Developing and Testing a Virtual Job Hazard Analysis Application

Using Virtual Technology for Job Hazard Analysis

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Overview

Construction project teams often perform job hazard analysis (JHA) to identify occupational safety and health risks and controls. Typically, an experienced worker leads a JHA session because novice workers may not identify all hazards. Thousands of new workers are expected to enter the industry in the coming years, and research indicates that when novice employees perform JHA, they frequently fail to identify all hazards, creating an increase in safety challenges. Virtual reality (VR) applications have the potential to increase JHA quality, but the effectiveness of a VR application for JHA has not been explored in depth. This research aims to begin filling that gap. Two interventions, a VR-based application for JHA and a paper-based JHA, were designed, developed, and implemented to compare their effectiveness. The JHAs were tested on 21 participants, all students at the University of Houston, with most having no prior construction knowledge.

Key Findings

- The research team successfully designed, developed, and tested a virtual reality application to perform job hazard analysis.
- Participants using the VR-based JHA had higher scores at identifying hazards compared to those using paper-based JHA, but the difference in the mean JHA scores was not statistically significant.
- Previous VR experience did not affect the JHA score, indicating that VR experience is not required to complete a JHA with the application created in this study.
- Participants with construction management or civil engineering background did not score higher than other participants).
- VR-based JHA provided an immersive experience for all participants, suggesting that the application can simulate real-world situations even for novice workers.

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https://bit.ly/3Dk7ur9

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