

Evidence that using Games-based eLearning (G-beL) can lead to significant benefits for learners and organisations.

The combination of games and learning is not a new phenomenon (Rieber & Noah, 1997). Scenario-based role-playing has been used as an educational approach for centuries. There was little evidence of the use of games and games-based approaches in the context of publicly available, technology-based training and education in the latter half of the 20th century.

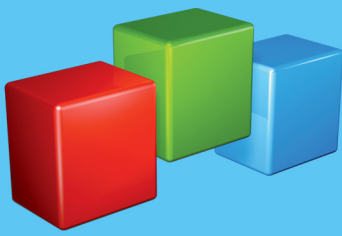
By the beginning of the 21st century however, many people and organisations had begun to consider that computer game approaches and technologies might offer an opportunity for encouraging and demonstrating the application of knowledge and information, thereby achieving Alexander's definition of deep learning. This interest was demonstrated by web searches for 'digital games based learning' conducted in this research between 1999 and 2002. The last of these, conducted in March 2002 through the Google.com search engine, returned 235,000 'hits' on the subject, including links to books, academic papers, international conferences, niche professional services, public sector bodies and works by individual training professionals and educationalists.

After conducting an extensive review of many of these sources of information, it was concluded that digital games-based learning is based on two premises: that interactive games approaches, such as role playing, exploration and simulation offer significant advantages over the simple presentation of information as was apparent in many hypertext-based learning approaches during the late 1990s; and, that the technologies and development methodologies adopted and perfected by the video games industry for entertainment purposes can be used to great effect for training and educational purposes.

Jones (1997) described learning environments as being where "users are free to define their own problems and work towards individual solutions" and drew parallels with computer games which he described as "motivating, and weave a fabric of content and fantasy so seamlessly that one can become lost in the game for hours." He contrasted this with what he termed 'instructional environments', which he stated, "hold the designer as primarily responsible for creating the regulatory structures of the environment. Both the problem and solutions are determined by the designer, and all learners will likely take the same path towards the solution." These statements bear close comparison with the contrast between the Instructivist and Constructivist teaching approaches.

Clive Shepherd, Director of eLearning at the Institute of IT Training asked, "What's the single, biggest obstacle to e-learning continuing to grow and fulfilling its potential?" It was not, he suggested, the cost of development, the lack of human contact nor reluctance for change, none of which he described as being "irresolvable" (sic), rather the real problem, as he saw it, was likely to be plain boredom.

Prensky (2001) declared that from the learner's point of view, the problem with the use of technologies for training "is that they are used today primarily to make things easier for the trainer". He described the majority of the uses of technology for training as elementary or old fashioned, and stated, "apart from remote delivery, it adds little to learning and often detracts from it."



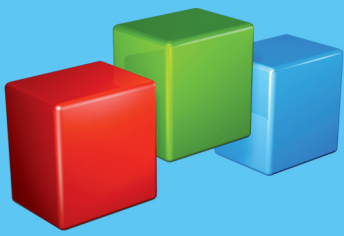
Such comments support the findings of Clarke (1983) and Kulik, Kulik & Cohen (1980) which emphasised the primacy of instructional methods over a focus on the features of the technology. Leyland (1996), stated that "education technology has yet to firmly realise its potential as an effective facilitator of deep learning" and referred to the works of Laurillard (1993), who called for learning experiences that are more like real life. Leyland also cited Laurel (1991), stating "Laurel recognises the power of our imaginations to create representations of the world when we read novels and plays." Laurel (1991) stated "these representations are wholly contained in the realms of the imagination yet they transport us to alternative possible perspectives and may influence us in ways that are more resonant and meaningful than experiences that are actually lived".

Leyland (1996) saw the sustained imaginative immersion that computer games provided as a way for "the player to invest something of themselves in a game or learning experience as they fully engage with the role". This 'personal investment', he concluded, was a critical factor in achieving deep learning.

The BECTa Computer Games for Education (CGE) Project, in which the researcher has participated, was established in 2001 and involved educationalists, teaching and training bodies, academic institutions, computer games developers and experts in other related fields. The BECTa report, entitled "Draft Research Findings of the CGE Project" (Dawes & Dumbleton, 2001), stated that its purpose was "to investigate what aspects of computer games might benefit software designed for use in educational settings."

The CGE Project was just one example of the significant interest in digital games-based learning which existed at the beginning of the 21st century. Other publicly funded bodies in the UK such as The Joint Information Systems Committee (JISC), Teachers Evaluating Educational Multimedia (TEEM) and the National Endowments for Science, Technology and the Arts (NESTA) and indeed, the Department for Trade and Industry have all commissioned or conducted research into the use of games for education, training or general learning. According to its web site, JISC "promotes the innovative application and use of information systems and information technology in further and higher education across the UK." In March 2002, it published a report entitled: "The relevance of video games and gaming consoles to the Higher and Further Education learning experience." The report concluded that "Games themselves present, in relevant contexts, possibilities for learning and teaching support, and are used as such in an increasing number of classroom scenarios (mostly in the US)."

TEEM published its "Report on the educational use of games", which is described as an exploration of the contribution which games can make to the education process (McFarlane, Sparrowhawk & Heald, 2002). The report is fundamentally positive about the potential for computer games for learning but stated: "It seems that the final obstacle to games use in schools is a mismatch between games content and curriculum content, and the lack of recognition for skill development." Assessment criteria within the National Curriculum, it would seem, is primarily concerned with the acquisition of knowledge (surface learning approaches) rather than the acquisition of meaning (deeper learning approaches). This lack of recognition of skill development in preference to easily assessable fact and information recollection is the fundamental weakness of standardised curricula according to Schank and Cleary (1995).



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'The Learning Game' (Henning 2000), commissioned by NESTA, took a different slant to the previously mentioned examples, in that it sought to identify the needs of UK software developers and education-
alists and to encourage the development of effective and commercially viable educational software
in the UK. The NESTA report showed that the interest in digital games-based learning is not a purely
academic one. The participation of the European Leisure Software Publishers Association (ELSPA) in the
BECTa CGE project also demonstrated that the commercial computer game developers and console
manufacturers are likely to play a major part in the continuing evolution of eLearning.