

Online Hazard Recognition Training using Images, Cinemagraphs, and Videos: A Case Study with Construction Experts

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ABSTRACT

Increasingly, online safety training has been used in the construction industry to reduce costs, save time, and offer workers flexible learning opportunities. This type of training utilizes safety videos to demonstrate unsafe behaviors and increase worker awareness of hazards. However, directing trainee attention to hazardous conditions within videos remains a challenge in remote instruction. This study evaluates animation variations within videos to direct trainee attention towards hazards. Three degrees of animations were compared – (1) static images: regular fixed pictures, (2) partially animated images: cinemagraphs, and (3) fully animated images: traditional videos. A case study was employed to understand the perspective of construction domain experts that trained using the different animation approaches to recognize a select set of struck-by hazards. A between-subjects experimental design was used to collect measures regarding hazard identification index (HII), attitudes, cognitive absorption, and transportability from 19 study participants. The results of this investigation did not detect statistical differences in the average hazard identification index scores using narrated static images (Average = 69.1 %; STD = 27.9%), cinemagraphs (Average = 80.5%; STD = 16.4%), or videos (Average = 66.7%; STD = 10.5%). Moreover, the survey responses suggested all the experimental conditions had equally positive attitudes, engagement, and sense of being transported to a jobsite location.