No Building, No Problem! Scaling Nursing Education with Virtual Reality

How Immersive Learning Helped UNC Nursing Grow — and Why It Can Work for You

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Learning Objectives

- Define Immersive Learning and Simulation
- Differentiate VR, MR, AR and 360 Video as forms of immersive learning
- Describe how learning theory supports immersive learning, especially in regard to perspective-taking and empathy building
- Describe how the UNC SON leveraged Clinical VR simulation to help grow enrollment
- Identify potential high impact use cases for VR simulation or other immersive learning tools with your students
- Summarize factors to consider when trialing VR simulation applications

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What Inspired Me to Explore VR and other forms of Immersive Learning

- Tired of teaching by Powerpoint
- Students were tired of me teaching by Powerpoint
- I have always preferred teaching using case examples
- Seeking active learning experiences (aka fun activities) for an elective course
- Stumbled upon the patient-perspective 360 video on the next slide, filmed by a UNC grad student
- Realized its broad applicability across health professions, not just nursing
- Partnered with a School of Medicine colleague to apply for a Center for Faculty Excellence (CFE) grant to trial VR simulation with health professions students

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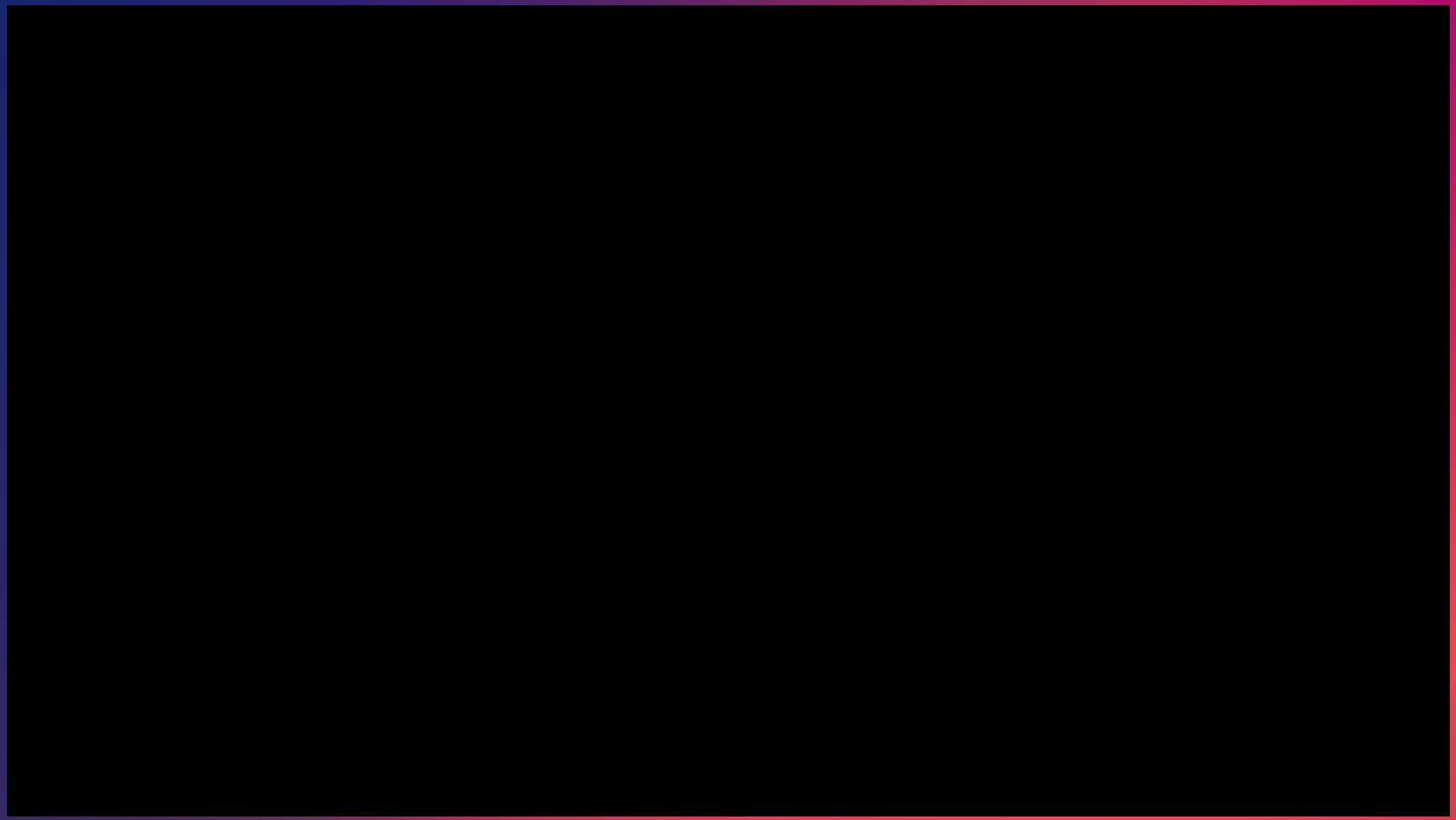

Link to video clip: https://www.youtube.com/watch?v=Dx5zRQMCs9w

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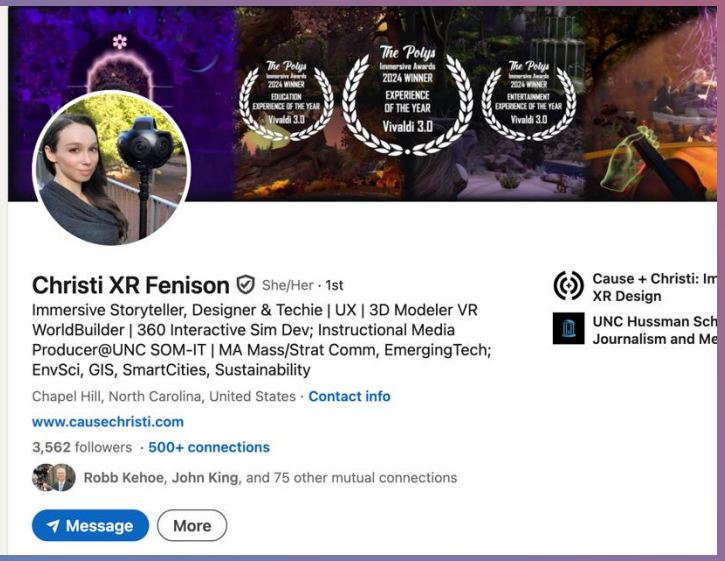
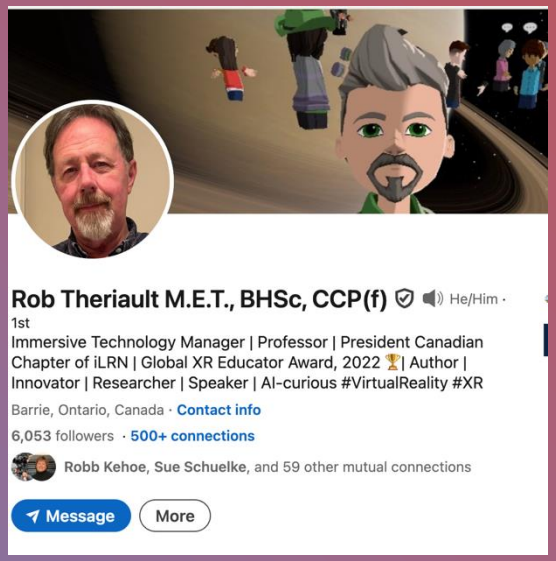
Immersive Learning

Immersive learning can be defined as *an experiential educational approach in which learners are deeply engaged within realistic or simulated environments that foster a strong sense of presence and narrative transportation, enabling them to practice skills, apply knowledge, and develop empathy in ways that approximate real-world experiences* (Bailenson, 2018; Fenison, 2020; Green & Brock, 2000; Hamilton et al., 2021; Radianti et al., 2020).

Tools like **virtual reality (VR)** and **360° video** can simulate complex, emotional, or high-stakes situations that are often impractical to teach through lecture or text.





A few Key Creators, Visionaries & Researchers Worth Following (one is at UNC!)

- Link to Jeremy Bailenson's Virtual Human Interaction Lab Site that links to his publications: https://vhil.stanford.edu/people/jeremy-bailenson
- Link to 360 and VR Downloads available through the same Site: https://vhil.stanford.edu/content/downloads
- Link to Rob Theriault's Google Drive document listing XR apps by profession: https://docs.google.com/document/d/187t9qlhMbtVRBsJh1H9OsWE3BawoWmvxfUG_vciSLq0/edit?usp=sharing

Making Sense of the Terms

Term	Description	Key Feature
Virtual Reality (VR)* *definitions vary, making it difficult to synthesize research	A fully immersive digital environment that replaces the real world. Users typically wear a headset.	Fully synthetic environment
Augmented Reality (AR)	Overlays digital information (like text, images, or 3D objects) onto the real-world view, usually via phones or smart glasses.	Real world enhanced with digital layers
Mixed Reality (MR)	Blends real and virtual worlds with interaction between physical and digital objects in real-time.	Real and virtual elements coexist and interact
Extended Reality (XR)	Umbrella term that includes **VR**, **AR**, and **MR**—any tech that alters reality through digital experiences.	Includes all immersive technologies

Reference: Lioce, L. (Ed.), Lopreiato, J. (Founding Ed.), Anderson, M., Deutsch, E. S., Downing, D., Robertson, J. M., Diaz, D. A., & Spain, A. E. (Assoc. Eds.), and the Terminology and Concepts Working Group. (2025). *Healthcare simulation dictionary – Third edition* (AHRQ Publication No. 24-0077). Agency for Healthcare Research and Quality. https://www.ahrq.gov/patient-safety/resources/simulation/terms.html

Methods We Will Discuss Today

Tool	Type	Level of Immersion	Level of Interaction	Best Used For
VR (Headset-Based)	Fully immersive	High	High	Clinical decision-making, skill practice, crisis scenarios
VR (Laptop-Based)	Partially immersive	Moderate	Moderate to High	Flexible practice at home, accessible simulations, debrief prep
360° Video	Semi-immersive	Moderate	Low (view-only or guided)	Perspective-taking, empathy, observation, communication analysis

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How 360° Video Supports Immersive Learning

- **360° video** is a semi-immersive tool that provides panoramic, recorded views of real environments. It allows learners to observe and reflect from a first-person perspective using a headset, computer, or even a smartphone.

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The Challenge at UNC SON

We lost a building and received a mandate to increase enrollment within the same year!

UNC SCHOOL OF NURSING RECEIVES $2.7 MILLION FROM THE STATE TO PREPARE MORE NURSES

Why Now?

GEN Z EXPECTATIONS

REMOTE AND FLEXIBLE ACCESS

FACULTY WORKLOAD, SPATIAL AND CLINICAL PLACEMENT CHALLENGES

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Simulation

"Simulation is a *technique–not a technology–to replace or amplify real experiences with guided on that evoke or replicate substantial aspects of the real world in a fully interactive manner."*

– David Gaba, 2004
p. i2

A pedagogical approach, not just a tech trend

Authentic, interactive, and realistic experiences

Gaba, D. M. (2004). The future vision of simulation in healthcare. *Quality and Safety in Health Care, 13*(Suppl 1), i2–i10. https://qualitysafety.bmj.com/content/13/suppl_1/i2

How Virtual Reality (VR) Supports Immersive Learning

Virtual Reality is one of the most fully immersive tools available. It places learners in a completely simulated environment using a headset. Within IVR, learners can:

- Make decisions in real time
- Interact with virtual patients, objects, or environments
- Practice cognitive, technical, and communication skills without real-world consequences

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EDUCATIONAL THEORY BEHIND IMMERSION

- Emotion is the glue that makes memories and new knowledge “stick”

Immersive environments enable learners to become emotionally engaged in simulated stories. When learners are “transported” into a narrative (Green & Brock, 2000), they are more likely to:

- Retain information
- Develop empathy
- Modify attitudes or behaviors

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VR is especially useful when students need to practice something that is dangerous or difficult, impossible or impractical, or expensive in real life.

Jeremy Bailenson
Experience on Demand (2018)

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XR Use Cases in Healthcare Span:

Education & Training

- **Simulated practice scenarios**
- **3D interactive anatomy**
- **Perspective taking**
- **Skills training (has caveats)**

- **Research**
  - **Movement analysis**
  - **Physical therapy**
- **Practice**
  - **Patient education and preparation**
  - **Anxiety & pain reduction:**
  - **Rehab & treatment exercises**
  - **Guided surgeries**

Student photos taken by Jeanette Robinson, Asst Director of Communications, UNC SON

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1000 Cut Journey- One Example of an Open-Access Immersive Learning Tool Designed for Perspective Taking and Building Empathy

- https://vhil.stanford.edu/downloads/1000cut
- Cogburn, C.D., Bailenson, J.N., Ogle, E., Asher, T. & Nichols, T. (2018). 1000 cut journey. ACM SIGGRAPH 2018 Virtual, Augmented, and Mixed Reality, DOI: **https://doi.org/10.1145/3226552.3226575**

What We Have Trialed

- "Off the Shelf" Vendor Applications: for Clinical Simulations
- Vendor Application for AI-driven Difficult Conversations Practice
- Person-Perspective Immersion via 360 video scenarios (stepping into someone else's shoes)
- Custom created 360 video scenario with decision points for interactivity: Patient Perspective of a Trauma Room and related care

Student photos taken by Jeanette Robinson, Asst Director of Communications, UNC SON

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Current Implementation Strategy at UNC SON

- Multi-modality approach: headset, laptop, screen-cast
- Course integration: N481 (Mental Health Nursing), N483 (Pediatric Nursing), N430 (Adult Health II) and N482 (Reproductive Health Nursing). May trial psychomotor skills scenarios for open lab practice in 2025
- Faculty innovation: small group immersive case studies in conference rooms, clinical and class makeups

Student photo taken by E. Stone

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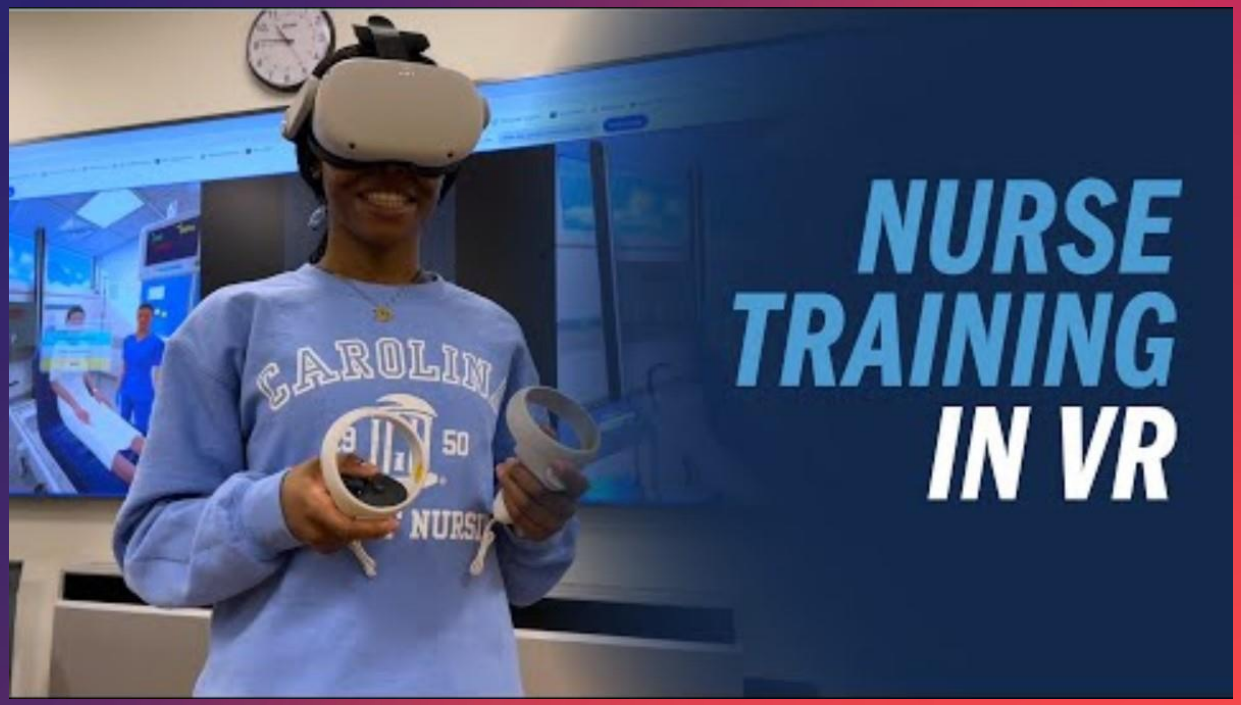

https://youtu.be/p8upmwL5Uvc?si=GcZtYnyma1blyEZN
Video provided by UNC Chapel-Hill Communications

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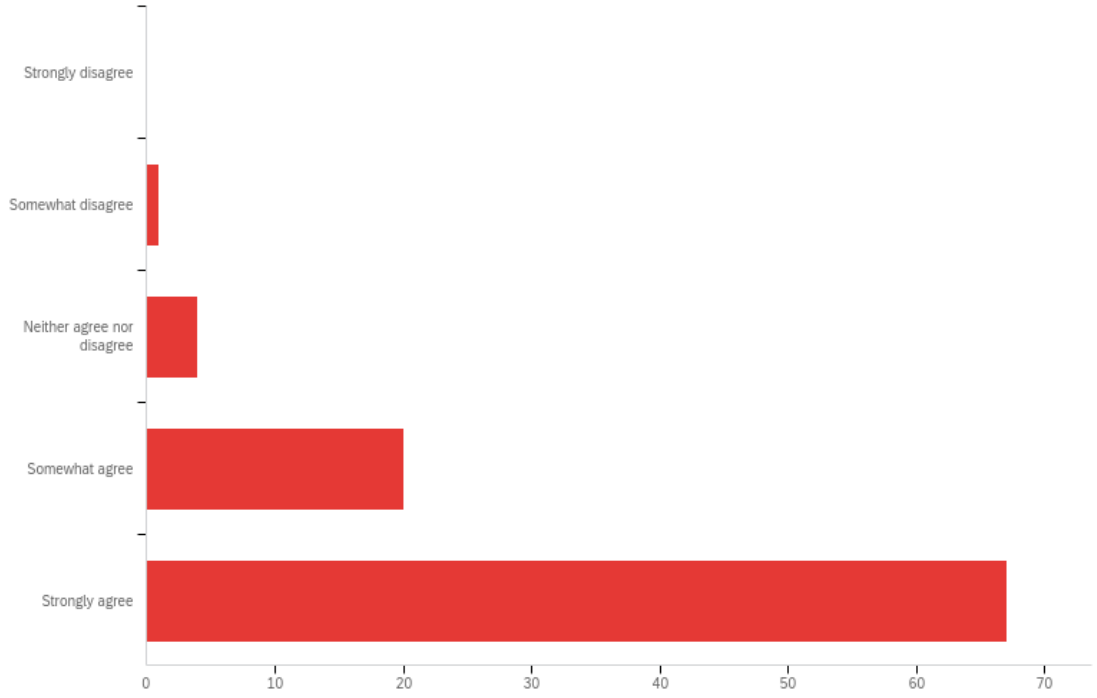
Student Feedback from First Large Pilot, in Mental Health Nursing Course (2024)

Q17 - Please rate your agreement with the following statement: "I would like to work through additional VR simulation scenarios while in nursing school if given the opportunity" (n=95 BSN students completed the survey)



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Qualitative Feedback from the Students

- “I really enjoyed the simulation and it felt so real! I learned a lot and excited to try it again!”
- “This was a great experience!! We should do more of them!”
- “This was so fun, I'd like to see it utilized more whenever we do assessments or practice!!"
- “I really felt like I was in a hospital emergency department…The headset blocks out all the outside sounds and that helps. It’s a low-pressure environment to learn.”
- “Please incorporate this in future learning! It was awesome!”
- “This was a really fun experience and I enjoyed being able to practice skills and clinical judgement without serious consequences”.
- “ I really really want to see this incorporated to the program as soon as next semester”
- “I loved the experience, I was immersed throughout the entire process and it doubled as a way for me to assess my exam understanding”

Only 3 of 108 students opted to use a laptop instead of a headset

**dedicated time for orientation to the headset and the application is key*

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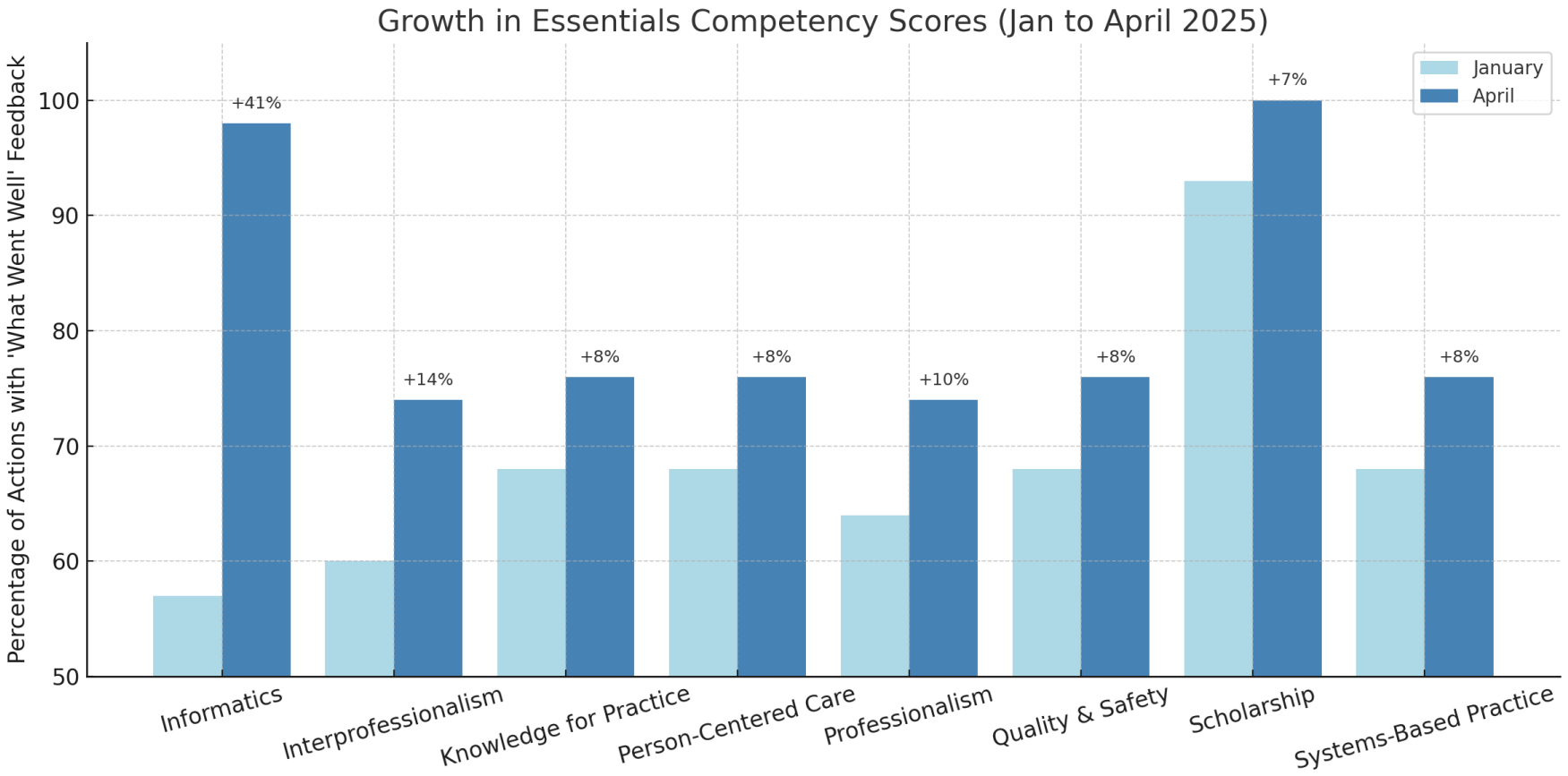
Year One of Adoption: Measured Competency Growth: Analytics from N430 Adult Health II Course (n=87 students)



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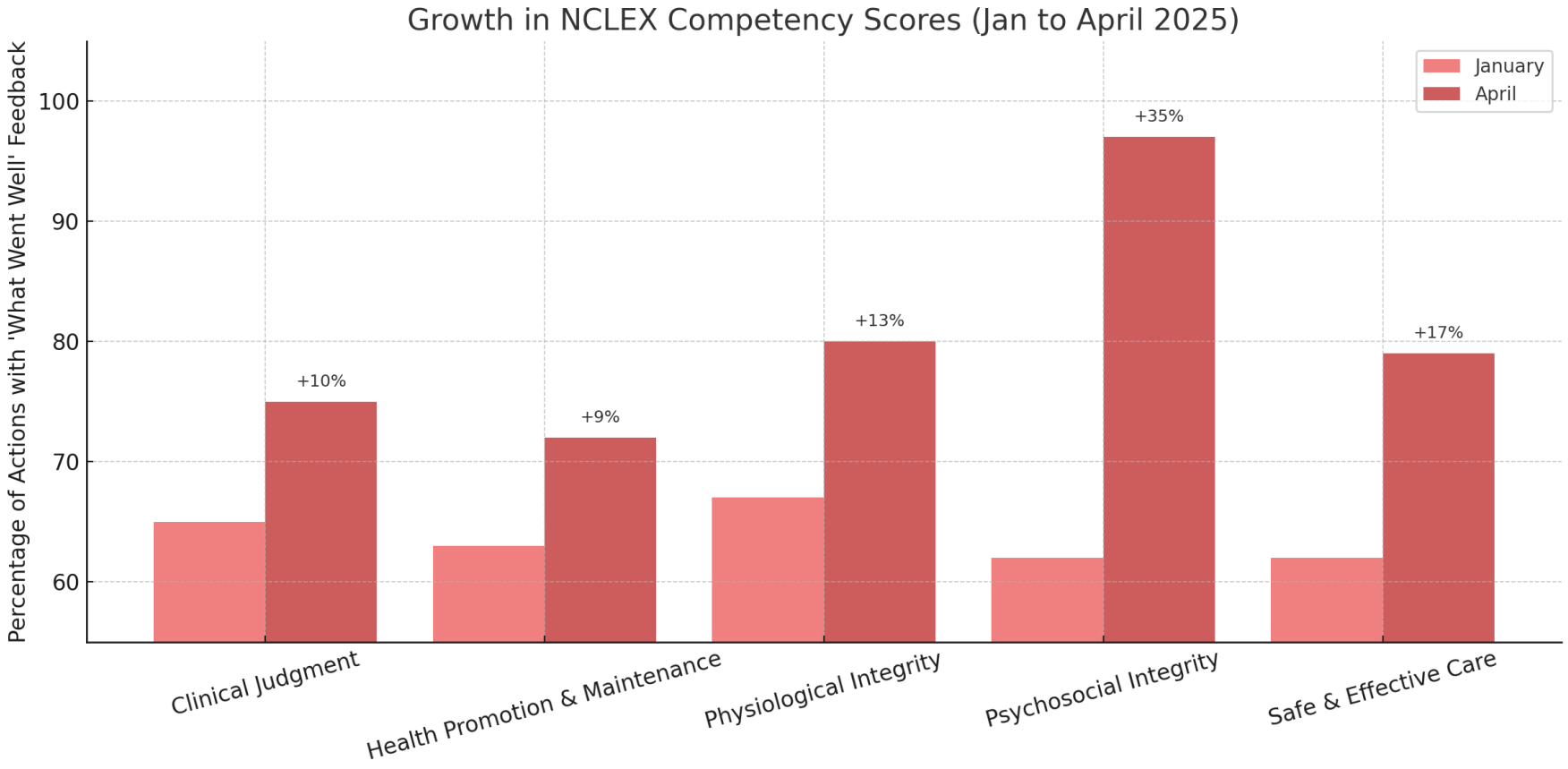

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Factors to Consider When Exploring Virtual Reality Simulation Options

- Facilitated vs. self-directed
- Single- versus multi-player
- Can it be accessed via headset + laptop?
- Analytics, feedback loops, AI integration
- If AI conversation practice is a goal- consider the space where it will be utilized
- Some products let you choose between menu driven communication and AI conversation- there are pros and cons to each

Lessons Learned

- Invest time to orient both faculty and students to the tech and the application
- Proper headset fit makes a big difference in comfort, vision, adoption
- Sitting down can help reduce feelings (or fear) of motion sickness
- Identify others in your profession/type of education who use it and learn from them
- Don’t buy before you pilot
- Many high quality immersive 360 videos available for free but require careful vetting- look for those created by or in collaboration with academic partners
- Involve IT from day one of exploration- involve them in demos and online meetings with vendors
- Make it accessible —have alternate methods for accessing the application - tech equity
- Partner with other schools / departments to pilot, even purchase- cost sharing
- May need to pilot with grant funding and then build a business case for sustained implementation

Other really cool things that are already possible with VR Sims

- Multi-user simulations (interprofessional or same-profession)
- Simulations that bring together students from different campuses (even different countries!)
- Multi Patient scenarios
- Simulation from home, with online or in person small group debriefing
- Open practice lab (some VR Apps offer hands on skills scenarios; others are focused on decision making, communication and prioritization of care)

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Summary

- VR helped scale learning despite constraints
- Theories and data support its value as a form of immersive learning
- When used for simulation, the Individualized analytics and feedback available with VR apps can be very helpful to students and also support competency mapping
- Accessibility- e.g. alternatives to wearing a headset- is critical
- This isn't just for nursing — it's a platform for growth across higher ed
- 360 video delivered via laptop or large screen is still immersive. Many 360 videos are available online; some have interactivity (choices within them that branch into different consequences).
- Custom created 360 videos such as the Patient-Perspective Trauma scenario can be tailored to your students' learning needs

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💬 “What’s one challenge or skill in your discipline that could benefit from immersive learning?”

Questions?

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- See handouts uploaded to Whoava

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