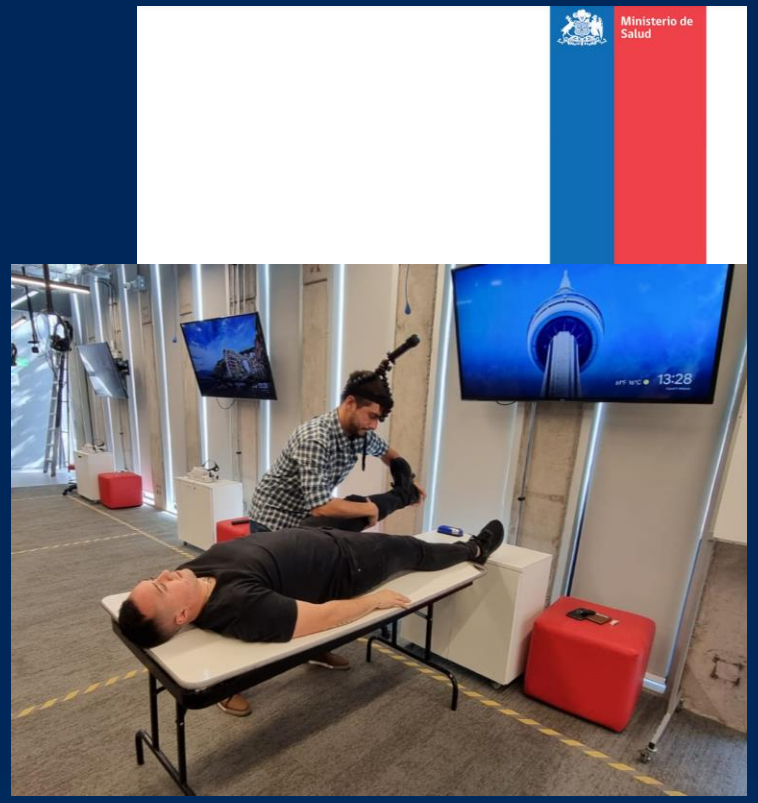
UDD EXPERIENCE: CR AND 360º VIDEOS
OPPORTUNITIES FOR IMPROVEMENT

- *Student*
  - *More individuality*
  - *Increased number of clinical cases*
  - *Immersive Experience*
  - *Reference from experienced clinicians*
- *Teacher/Institution*
  - *Individual Report*
  - *Cost reduction*
  - *Decrease in internship costs*
  - *Greater content coverage*

UDD EXPERIENCE: CR AND 360º VIDEOS

DESIGN

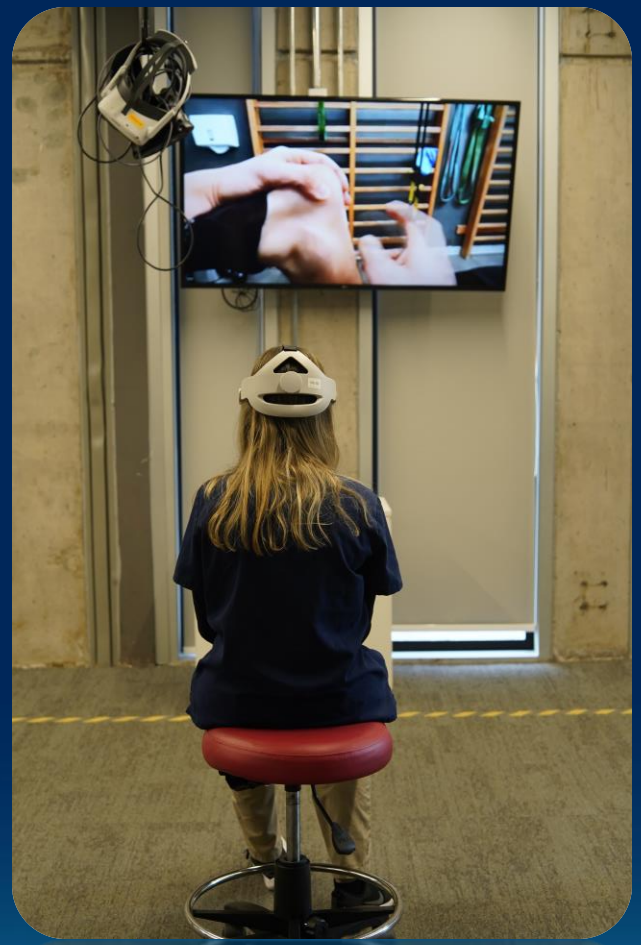
- Analysis with the coordinating team of the course
- Definition of content for piloting
- Creation of the clinical case with expected answers
- Definition of technical approach
- Recording of all possible scenarios
- Creation of satisfaction survey



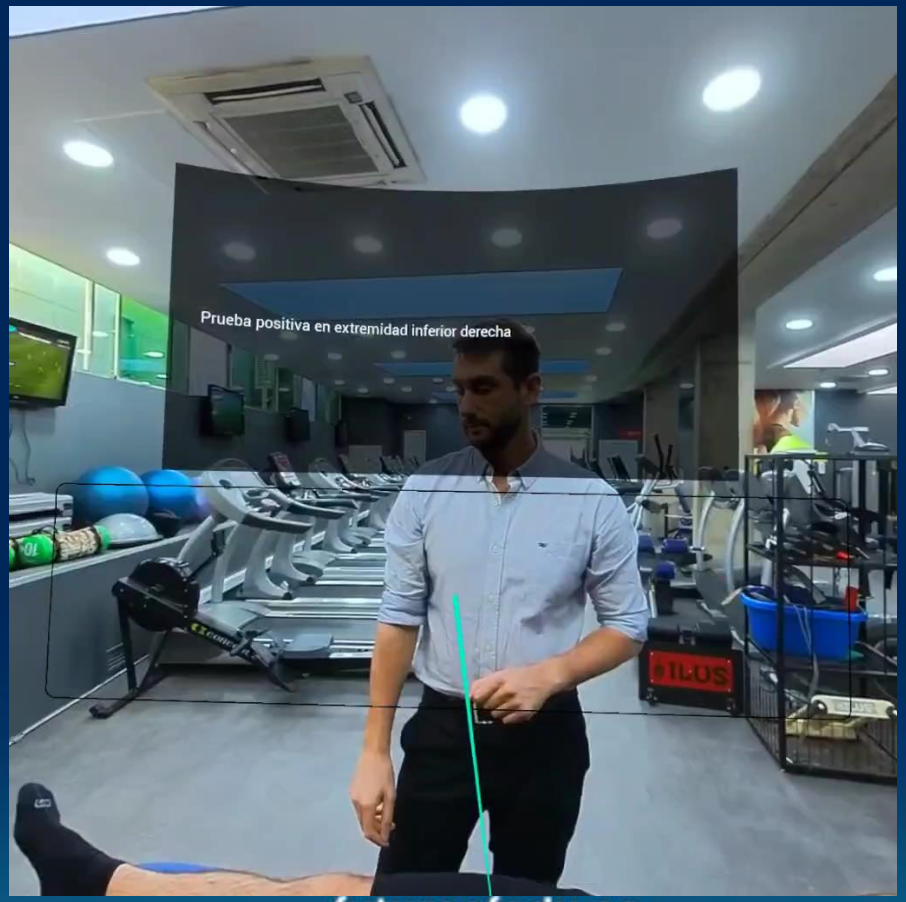
UDD EXPERIENCE: CR AND 360º VIDEOS

IMPLEMENTATION

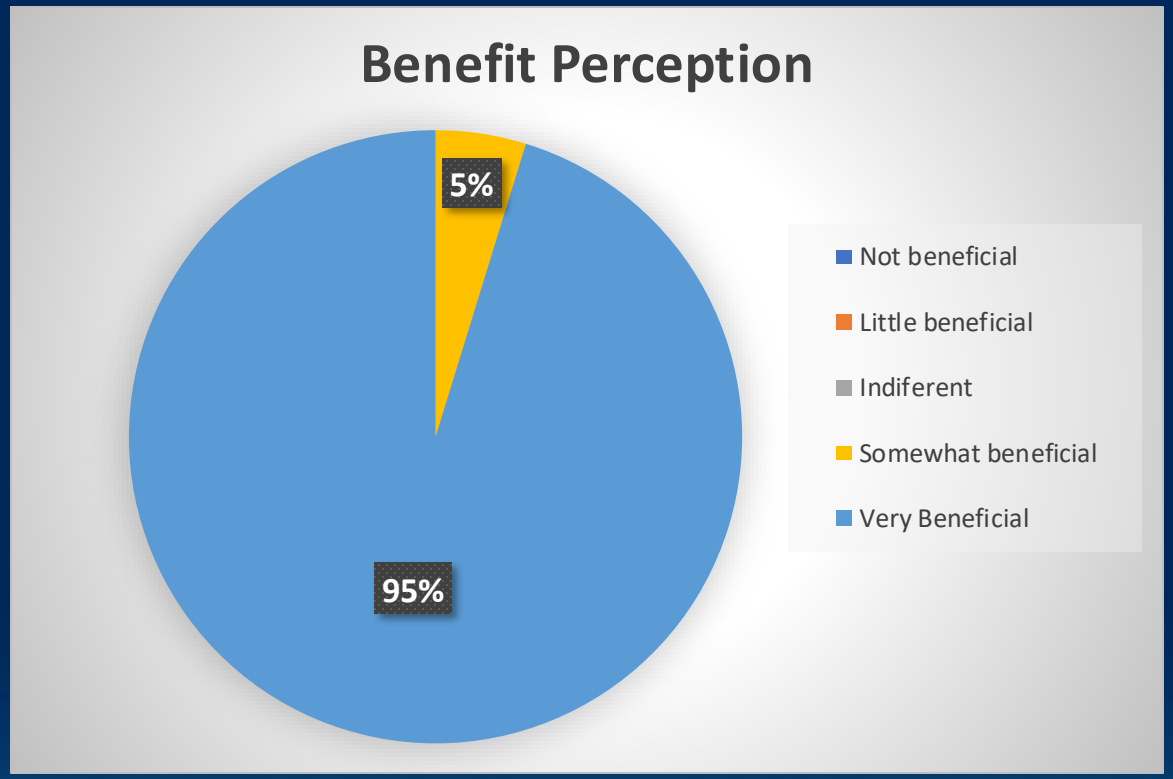
- Dividing the course into sections (42 students)
- One student per device
- Explanation of the activity and instructions
- Evaluation by perception survey

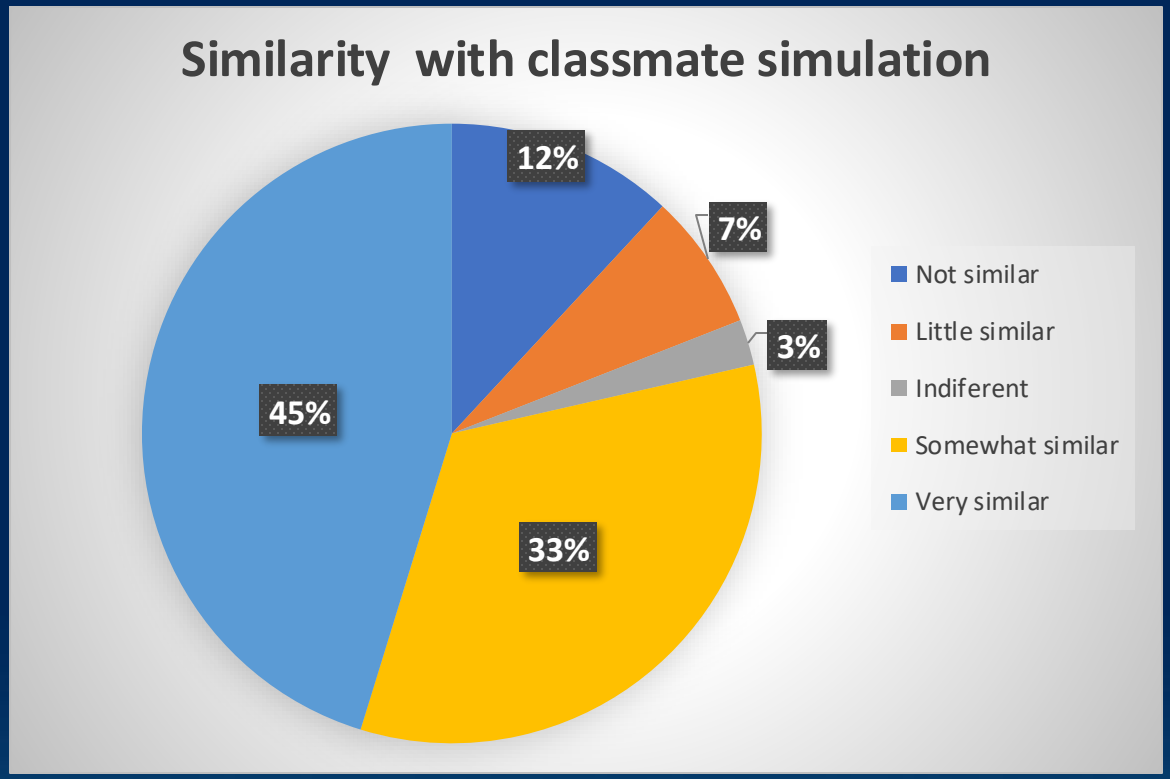


UDD EXPERIENCE: CR AND 360º VIDEOS
IMPLEMENTATION



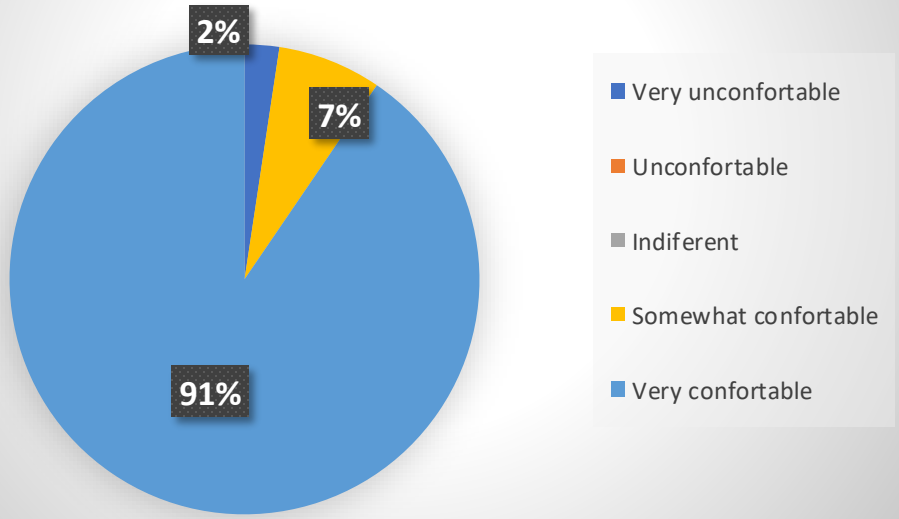
UDD EXPERIENCE: CR AND 360º VIDEOS
RESULTS



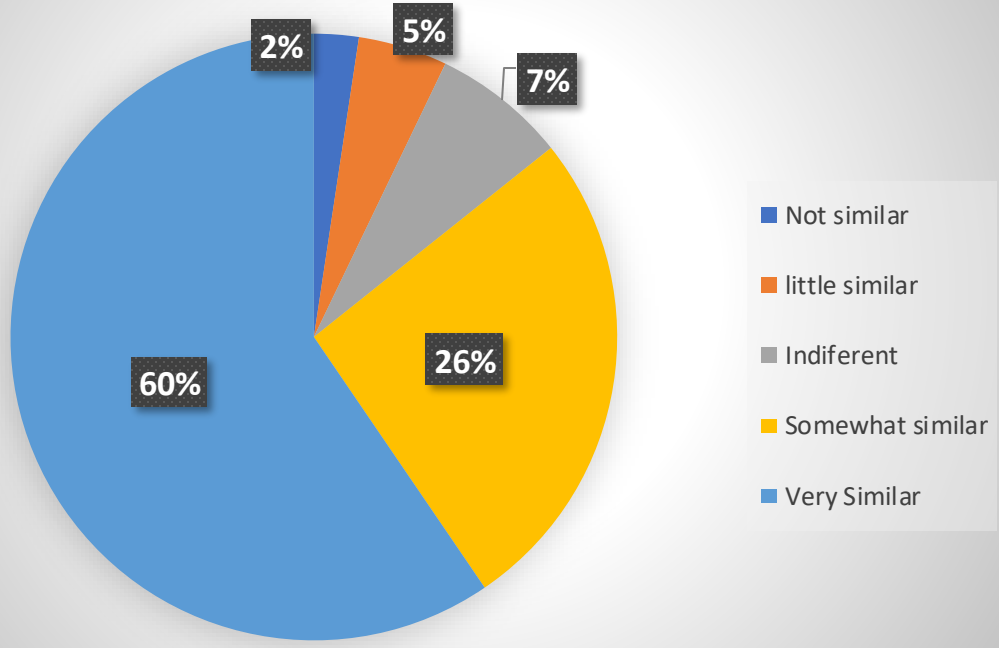


UDD EXPERIENCE: CR AND 360º VIDEOS
RESULTS

How comfortable in relation to activity with simulated case among classmates

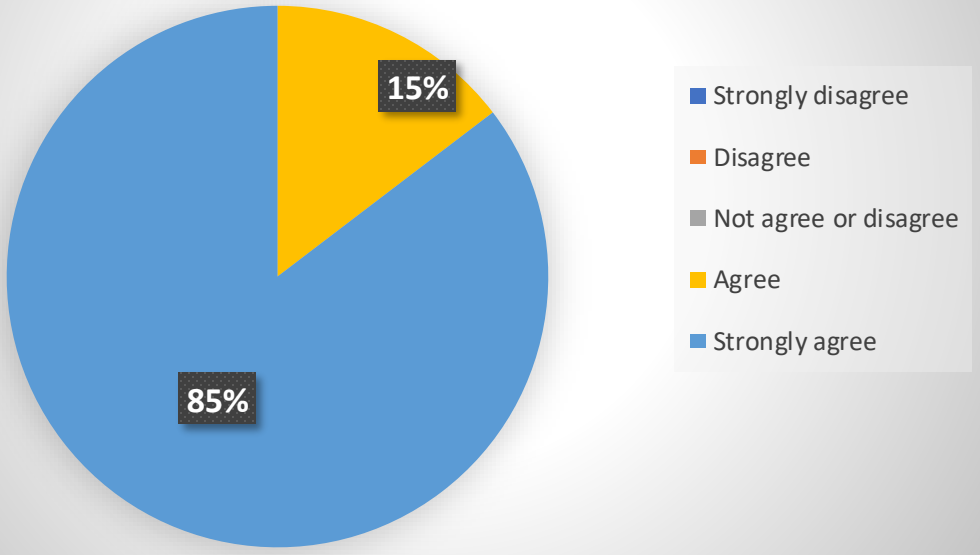


Comparison with real patient

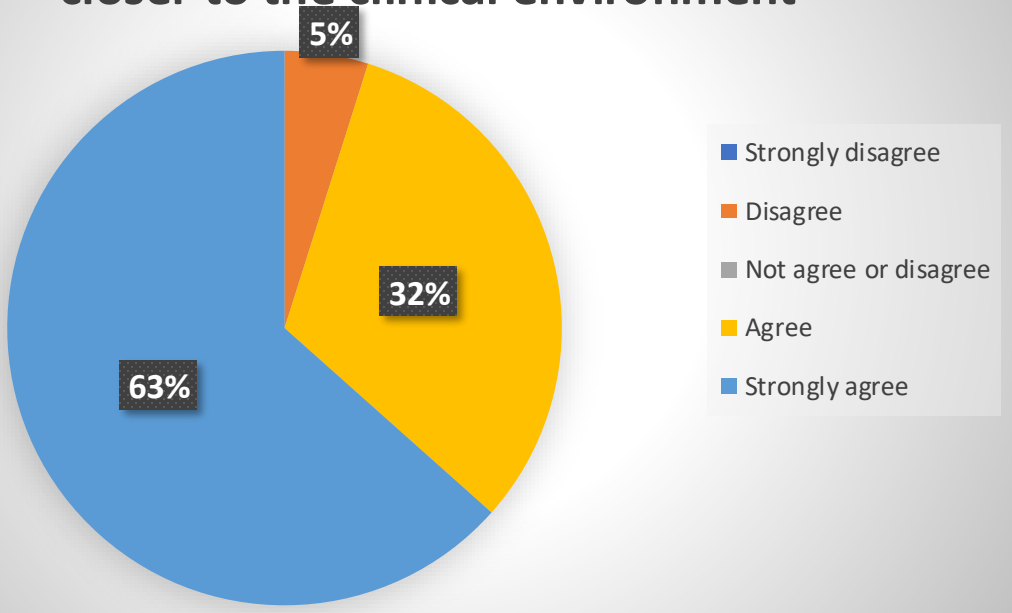


UDD EXPERIENCE: CR AND 360º VIDEOS
RESULTS

"Using 360º videos helped me to apply content seen in the subject"

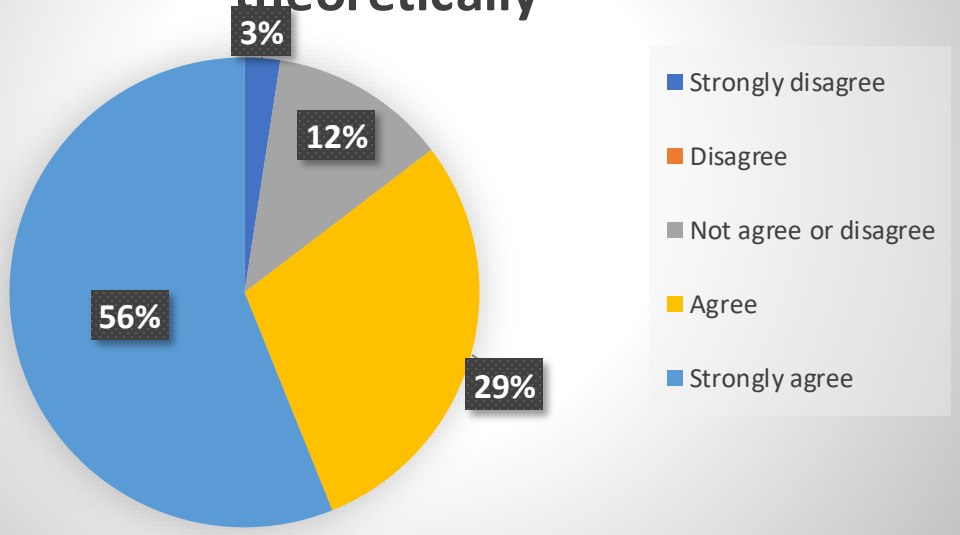


"Using 360º videos helped me to feel closer to the clinical environment"

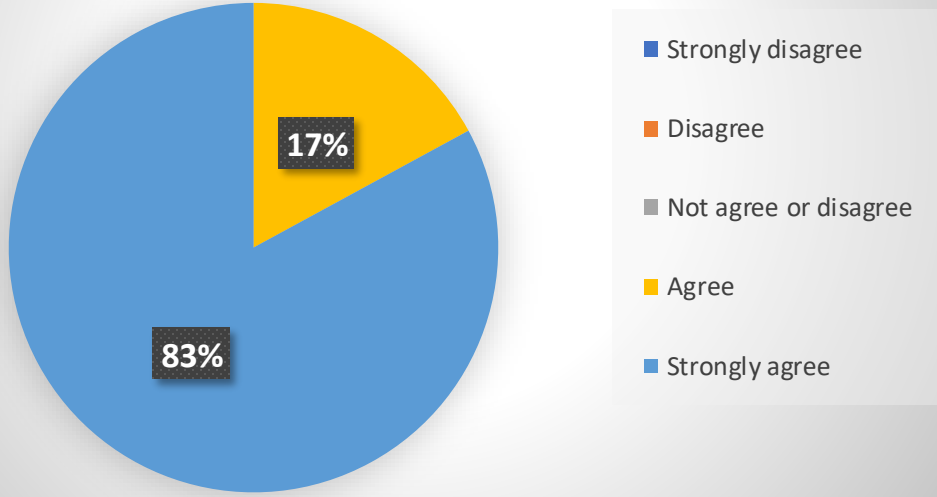


UDD EXPERIENCE: CR AND 360º VIDEOS
RESULTS

"In the 360 videos I was able to see aspects that I only knew theoretically"

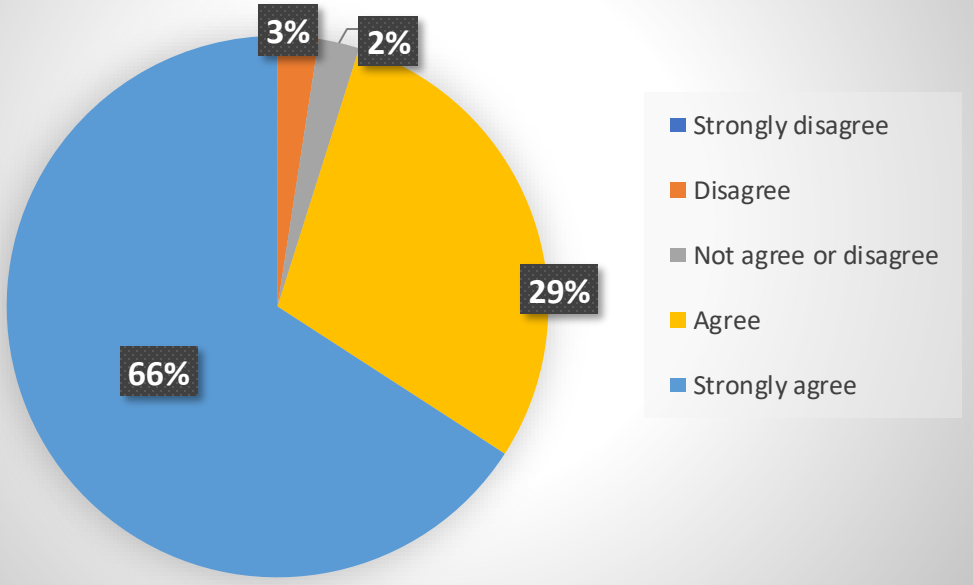


"Using 360º videos helped me to reason about clinical decision-making in a simulated environment"

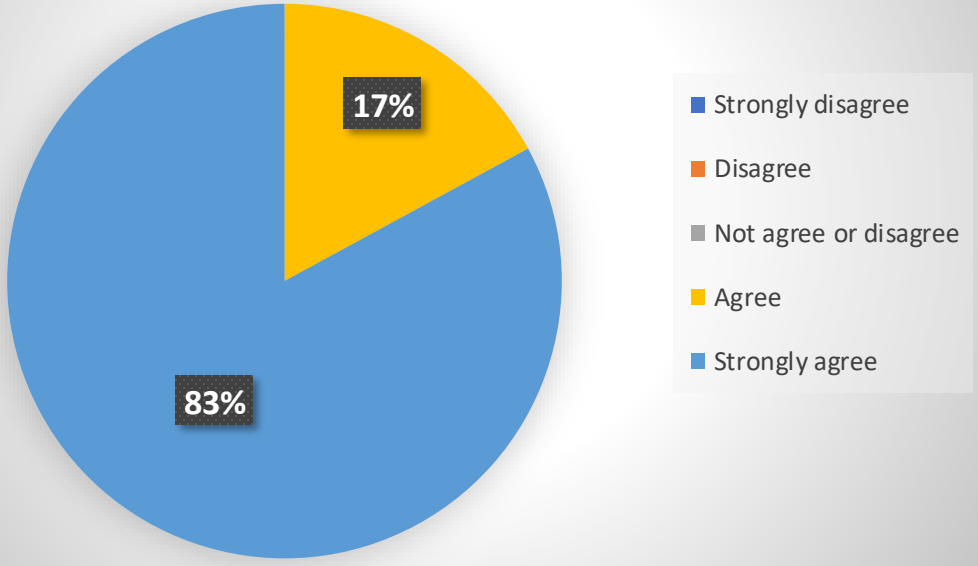


UDD EXPERIENCE: CR AND 360º VIDEOS
RESULTS

"Using 360º videos helped me realize what I still have to study"

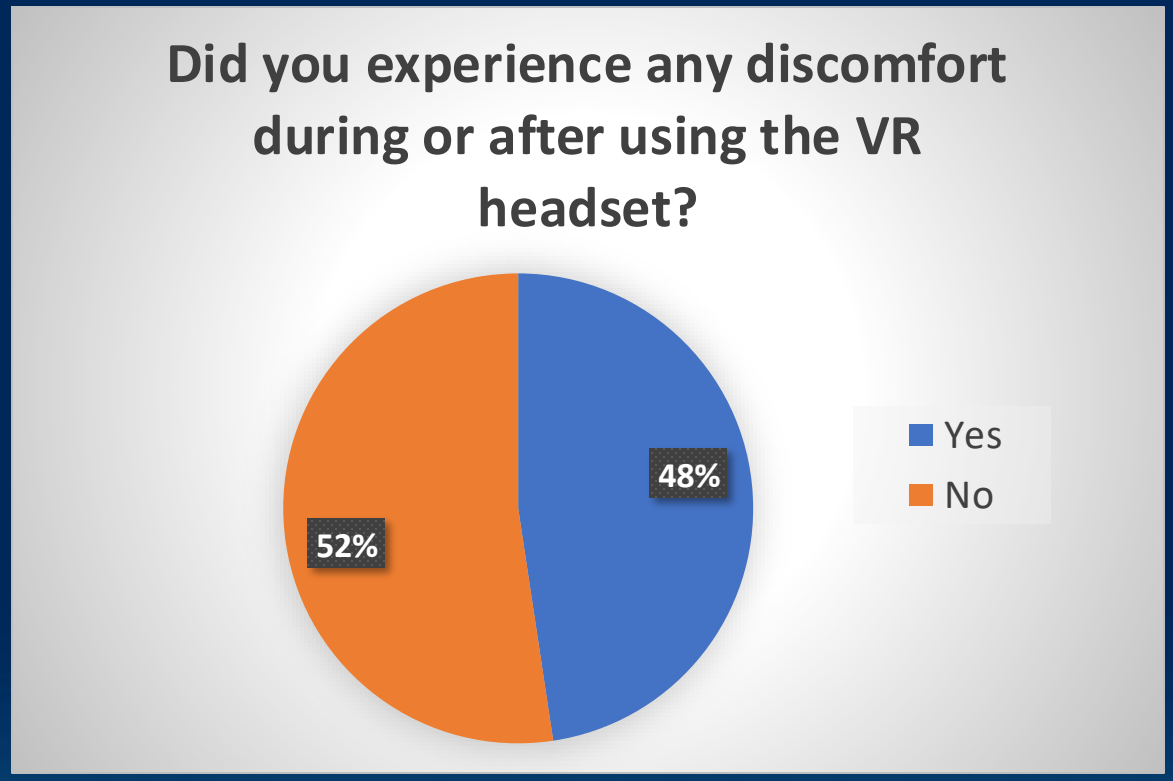


"I felt immersed in the digital stage presented"



UDD EXPERIENCE: CR AND 360º VIDEOS

RESULTS



UDD EXPERIENCE: CR AND 360º VIDEOS
RESULTS

- *"Very complete, I felt very confident of what I was doing and I understood where I was wrong to continue"*

- *"It was clear, the patient used a casual language that a real patient would use, it made me think about what would be best for him, as if I were really the PT of the activity."*

- *"The patient's information was clear enough to make decisions based on reasoning, and the way the tests were performed was also clearer"*

UDD EXPERIENCE: CR AND 360º VIDEOS
RESULTS

- *"I loved it, I felt super comfortable since I can make mistakes and learn from the mistake without having the pressure of being with a real patient, plus it helps me a lot to practice before having a real patient"*

- *"The truth helped me to be able to make mistakes without repercussions and thus I better understood why"*

UDD EXPERIENCE: CR AND 360º VIDEOS
TAKE HOME LESSONS

- Benefit perception
- Similarity with real patients
- Motivation with the activity
- Active Process

UDD EXPERIENCE: CR AND 360º VIDEOS
NEXT STEPS

- Learning Impact Measurement


THANKS

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