An investigation into the potential of collaborative computer game-based learning in Higher Education

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Advocates of game-based learning argue that computer games have the potential to transform university education, motivating and engaging a new generation of learners in a way that traditional education does not. The research described in this thesis, grounded in the fields of education, human-computer interaction and game design, questions this assumption and considers the case for computer game-based learning in Higher Education.

Initial research found that positive motivation for games-based learning is by no means universal in adults, and that a propensity to play games recreationally does not imply an enthusiasm to use games for learning. However, even reluctant gamers were willing to try game-based learning if it was perceived to be an efficient way to learn.

Criteria were developed for the design of effective educational games, based around theories of constructivist learning. These informed the development of two collaborative game-based activities with identical learning outcomes: an adventure game and an online version of a traditional teambuilding exercise.

Questionnaires were developed to measure self-reported learning and engagement and 112 students participated in an experiment to compare educational effectiveness between two groups, one using the adventure game and the other the teambuilding activity. No significant difference was found between the two conditions, with the exception that those students who used the teambuilding game had a significantly greater perception of control than those who used the adventure game.

This study challenges the assumption that games will revolutionise education because they lead to increased motivation and engagement. Instead, it argues that there is a potential for increased engagement through educational games, but this is because they embody the principles of interactive, collaborative and experiential learning.

Overall, this research offers an insight of the nature of adult game playing, practical guidance for the development of educational games, a validated tool for measuring post-experiential engagement, a critical analysis of usability testing techniques for multi-user games, and a genuine rationale for the use of game-based learning.

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