Teaching Game Programming using Video Tutorials

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ABSTRACT (POSTER)

Background. What are the learning potentials of using online video tutorials as educational tools in game programming of Mixed Reality? The paper reports on the first experiences of teaching third semester engineering students design of Mixed Reality using online step-by-step programming video tutorials. Mixed Reality covers in this case both Augmented and Virtual Reality. Until recently, most of the instructional support for the software and game development came from paper tutorials (van der Meij et al, 2016:332). YouTube's rapid growth in popularity and easy to use programs for video production makes video tutorials a promising alternative to paper tutorials. Software and game engine companies such as Unity has already switched to video and other online materials as the primary medium for their tutorials. It is often hard to find up to date thoroughly worked through textbooks on new and emerging topics such as Mixed Reality. Students tend to use video tutorial on their own initiative as supplementary tutorials for new and hard topics. This motivated me to use existing video tutorials as teaching materials in the course titled Mixed Reality for third semester engineering students.

Explanation. The learning approach was inspired by communities of practice and constructionist learning ideas (Lave & Wenger, 1991; Papert, 1993; Majgaard, 2014). The imitating and copying of step-by-step programming video tutorials was a part of becoming a member of virtual community around game programming. And in the classroom coding and experiences were discussed. The constructionist part was where the students revised and experimented by adding, combining and testing new coding elements to what they have already done in the tutorials.

Set-up. The students developed applications using the game engine Unity and tested the applications using android smartphones. The qualitative research method was based on design-based research, which support development of technological tools, curriculum and theory that can be used to understand and support learning (Barab & Squire, 2004; Majgaard, 2012). Empirical data were student made applications, tutorials, curriculum, observations and informal interviews.

Outcomes. Extending the applications based on the tutorials facilitated deeper learning for the students. For example, when they applied or recycled code components in new program contexts they developed a better and deeper understanding of the code. Surprisingly, comprehensive, polished and worked through tutorials promoted minor changes in the developed applications. Whereas, less polished and less professional tutorials made the students become more creative and diverse in development of extended application.

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