



香港城市大學  
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## Learning by Doing: A Development of New MR (Mixed Reality) Safety Training Tools for Civil and Construction Students in Hazardous Workplaces <br>(利用實做學習! 在混合模擬真實環境裡, 學員會像親歷其境, 深層記憶(高風險)工地各項施工程序的安全, 也能即時被糾正重做! 學生也可參與 DEC 實地個案制作, 從而學習到安全理念及新科技!)

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### **Abstract:**

Construction industry has its hazardous nature due to the congested working environment, complexity and uniqueness. The unsafe behaviors and habits of workers or practitioners due to insufficient safety knowledge is the major cause of accidents on sites. Their unsafe behaviors are now monitored by human observations that have a lot of limitation. Human observation is becoming impractical with the expanding employment sizes in construction industry. Therefore, in order to improve the safety performance of the construction industry more effectively and efficiently, we should first enhance the safety knowledge throughout specific training for the practitioners and the frontline workers to avoid accidents.

The traditional ways used in Hong Kong to perform safety training are reading the words, charts or figure on paper, safety training lecture, videotapes and taking online classes. These types of training provide lack of realism in mock drills. Construction practitioners/workers are difficult

to apply the knowledge from notes or video in real situation when they really facing the hazards.

Moreover, these traditional training methods do not provide a good evaluation of effectiveness.

Hence, a brand-new training is needed in construction industry.

However, it is not easy to achieve on-site or in-plant safety training as there are uncontrollable and unpredictable hazards. Tools or equipment are also too costly for safety training.

Visualization is a far better tool that solves the issue of understanding and analyzing hazards. The new MR training tools can enhance the works safety habits and hence contribute to a safety and health-working environment. The proposed project will focus on creating a new Mixed Reality



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(MR) Safety- Training Tools. Through the MR environments and experience different scenarios, “Learning by Doing” to be implemented: it helps the students (the future practitioners/ trainer)

to understand, simulate and remember the safety precautions, inspections, rules, standards, regulations and other follow-up actions (e.g. by posture detection!), etc.