

ROLE OF VISUALIZATION TECHNOLOGIES IN SAFETY PLANNING AND MANAGEMENT AT CONSTRUCTION JOBSITES

Salman Azhar

.E. Wilborn Endowed Associate Professor

Associate Editor, International Journal of Construction Education & Research (IJCER)

McWhorter School of Building Science

Auburn University

Auburn, Alabama, USA

ABSTRACT

There has not been a significant decline in fatalities, injuries and illnesses in the construction industry despite rigorous efforts of safety professionals and strong governmental enforcement of safety laws. Inappropriate work planning; insufficient communication between workers and supervisors; and lack of safety training are some of the key contributing factors. In recent years there has been a significant increase in the use of visualization technologies in different phases of the construction project life cycle. Visualization technologies such as Building Information Modeling (BIM) and 3D Immersive Virtual Reality can result in improved occupational safety by allowing designers and constructors to visually assess jobsite conditions and recognize hazards. By using digital models and 3D/4D simulations, the project team can more effectively communicate and implement a safety plan. This paper will present findings of several research studies that investigated the effectiveness of visualization technologies in developing, communicating and implementing construction site safety plans. Our results indicated that 3D/4D dynamic tools are more effective in safety planning and management as compared to the 2D static drawings because they closely simulate the actual jobsite conditions. In addition, the visualization technologies are found to be very effective in construction safety education and training in both formal and informal settings.