Virtual Reality in the Classroom – How Virtual Reality Can Support the Process of Learning-by-Doing

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1. Background

Criticism of decontextualized, teacher-centered, passive learning environments led to the establishment of new approaches in educational psychology that stress the importance of the active aspect of learning – so called learning-by-doing (e.g. Barron & Darling-Hammond, 2008; Jonassen, Cernusca & Ionas, 2007). These approaches include constructivism (Jonassen, 1991; or constructionism Papert, 1991), situated cognition (Choi & Hannafin, 1995) as well as the generative learning model (Wittrock, 1974). These approaches propose that effective teaching should take place in an environment, in which the student can actively test and validate the acquired knowledge, by influencing events through own deliberate manipulation. Under such conditions, learning is the result of one's own actions in the environment, mistakes as well as correct decisions.

2. Aim

The presentation will be focused on how learning-by-doing in educational settings can be supported by virtual reality (VR) systems. It will be argued that VR systems are perfect environments for inquiry-based learning, because they allow the user to play an active part in in reorganizing and integrating learned information.

The presented account will be strictly theoretical, however descriptions of concrete examples of the most promising VR learning environments will be provided.

3. Conclusions

VR environments promote personal involvement of students and gaining practice by working on specific projects and real life problems in simulated space. They allow for active experimentation with learning material, as well as acquiring knowledge through trial and error, by investigating several different methods of understanding the material. By solving authentic, complex problems, students acquire knowledge through self-guided action, by observing and testing the effects of their enterprises and by sharing their insights with the teacher and the group. This leads to the development of precise mental model of the learned material.