Usability Testing in Virtual Reality and Traditional Physical Environments: A Comparative Study

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This project aims to **compare the effectiveness of usability testing in VR and traditional physical environments** to provide insights on how to optimize the testing process in both environments. The result of this study can potentially be used to justify conducting usability tests in Virtual Reality. The study was conducted using a mixed-methods approach, which included both quantitative and qualitative data collection and was organized into user research and evaluation phases.

108 participants were recruited for the **online survey study**
10 participants for the **user interviews**
14 participants recruited for the **usability tests**

Based on the research data, a solution was designed along with high-fidelity prototypes that were evaluated through usability tests in both a VR environment and a traditional physical environment. These tests involved a usability testing session with a high-fidelity prototype of a user interface (UI) using a "Think-Aloud" technique.

Performance was measured by having each user complete a satisfaction survey after undergoing testing in each environment. This evaluation phase was used to collect feedback from potential users through testing. The findings demonstrate that usability testing of an interactive experience can be effectively conducted in a VR environment. This provides new opportunities for designers to explore innovative ways to engage end-users during the evaluation phase of the design process.

The testing was conducted in two environments. For each participant, two different interface design prototypes were used. The goal was to gain more insight into the participants' positive and negative opinions about the new interface design, but also to understand how they felt about the two testing environments.

Based on this study, where a new design for an in-vehicle navigation system was tested in both virtual reality and physical environments, we found that there was equivalent feedback on the interface provided by users in both testing environments. There were several minor concerns uncovered with the VR environment that will likely improve as the quality of the VR technology improves and the general public becomes more familiar with the technology over time.

The interface designed to conduct the usability tests in this study provided users with a rich and easy-to-use interface for discovering, navigating to, and visiting new places. With the feedback obtained during this study from both VR and physical environments, further improvements can be made to the interface to reduce cognitive load and improve user experience.

TESTING ENVIRONMENTS

HIGH FIDELITY PROTOTYPE
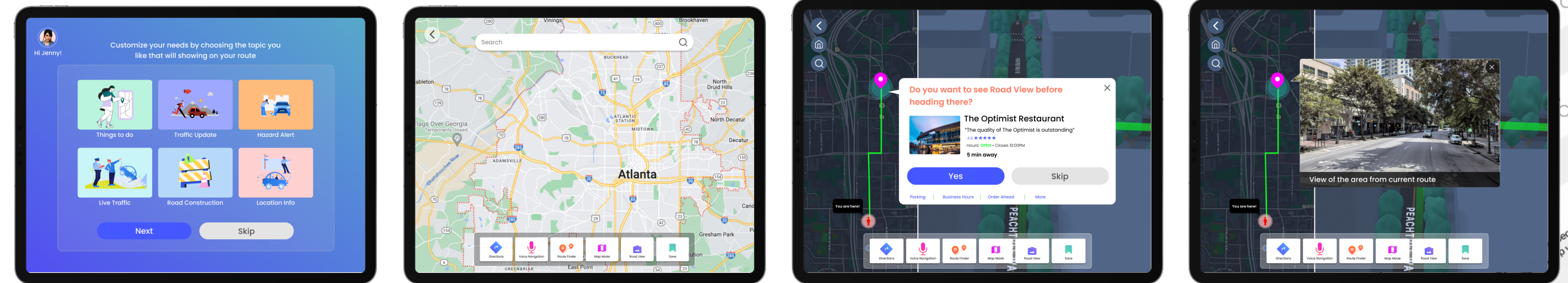
Task 1

Destination input task: Participants were asked to input a destination in the GPS app

Task 2

Re-route: Participants will be asked to choose a different destination

Task 3

Destination input task: Using the Route Finder feature to search for a destination

Task 4

Enter a new location and as the participant is getting close to the destination, the app will ask if they want to learn more specifics.