



Combining Two Educational Innovations: Enquiry-Based Learning and Computing Student Development of Serious Computer Games

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Abstract:

Most serious games are developed for student use by professional programmers and educational researchers. However, when the target student population are computing science students, then further exploitation of serious games to support learning can be gained through asking the students to develop the serious games themselves.

Much work has been undertaken in recent years in the fields of problem-based and other enquiry-based approaches to organising student learning – generally such approaches involve organising students into teams, and having the students solve “problems” over a period of time. Students gain many important “soft skills” such as communication, working with others, time management; in addition to having to bring together many different aspects of their chosen domain of learning, to solve a non-trivial task. In Ireland, and other countries, in recent years such enquiry-based learning approaches have begun to be used in technical subjects such as engineering and computing science. A “computer game” is an appealing deliverable to ask computing student teams to develop, since they already have a clear idea of what the software system is to do. Computer games require many different aspects of computing science theory and practice to come together, and the sophistication of the game determines the range. For example, a progression of games for different semesters or years of teaching might include: simple number guessing games (guess a number, simple card games, up to interactive 3D games – now possible in 4-5 week projects through use of game development environments such as Unity unity3d.com). For final year students, setting serious games as the team objective further brings into play key issues about the importance of the users of the final computer system and the learning that the computer game is intended to support. Recent student projects at the author’s college including games to promote fire safety and campus layouts.