

Ideas Worth Sharing

What's happening next in AIED



Teaching road safety to kids with Virtual Reality

Ye Cheng Gu

How do you - safely - teach road safety?

Children need to experience some form of roadside training in order for pedestrian safety education to be effective. But in-person roadside training is by its very nature dangerous; the unpredictable nature of traffic and weather conditions, coupled with children's early stage motor skills and limited awareness of their surroundings, mean that constant adult vigilance is required.

Currently, schools and parents adopt many different approaches to teaching children pedestrian safety, and optimizing a hands-on process for each school and family is difficult and time consuming.

Virtual reality (VR) is a technology with well documented benefits for providing learners with realistic, immersive training environments. More than 20 years ago, William Winn described the potential of VR for education in his article, [A Conceptual Basis for Educational Applications of Virtual Reality](#). And many will be familiar, of course, of the long history of VR simulator use for pilot training.

It's pretty straight-forward to see how VR might be used to

effectively teach road safety - in a VR environment safety concerns are removed, traffic and weather can be altered at will, and so on. However, previous efforts to do this have left a lot of room for improvement, including for example, the level of immersion that can be achieved and the diversity of exercises available. Further, previous VR systems relied heavily on human tutors for monitoring and teaching each individual child, making such systems impractical in many classrooms. To address these failings, my colleagues and I have been working to [combine a VR environment with an intelligent tutoring system to create an authentic road safety training environment](#) that helps and instructs children in an adaptive way.

Virtual Reality + Smartness

With the SafeChild platform, we developed an intelligent tutoring system to make the VR system "smart." An intelligent tutoring system relies on artificial intelligence (AI) methods to customise the educational experience and generate appropriate education measures based on a student's needs. For example, it might customise the amount of



Screenshot of the SafeChild Platform

practice a student is assigned, the level of detail of feedback and instructions the student receives, or the sequence of exercises that the student must complete. Real-time interactions between the learner and system generate a continuous stream of data that are analyzed by the AI according to their relevance to learning goals. At the same time, the AI adjusts the parameters of the experience, such as car speed, visual aids, or the number of obstructions, according to the needs of each individual learner.

Getting the technology into use

Our pilot study of the technology we built has shown promising results. During the pilot, children were provided with an online version of the system and used it under supervision of their parents. Feedback indicates that children found this kind of training to be fun, and parents and children



SafeChild platform

Previous VR systems relied heavily on human tutors for monitoring and teaching each individual child, making such systems impractical in many classrooms.

felt it helped the children safely improve their skills. Our pilot has also pointed to the need for further research and development with traffic safety experts and educators in order to refine the system, however. For instance, several children found the controls too hard to master and the training to be too fatiguing. I do believe, though, that as VR systems become more available and affordable, an intelligent VR system could bring safe, uniform training for pedestrian safety to a large number of children and make a difference at scale.



Yecheng Gu is a PhD student and researcher in the area of Technology Enhanced Learning at the German Research Center for Artificial Intelligence (Deutschen Forschungszentrum für Künstliche Intelligenz [DFKI]).

Ideas Worth Sharing is Pearson's new Open Ideas mini-series, where top experts from outside and inside the company share their leading edge work in education technology, research, and innovation.

@Pearson
#SmarterEdtech