Editorial for EJEL Volume 15 Issue 4
Special Issue on Games-Based Learning

The papers in this volume tackle a range of contemporary issues that reflect the varied interests of the games-based learning community. Topics include the learning and motivational features of games, characteristics of the players and the context in which games are played, as well as methodological issues relating to game evaluation. The papers also reflect the diverse content areas that digital games now address, such as games to teach computer programming to children, games to teach sign language and games to illustrate the interdependent nature of planning operations in a container terminal.

There is recognition in the literature on games for learning of the need to provide a strong evidence base showing that games are more effective than traditional methods of learning. Kamnardsiri et al report a carefully designed evaluation comparing their game for learning American Sign Language (Kinect) with the traditional face-to-face learning that is typically used in sign language skill training for students with hearing impairments. They found that, while both groups improved performance following training, the game group showed higher scores than the control post training.

An important question for games for learning concerns the kind of thinking that they can support. Games that can support higher level thinking such as problem solving are of particular interest. Rose, Habgood and Jay endorse Papert's view that computational thinking is just as important for children in the 21st century as the 3 Rs – reading, writing and arithmetic. Rose at al. aimed to extend our understanding of how Visual Programming Tools can help to develop computational thinking in children. They found that children using a ScratchJr-like interface performed more program manipulation or 'tinkering' than those using a Lightbot style programming interface and that non-verbal reasoning predicted program manipulation, but only for those in the ScratchJr-like condition.

A number of papers addressed the need to consider individual differences between players in designing games. Recognising that different players may enjoy different kinds of games, Lukosch et al examined how gender and cultural differences impact on player experience and game performance while playing a complex problem solving game that aimed to illustrate the interdependent nature of planning operations in a container terminal. They found that females performed better than males on this task and explained this in terms of the superior abilities of females on planning and attention tasks. They also reported cultural differences in performance.

An important advantage offered by the interactivity of games concerns their capacity to adapt to characteristics of the learner. Gardner's theory of Multiple Intelligences suggests that people exhibit multiple dimensions of intelligence, such as interpersonal, intrapersonal, bodily-kinaesthetic and musical-rhythmic, as well as the more traditionally recognised visual-spatial, linguistic and logical-mathematical intelligences. Sajjadi, Vlieghe and Troyer aimed to map these different intelligences to the fundamental building blocks of games, i. e. game mechanics. They surveyed game experts' self assessments of their preferred games, categorised these by game genre and game mechanics and linked these to the experts' self evaluations on multiple intelligences. The authors suggest that these mappings illustrate which game mechanics suit which MI dimensions, and can provide guidelines in designing games for people exhibiting dominance for specific MI dimensions.

Lukosch et al.'s game included a collaborative element where success depended on working together. Collaboration was also examined by Scoular, Care and Awwal who described an Approach to Scoring Student Collaboration in Online Game Environments. Scoring is an important aspect of many games and careful consideration has to be given to how it is implemented. Scoring collaboration between players raises additional issues that do not arise with scoring individual players. Scoular et al. presented a generalised approach to scoring collaboration based on identifying common behaviours across 3 different games.

The immense popularity of entertainment games gave rise to the hope that the features of entertainment games that make them so engaging might also lend themselves to more effective learning. Mozelius, Fagerström and Söderquist examined how motivating factors and intrinsic integration of knowledge in

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educational games might be related to players' perceived knowledge acquisition. This paper also addressed the interesting issue of tangential learning, where players find that they enjoy playing a game and are encouraged to follow up on this new interest out-with the gameplay. The key finding was that intrinsic integration of information in games was linked to knowledge acquisition and tangential learning.

The uptake of educational games in the classroom will be influenced by many factors but the Technology Acceptance Model (TAM) emphasises that the perceived ease of use and perceived usefulness of a technology will impact strongly on how well users accept that technology. Sánchez-Mena, Martí-Parreño and Aldás-Manzano used the TAM model to examine teachers' acceptance of games in the classroom and and they confirmed the links predicted by the TAM model. They also found that age moderated the effect of teachers' perceived ease of use on perceived usefulness, suggesting that older teachers are less accepting of games as a means of learning.

Collectively these papers provide a snapshot of research in this fast developing area, adding to the evidence that games for learning can provide entertaining and enjoyable gameplay with effective methods of learning in many different content areas, both curricular and non-curricular. The papers also show that there are still many issues to address, especially with respect to how learning outcomes can be supported by different kinds of game mechanics.

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