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# Computer Graphics 2015: Virtual Instruction: A New Approach to Educating the 3D Artist

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This presentation will address the incorporation of latest methods, technologies, and tools for a more accessible and streamlined system to coach subsequent generation of 3D artists. It'll compare and contrast traditional tools and methods with new and emerging ones also as highlight the pros and cons of every. It also demonstrates why these changes aren't only necessary, but will become mandatory within the future. Virtual Instruction are often defined simply as instruction given through a live online video feed without the trainer being physically present, or in some cases, without the scholar being physically present. While Virtual Instruction isn't new education, there are new concepts being introduced to form Virtual Instruction even more accessible, cheaper, and of a good higher quality. The proposed Virtual Instruction model will open a discussion about the challenges of companies hiring well-trained employees with less student loan baggage, the challenges of faculties attracting qualified industry professionals to show animation courses at their campuses, and therefore the challenges of scholars striking a balance between quality and affordability in animation programs. These challenges bring a really promising environment to implement subsequent phase of Virtual Instruction. The thought of implementing the Virtual Instruction model across time-zones also will be discussed. This presentation will have several samples of instructional tools developed by the presenter, including personal and student projects. These examples will give compelling evidence of the effectiveness of the Virtual Instruction model, which is that the goal of the presentation.

Prior studies on the utilization of digital prototyping and computer game (VR) in designing also as evaluating new products have shown that VR reduces both development time and costs whilst augmenting student motivation and creativity. The present study demonstrates that VR and 3D prototyping within the context of project-based learning (PBL) promote effective communication, increase problem solving skills, and enhance learning outcomes. VR and digital prototyping are extensively utilized in industries for the aim of product design and usefulness evaluation. Within the context of engineering education, many research studies have attempted to explore the effect of VR on teamwork, engagement, retention, and motivation. During this paper, VR is employed in conjunction with PBL in self-directed approach to style and implement a product using 3D software whilst also using computer game immersive CAVE display to guage their design. The hypothesis is that the utilization of VR with a project-based-learning approach to facilitate the attainment of desirable goals within the engineering design project, improved achievement in fact learning outcomes and promoted effective communication. Consistent with the research findings, VR approach significantly affected the distribution of cumulative project grades. Students' project grades improved, particularly the implementation component. Additionally, the course outcomes associated with project design were better achieved in VR approach. The communication and problem-solving skills were improved within the VR approach as compared to traditional approach. With the recent developments in information and communication technologies, 3D virtual worlds have the potential to form a serious contribution to style education as constructivist learning environments. Considering the changing trend in design education, we've been employing cutting-edge technologies in our design teaching, allowing students to collaborate within the 3D virtual environments like Second Life (www.secondlife.com) and Active Worlds (www.activeworlds.com), which support synchronized design communication and real-time 3D modeling. This paper reports our teaching experience and therefore the students' learning experience, supported team-based design and communication skills-building in 3D virtual environments and presents the challenges faced intentionally education. During this paper, we'll firstly provide a critical appraisal of varied design learning and teaching features in 3D virtual environments as constructivist learning environments, and secondly identify issues which address the core skills and cognitive processes involved when designing in 3D virtual environments.

This paper extrapolates on a pilot study involving first year engineering students at the Qatar University, learning engineering and ethics subject as a part of a self-directed approach to reinforce their problem-solving skills and communication skills additionally to enhancing their skills in engineering design. It's been explored with first year students that haven't any prior knowledge or skills in 3D software or programming. The project's design and development were undertaken by leveraging 3D modeling software, or virtual prototyping. VR immersive CAVE display was also wont to help the scholars examine their design in an intuitive, interactive and immersive virtual ecosystem. The study provides an in depth description of assessment tools and experimental design with statistical analysis of the results of student outcomes using the MWW test to see for significant differences while comparing the means with 95% confidence interval and standard significance level p value of 0.05. Detailed description of the task, process, and CAVE display with preliminary result was reported in previous paper. In summation, it are often safely concluded that VR has the potential of getting used as an efficient tool for education. Against this backdrop, the research study assessed the supply of design component within the overarching theme of an engineering course so as to show design skills via a PBL methodology. During this approach, a virtual prototype was implemented during a VR environment that was fully immersive. The evaluation of VR approach is based on the students' achievement of project goals. The result demonstrated a big effect of using VR in increasing the cumulative project grade and specifically on the implementation component of the project additionally to enhancing the engagement and motivation of those students and better achievement of the course outcomes.

This work is partly presented at 2nd International Conference and Expo on Computer Graphics & Animation on September 21-22, 2015 held at San Antonio, USA