

Background

Dr. Michelle Aebersold and colleagues developed a virtual reality simulation where nurses and pharmacists administering chemotherapy drugs can learn about proper safety protocols in a risk free environment. During this study the simulation was user tested and will now under iterations based on findings before being released on the Oculus app store.

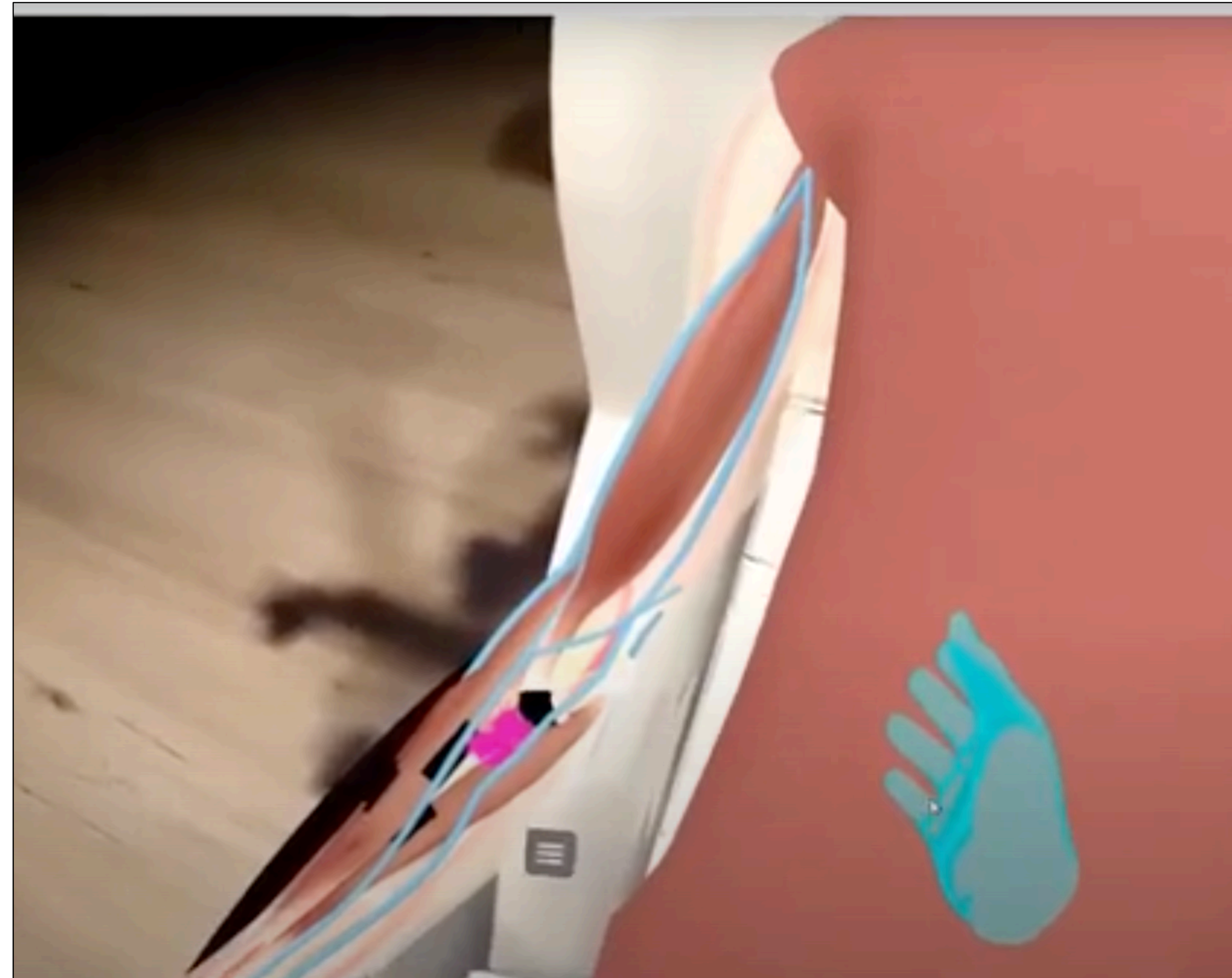
Objective

User test the “Under the Skin” Virtual reality simulation to assess learning outcomes, usability, and confidence.

Methods

- **User Interviews**
- **Talk Aloud Sessions**
- **Pre and Post Simulation Knowledge Tests**
- **System Usability Scale(SUS)**
- **NASA TLX**

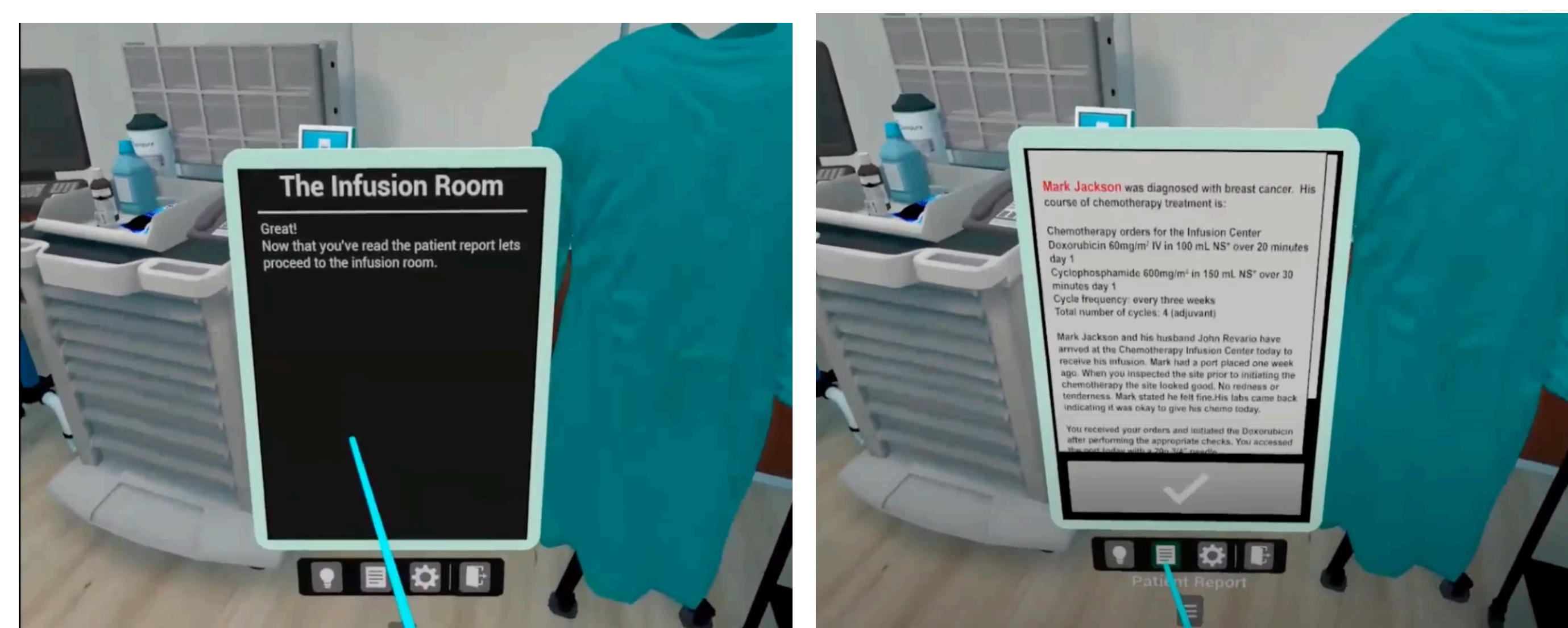
Protocol: We had a group of nurses/pharmacists and students with experience in chemotherapy undergo the VR simulation training using the Oculus Quest VR headsets and then take a series of tests to measure knowledge, confidence, and cognitive load. We also had them narrate their experience out loud as they went through the simulations. This procedure is known as a ‘think aloud’ procedure and is commonly used in usability testing (Bastien, 2010). This was recorded, transcribed, and coded for themes. The overall focus was on ease of use, knowledge gained, and overall experience.



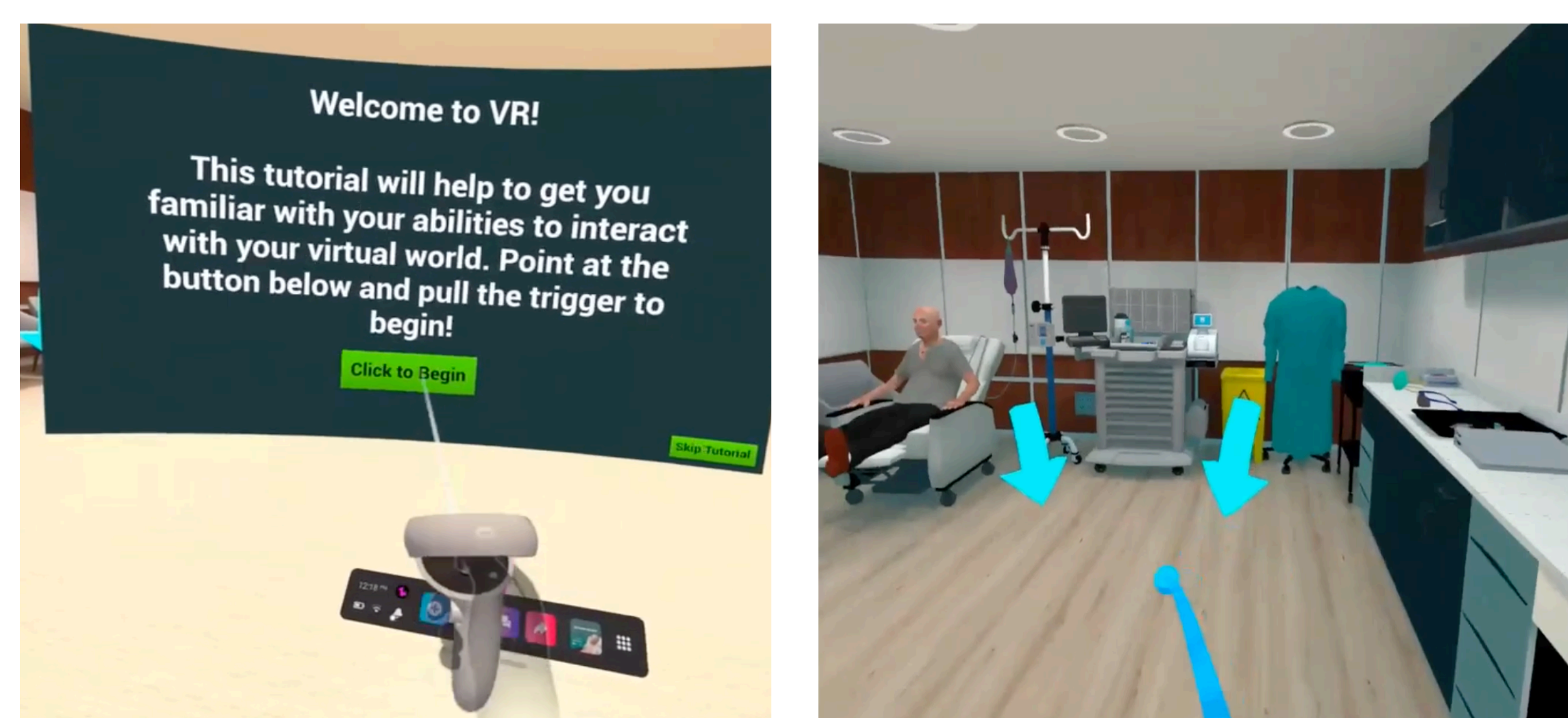
Users are able to see how chemotherapy drugs effect a patients tissues over time



Simulated patients also speak to the user which helps build empathy as they complete tasks



Users utilize a tablet that acts as a patient chart and guides them through tasks



Usability in VR simulation training is correlated with learning outcomes

Results

Pre Knowledge Test Average
Score: **34.5%**

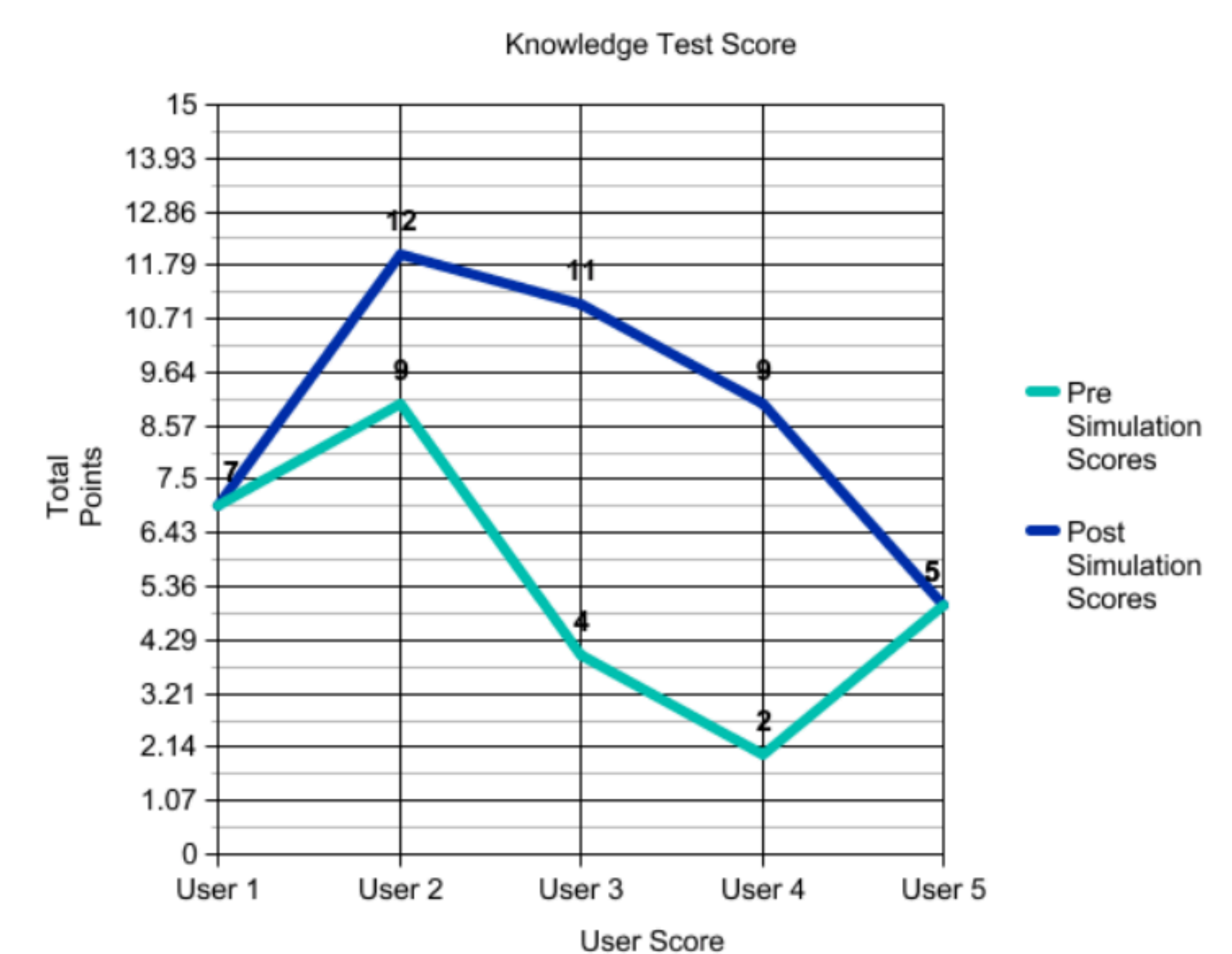
Post Knowledge Test Average
Score: **58.5%**

Pre Simulation Confidence
Score: **1.8 / 5**

Pre Simulation Confidence
Score: **3.4 / 5**

System Usability Score
Average: **56**

Nasa TLX Score Average:
55.4/100



| | Verizon | | 2:25 PM | 100% | |
|----------------------------------|---------|--------|--------------|------|--|
| | History | | Rating Scale | | |
| Study Name: Under-The-Skin-Pilot | | | | | |
| Study Group: 1 | | | | | |
| Subject ID: 2 | | | | | |
| Trial: 001 | | | | | |
| Type: Rating Scale | | | | | |
| 12/14/2021 08:54 | | | | | |
| | Rating | Weight | Adjusted | | |
| Mental Demand | | 50 | 5 | 250 | |
| Physical Demand | | 0 | 1 | 0 | |
| Temporal Demand | | 65 | 3 | 195 | |
| Performance | | 65 | 4 | 260 | |
| Effort | | 30 | 2 | 60 | |
| Frustration | | 15 | 0 | 0 | |
| Weighted Rating: 51.00 | | | | | |
| | | | | | |

| | Verizon | | 2:24 PM | 100% | |
|----------------------------------|---------|--------|----------|------|--|
| | History | | Pairwise | | |
| Study Name: Under-The-Skin-Pilot | | | | | |
| Study Group: 1 | | | | | |
| Subject ID: 2 | | | | | |
| Trial: 001 | | | | | |
| Type: Pairwise | | | | | |
| 12/14/2021 08:54 | | | | | |
| | | Weight | | | |
| Mental Demand | | 5 | | | |
| Physical Demand | | 1 | | | |
| Temporal Demand | | 3 | | | |
| Performance | | 4 | | | |
| Effort | | 2 | | | |
| Frustration | | 0 | | | |
| | | | | | |

Future Application and Next Steps

This will be available in the Oculus App Store once final iterations are complete. Anyone will be able to use this simulation for training.

Acknowledgments

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