

## **Students' increases in perception from operating or watching a virtual reality simulation**

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Virtual reality (VR) offers the opportunity for students to operate equipment without the risks and the logistical challenges of real sites. However, universities generally have fewer VR sets than students.

We address the questions:

1. Can VR support students to make observations that they do not otherwise notice?
2. Can students who observe a student interacting with a VR simulation, gain an increase in perception similar to that of the students who interact with the simulation?

The second author developed a VR simulation in which students operate a vehicle loading crane to learn about safety in design. We expected that students would visualise hazards in the design more easily after using the simulation.

Workshops were held with 280 5<sup>th</sup> year engineering design students. Students completed a standard construction hazard analysis implementation review (CHAIR). In each group of students, one student then operated the simulation and the others observed that student and their VR headset view displayed on a screen.

In this presentation we will report results of qualitative analysis of the students' perspective represented in the hazards identified by students before the simulation, individually after the simulation, and then also after group discussion. We conclude that students can learn by observing both the student wearing the headset and that student's VR projection. It is therefore feasible to teach large classes with VR in groups with one headset per group. We would be keen to learn of how others have used VR with large classes.