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Online gaming and synthetic worlds as a

Videogame technology brings many advantages to the education arena. Educational research on the use of videogames has shown them to have great positive potential by using their interactive entertainment value (curiosity, fun challenge, etc.). Furthermore, there has been considerable success when videogames are specifically designed to address a specific problem or to teach a certain skill (Griffiths, 2002). Games such as 'Darfur is Dying' and 'World Without Oil' highlight that games playing has already developed well beyond the interests of the stereotypical teenager.

Video and computer-based games sometimes possess advantages not present in other learning strategies. For example, simulations provide the ability to choose different solutions to a difficult problem and then see the affect those decisions in a fictional game. This allows students to experiment with problem solving in a relative safe environment (Griffiths, 2002). More recently, avatar-mediated environments -used in online games known as MMORPGs (massively multiplayer online role-playing games) and synthetic virtual worlds such as 'Second Life' - have become very popular. This article briefly looks at how games in this media may be of help to the classroom teacher.

Synthetic worlds and metaverses

There is a great deal of hype around "serious games" and their impact on learning. Nowhere is this more apparent than the many surveys that are sponsored by games companies for their PR value. For instance, Taylor (2007) noted that Corporate Learning Games in Europe polled views from games developers, the learning industry, and the corporate marketplace. When asked 'Do you see great potential for using games in organisational learning?' 100% of the corporate respondents agreed and saw great potential for games in learning.

Despite the hype, Gordon Snyder, Jr., the Executive Director and Principal Investigator of the National Center for Telecommunication Technologies in the US, describes how MMORPGS and synthetic worlds can be used in the classroom (Snyder, 2007). For instance, the virtual world 'Second Life' can be used to help teach mathematics and science concepts. 'Second Life' is an example of a metaverse. Metaverses are online virtual worlds in which there are no specific goals or objectives and in which the user creates an avatar and then explores the world as that avatar. Users are able to chat with others in the world and interact with their avatars. The real educational potential of the metaverse concept is when the platform is used to do things that cannot otherwise be done in a classroom. Some examples of the practical power of a metaverse include:

· Shrinking down and walking through the human body
· Flying above a cityscape to see patterns or green space
· Becoming another gender or race
· Manipulating financial markets and observing the outcome

These are innovative uses for metaverses and they provide educational environments that go beyond the current classrooms in the pupil's imaginations. Synthetic world platforms (such as 'Second Life') provide a very cost-effective way of creating metaverse learning environments. The immersive and interactive qualities of metaverses and MMORPGs provide an innovative environment for experiential learning. In games like 'World of Warcraft' players are constantly strategizing, calculating risks, recruiting guild members, planning and executing raids, allocating winnings, etc. The process of becoming a skilled 'World of Warcraft' player involves collaborative experiential learning around a functional process or set of activities. Some may even argue it is a total immersion course in leadership. Modern internet-based platforms and processing power make possible rapid interaction and simulation that is compellingly rich in detail - in particular MMORPGs.

Multiplayer online games for school education

A case study example

While the use of 'offline' games in school contexts are growing in popularity with tutors and learners, development of the use of MMORPGs and synthetic worlds to support learning for school children is clearly in its earliest stages (de Freitas & Griffiths, 2007). One such research project - Rochester Castle - was undertaken by researchers at Charles Sturt University in Australia. The pilot study at Swan View Senior High School in Perth, Western Australia, demonstrated potential for supporting collaborative learning processes, such as those associated with problem- and experience-based learning (Lee et al, 2005).

The Rochester Castle project is original not only because it uses a MMORPG to support learning in a school, but also in that the learners designed and developed the

game themselves. The teachers and research team initially created the virtual environment for Society and Environment students to explore the history of Rochester Castle in England in a more interactive way. The role-play online game was based upon a Multi-User Domain Object-Orientated (MOO) and was used to support English and History students. The learners designed and developed the game based upon a scenario presented by their teacher.

The researchers conducted an interim analysis of online gamer behaviour and found that 53 student online gamers were using Rochester Castle for a total of 223 pupil hours, which averaged at 5.2 hours per pupil. Interestingly, the average time spent by teachers supporting the game was nine hours (about typical teacher preparation time). The project was successful in engaging the schoolchildren in a more interactive approach to learning, which also supported collaborative and team-building skills, skills that could then be applied to real life. Pupils using the MMORPG found that they had gained new skills in learning collaboratively online while teachers found that they had developed new ICT skills and enhanced teaching practices.

The MMORPG piloted here indicates important implications for producing collaborative learning content through content authoring interactive environments that gaming offers teachers and learners. The project also indicates the potential of gaming for supporting collaborative learning approaches that support 'flow' between learning groups and throughout the learning experience, helping to engage learner cohorts but also contributing to skills development.

Conclusions

At present, multiplayer online games are being piloted in a range of learning and training areas (de Freitas, 2006). New research projects and collaborative

examples from learner communities indicate that experimental take-up of online gaming is being explored in wider learning and training contexts. Although there is evidence that these online games are being used in practice, the need for the development of tools for evaluation and validation of the use of serious games to support learning outcomes is ongoing and experimental. If serious gaming follows the same route as the use of simulations, its employment may be characterised by usage in pockets of learning and training contexts, rather than as a generic tool used across different disciplines and learning contexts.

Case studies such as the one outlined above, indicate the potential for supporting effective collaborative learning does merit further experimentation and study, and early indications suggest that this form of gaming could provide a rich vein of potential for training and learning in groups, particularly where they build upon the tried and tested methods associated with simulation-based learning approaches. Furthermore, there is more than anecdotal evidence that gaming can support intrinsic motivation and so help to engage learners and collaborative processes (de Freitas et al., 2006).

The implications of these new forms upon general formal education are difficult to assess at this stage. The widespread use of games to support learning indicate that games can be used to support exploratory learning, to support peer interactions and in support of higher cognition but clearly have challenges for standard pedagogic practices and for how institutions are organised. The wider use of multiplayer games and synthetic world applications make also have an impact upon the physical organisation and use of the university campus, with the emergence of 'cybercampuses' (or virtual representations of campuses) where seminar and lectures in virtual spaces are becoming part of the wider learning activities.

In conclusion it would appear that synthetic worlds are here to stay, and can offer an engaging educational experience that - in some cases - justifies the investment required in development. However, it must be noted that games are only part of the learning mix and teachers need to know the pedagogical relevance. This includes motivation, engagement, interactivity, providing rewards and reinforcement for skill improvement.

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