Can Mixed-Reality Technology Improve Safety Communication on a Construction Project?

Holographic Visual Interaction and Remote Collaboration in Construction Safety and Health

Fei Dai and Abiodun Olorunfemi. CPWR Report, 2018.

Overview

Mixed-Reality technology blends virtual reality with the physical world, enabling wearers of a mixed reality headset to view the physical environment as well as notes, objects and information appended to real-world objects, and then to share their view with others via wireless networks. Applying this technology to safety communication would permit onsite and office personnel to collaborate about jobsite hazards in real-time with shared visuals. Researchers enrolled 53 construction personnel (including project managers, superintendents, and safety officers) in an experiment to evaluate the potential of mixed reality as a means of safety communication. Participants were paired, with one on the jobsite wearing a Microsoft Hololens® mixed-reality headset, and another in the office speaking with his colleague while sharing his view on a tablet computer. After exchanging information about jobsite hazards, participants were asked to compare the new technology with more conventional means of safety communication, such as phone calls, videoconferencing, e-mails, and traveling to the jobsite to talk face-to-face.

Key Findings

- A majority of participants reported that the Hololens®, with its shared, real-time visual information, was likely to make communication more accurate and efficient than traditional communication channels such as phone calls and emails.
- Forty-six percent (46%) of participants said the Hololens® was easy to use, while 5% disagreed.
- About one-third (32%) of respondents said the Hololens® was ready for adoption on the jobsite, while 17% of respondents disagreed.

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