Learning and Motivational Processes When Students Design Curriculum-Based Digital Learning Games - DTU Orbit (03/12/2018)

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This design-based research (DBR) project has developed an overall gamified learning design (big Game) to facilitate the learning process for adult students by inviting them to be their own learning designers through designing digital learning games (small games) in cross-disciplinary subject matters. The DBR project has investigated and experimented with which elements, methods, and processes are important when aiming at creating a cognitive complex (Anderson and Krathwohl, 2001) and motivating learning process within a reusable game-based learning design. This project took place in a co-design process with teachers and students. The learning approach was founded in problem-based learning (PBL) and constructionist pedagogical methodology, building on the thesis that there is a strong connection between designing and learning. The belief is that activities that involve making, building, or programming provide a rich context for learning, since the construction of artefacts, in this case learning games, enables reflection and new ways of thinking. The students learned from reflection and interaction with the tools alone as well as in collaboration with peers. After analysing the students’ learning trajectories within this method of learning, this study describes seven areas of the iterative learning and game design process. The analysis also shows that the current learning design is constructed as a hierarchy supported through different roles as learning designers contained within one another. The study found that the students benefitted from this way of learning as a valid variation to more conventional teaching approaches, and teachers found that the students learned at least the same amount or more compared to traditional teaching processes. The students were able to think outside the box and experienced hard fun (Papert, 2002) - the phenomena that everyone likes challenging things to do, as long as they are the right things matched to the individual. They were motivated by hands-on work and succeeded in developing four very different and meaningful learning games and game concepts, which contributed to achieving their learning goals.

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