Web3D and augmented reality to support engineering education

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ABSTRACT: In the article, the authors present an educational application that allows users to interact with 3D Web content (Web3D) using virtual and augmented reality (AR). This enables an exploration of the potential benefits of Web3D and AR technologies in engineering education and learning. A lecturer's traditional delivery can be enriched by viewing multimedia content locally or over the Internet, as well as in a tabletop AR environment. The implemented framework is composed in an XML data repository, an XML-based communications server, and an XML-based client visualisation application. In this article, the authors illustrate the architecture by configuring it to deliver multimedia content related to the teaching of mechanical engineering. Four mechanical engineering themes (machines, vehicles, platonic solids and tools) are illustrated here to demonstrate the use of the system to support learning through Web3D.