Digital Manufacturing Pilot Study for Stepping Towards Mixed Reality Applications in Tertiary Education

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Abstract. Digital manufacturing is a comprehensive approach which includes the integration of information technology and automation into the entire product lifecycle, from design and engineering to production, logistics, and customer service. In education, mixed reality can be used to create interactive educational experiences. It has the potential to revolutionize the way products are designed, manufactured, and maintained in the digital manufacturing industry. One of the key-ways mixed reality can be used in digital manufacturing is by providing a more immersive and interactive design experience. Engineers and designers can use mixed reality to create virtual prototypes of their products and test them in a realistic, 3D environment. This can help identify potential issues early in the design process before they become costly to fix. The current paper explores the process of testing and selecting specific applications from a digital manufacturing university level course to be designed and integrated into mixed reality scenarios. Within the framework of an Erasmus+ funded project, the authors designed a Digital Manufacturing course which was implemented over 15 hours of face-to-face activities. Based on participant feedback and assessment of trainers the main areas of content were identified for further development into mixed reality applications. The paper presents one mixed reality application and pinpoints future areas of improvement and development into immersive environments for tertiary education.

Keywords. Digital manufacturing, Additive manufacturing, Simulation, Mixed reality

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