PEERS® VR: Virtual Video Modeling on the Social Skills of Adults with Autism

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Client: Dr Sarah Howorth , College of Education and Human Development

Abstract #524

1 Introduction

The versatility of virtual reality technology provides a unique opportunity for interacting in an immersive and realistic environment. Our project takes advantage of this experience in order to assist adults with autism in practicing social skills. Our goal was to create a proof-of-concept demonstrating that VR can be a more immersive environment to facilitate learning and practice social skills.

2 Dr Howorth & PEERS®

Dr. Sarah Howorth from UMaine COEHD who is the director of the PEERS® Lab at UMaine, requested this project on virtual video modeling of the social skills of adults with autism. It is based on the existing PEERS® curriculum, which is a formal process for teaching social skills, created by Dr. Elizabeth Laugeson from UCLA.

3 Development Process

This is a UMaine Computer Science Capstone project. The first semester is dedicated to acquiring requirements, planning, and drafting designs, while the second semester focuses on programming and implementing those designs.

Deliverables:

Each stage of development produces a related deliverable document.

1. Software Requirements Specification
2. Software Design Document
3. User Interface Design Document
4. Critical Design Review
5. Code Inspection Report
6. Administrative Manual
7. User Guide

Development Life Cycle:

The development of this project followed the Spiral Model (**see Fig. 1**). Each cycle of development progresses by determining objectives, identifying risks, code implementation, testing, and then planning for the next cycle. Each iteration produces a prototype of the final product, each with progressively more features implemented.

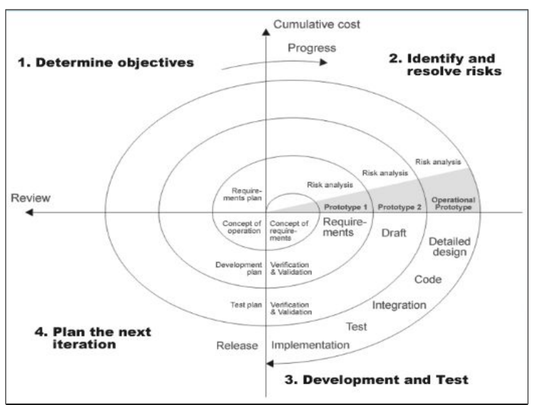
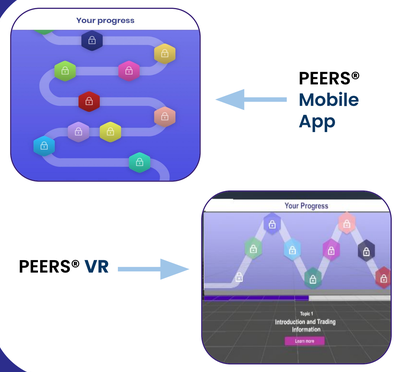


Fig 1. *The Spiral Development Model*

4 Demo

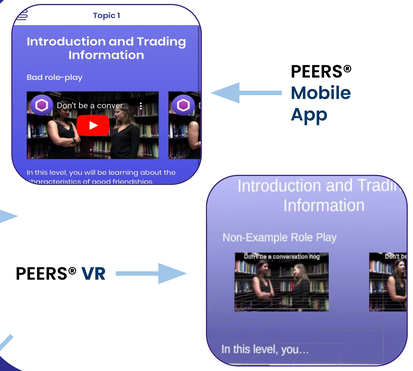


PEERS® Mobile App

PEERS® VR

View 1

The Curriculum View displays the curriculum map. The curriculum map has an icon for each lesson of the PEERS® material in a zig-zag pattern. The user can select one of the icons and is brought to the lesson view for that particular lesson.



PEERS® Mobile App

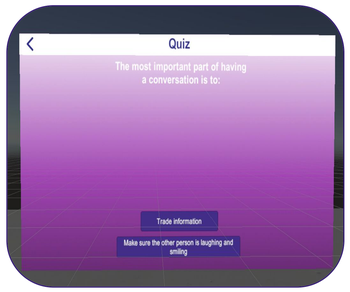
PEERS® VR

View 2

The Lesson View displays the content of the specific lesson including videos and a general description. The Lesson View shows non-example role play videos, a general description that can be expanded, and a button to see more content rules.

View 3

In the Video View, users can see video content displayed to them with multimedia controls. These videos are in standard 2D format for now, but in the future they will be remade into 360 degree videos.



View 4

The Quiz View allows the user to be assessed on the content they just watched for each lesson, and provides feedback to the user. The Quiz View consists of multiple questions that have two potential answers and upon completion the user can progress to the next lesson.

5 Future

The future goal of this project is for Dr. Howorth and colleagues to conduct research to investigate the effects of social skills taught in an immersive VR environment on the generalization of those skills in the real world. The results of these investigations may lead to the creation of a new product and grant funding for its development and further testing.

6 Acknowledgements

We would like to thank and acknowledge our client Dr Sarah Howorth, our faculty advisor Dr Laura Gurney, UCLA's Dr. Elizabeth Laugeson, and our peer team 5M (Michael Massari, Danny McA'Nulty, Madox Hussey, Nick Millett, and Mohammed Fazli).

7 References

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- PEERS (2023) UCLA PEERS® Clinic, Semel Institute for Neuroscience and Human Behavior. https://www.semel.ucla.edu/peers
- Tristan Cilley, Allison Lupien, Nick Sarno, Jacob Michaud, Maha Fazli. (2023). GitHub repository, https://github.com/VoloVita/SeniorCapstone/tree/main/Deliverables

Source Code Repository: The source code of this project is available in a public GitHub repository. (Scan QR Code)