# Advance

## Virtual worlds for learning

Our experience of the World Wide Web is changing rapidly. What was once essentially a publishing medium, allowing content to be shared online for passive consumption, has evolved into a highly interactive environment, to which users contribute and in which they communicate and collaborate with each other much more than they simply consume. The 'read-only' web is now the 'read-write' web, Web 2.0 rather than 1.0. And from these developments are arising a host of new opportunities for learning experiences:

blogs, which enable students to maintain their own learning journals; wikis, in which learners collaborate to create content; social networking, which facilitates contact building and community; and virtual worlds, which allow learners to interact in alternative 3D spaces. Each of these opportunities has the potential not only to transform education and training but to bamboozle even the most open-minded and eager of learning professionals. This article attempts to demystify and contextualise just one of these opportunities, that of virtual worlds.

According to Wikipedia, a virtual world is a 'computer-based simulated environment' which users 'inhabit and interact with via avatars.' Don't be put off by the terminology, because the idea is actually quite simple. You've undoubtedly seen 'computer-based simulated environments' before, because they have formed the basis for the majority of video games for the past ten years. You can distinguish virtual worlds from other computer-based simulated environments because the graphics are in 3D – just like modern cartoon films such as Toy Story. But unlike these cartoon film graphics, the 3D images in virtual worlds are created on-the-fly by the computer, in response to user interaction. This takes a lot of processing power, but that is not a problem for the modern PC or games machine – power is available in bucket loads. The Wikipedia definition refines the concept further by introducing the notion of an avatar – 'an internet user's representation of himself or herself' – which the user employs to navigate the 3D world. An avatar may be configured to look something like the user does in real life, or it may be a radical alternative – the virtual world doesn't mind.

## Elements of the virtual learning experience
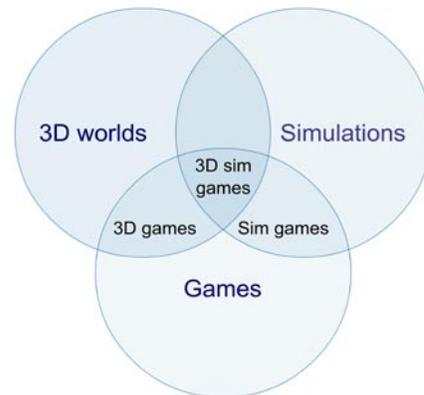


A virtual world provides a platform upon which educational experiences can be constructed, but in itself is no more than an 'alternative reality', which may or may not have any relevance to the user's real-life world or indeed their learning interests. Even so, some educational benefits are being claimed for virtual worlds in their own right. For a start, the experience of navigating through a virtual world using an avatar is novel for many people, particularly those who are not regular video game players. It is often described as immersive, implying that the user is likely to be captivated by the experience and to engage with it on a deeper level. And navigating through the medium of an avatar provides the learner with a feeling of being in control of the learning process. These benefits are likely to be present even if you are merely using a virtual world as a sort of a gimmick – perhaps just to host a quiz or provide access to standard 2D materials such as video or documents.

Virtual worlds offer more powerful learning opportunities when they are configured to simulate some aspect of a real-world task.

Simulations provide a means for the learner to practise a task without risk to themselves, to others or to expensive equipment. Consider the flight simulator, perhaps the classic example of the use of 3D graphics for training purposes, which allows pilots to practise their full repertoire of aerial manoeuvres in an incredibly life-like virtual environment – so lifelike, in fact, that many pilots need only minimal further training in the real aircraft to become totally proficient. For simulations to be credible they need to be faithful to the real-world task, both physically and functionally. Functional fidelity – the degree to which the simulation behaves like a real-world process – does not require 3D graphics: an economics simulation, for example, could run quite happily in a spreadsheet. Physical fidelity – the degree to which a simulation appears like a real-world process – will be considerably enhanced by a 3D virtual world, assuming that this is closely modelled on real-life.

Imagine a simulation in which engineers have to navigate a virtual oil rig to identify health and safety hazards and how much more realistic than scanning photographs or watching a video this is.

Virtual worlds can also be enhanced by elements of game play. The best games will engage and motivate learners to a degree that is typically not achievable using other approaches. Games can involve simulation (think of a business game, in which a model of a business situation is explored competitively, or a 2D game, such as early versions of SimCity) and can use 3D graphics (as with most modern video games, particularly of the action variety) but can take many other forms as well. Don't forget quiz games, text and 2D graphical adventures, board games, mind games, Olympic Games! Games can be defined

as challenges, in which the player has to overcome obstacles (hazards, misfortune, competitors) in order to achieve well-defined goals (scoring, solving, finding, beating) within defined constraints (time, 'lives', rules), but without serious risk (of physical injury, of economic harm, of hurt pride). Games may be thought of as mere play, but they are capable of raising the intensity of an activity to deliver an unforgettable learning experience. 'Serious games' are becoming seriously important.

## Using virtual worlds for learning

Like e-learning in general, virtual worlds provide the basis for a wide variety of very different learning experiences. These may employ the same basic 3D technology but have different characteristics which make them more or less appropriate to meeting particular learning requirements. As the following table shows, 3D virtual worlds can be employed in an asynchronous (self-paced) context or as platforms to support synchronous (live) learning, much like the traditional and e-learning approaches which preceded them.

|  | Asynchronous (self-paced) | Synchronous (live) |
|---|---|---|
| **Traditional learning** | Books, videos, etc. | Classrooms |
| **2D e-learning** | Self-study materials<br>2D games and simulations | Virtual classrooms<br>Chat rooms |
| **3D virtual worlds** | 3D games, simulations and scenarios | Multi-player games and simulations<br>In-world workshops |

In both traditional and e-learning forms, self-paced learning offers enterprises many advantages over live learning – it takes much less organisation, can be scheduled more easily around work priorities and provides the learner with greater flexibility and control. Asynchronous activities set in virtual worlds enjoy the same benefits. Imagine a customer service activity set in a virtual retail outlet; a problem-solving challenge for managers based in a virtual office; a language learning exercise set in a virtual Spanish restaurant; an induction programme showing how work was carried out when a company was first formed more than a hundred years ago.

However, as all teachers and trainers well know, asynchronous self-study is not enough. Live events are immediate and energising. Collaborative activities facilitate the sharing of experiences and perceptions; they

allow interpersonal real-world tasks to be simulated; they also generate a degree of peer pressure/competition. Virtual worlds are rising to the challenge of providing these benefits. Tools such as Forterra allow large numbers of users to interact in real time to play out critical scenarios such as fire, criminal or medical emergencies.

Although it is certainly not a trivial task to create a bespoke virtual world, the tools and techniques originally developed for game design and military and aeronautical simulators are increasingly being adapted for educational and commercial use. Some of these exercises may be expensive to set up, but there is often no alternative real-world way for users to obtain the same experience, and the costs pale into insignificance when offset against the advantages and increased likelihood of success. Furthermore, with tools like Caspian Learning's Thinking Worlds, a bespoke 3D training

programme should not cost much more than a top-end 2D e-learning equivalent. Organisations that plan ahead can spread the cost by reusing the same virtual worlds in a number of different programmes.

Perhaps the most famous example of a collaborative 3D environment is SecondLife, a virtual space which millions of computer users around the world have sought to inhabit. SecondLife is a virtual world in the purest sense, which 'residents' can extend, manipulate and exploit to their own needs. If SecondLife includes game play it is because users have introduced it; if it attempts to simulate some real-world place or process, then this is of the users' making. Residents can explore their world, meet other residents, socialise, participate in individual and group activities, create and trade items and services from one another. In the process, they could learn something.
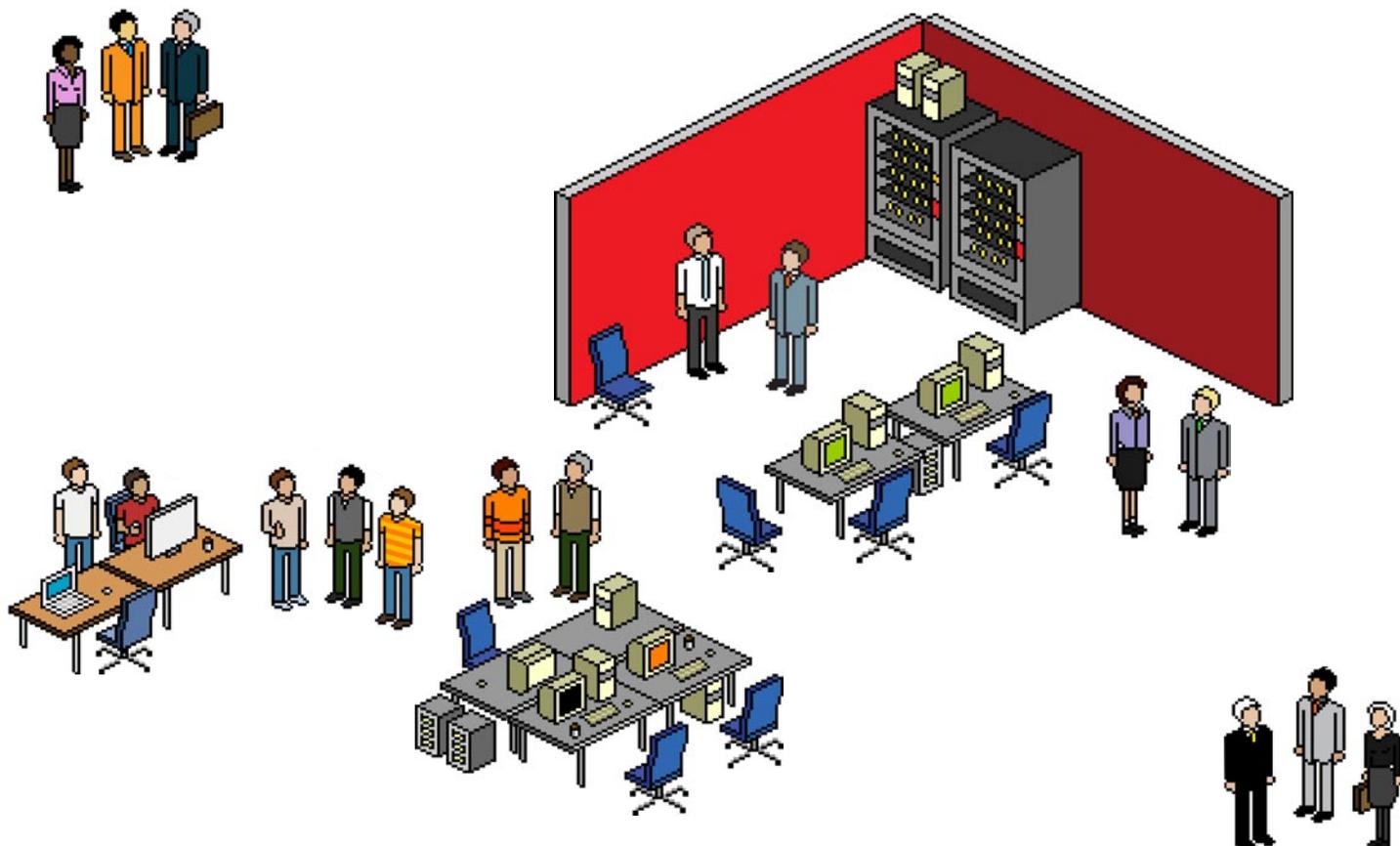
Many organisations, including well-known corporations and educational institutions, have established a presence in SecondLife - images of which you can see below - whether for promotional purposes or as a vehicle for hosting seminars, meetings and workshops. In some cases, this amounts to little more than web conferencing in 3D, complete with PowerPoint. In others, learners are set problem-solving challenges within the context of a custom-built simulated environment, requiring them to interact both with each other and with content. Looking to explore the potential for virtual worlds in learning, Saffron Interactive has established its own 'island' in SecondLife. Expect to meet there with other e-learning enthusiasts sometime soon.

Virtual worlds are, of course, no panacea. What they do is provide the designer of learning experiences with yet another set of choices. In some cases these make possible what was previously impractical; in others, they simply enhance an experience that would otherwise have been less authentic, less engaging and less enjoyable. And that's not such a bad thing.
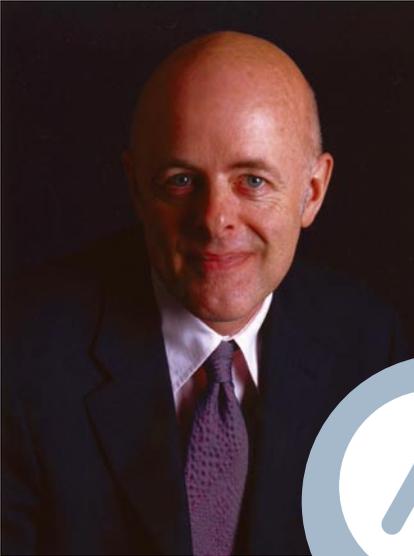
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Clive Shepherd is a consultant specialising in the application of technology to education, training and employee communications. With more than twenty years of experience in this field, Clive is acknowledged as a thought leader in the UK in all aspects of e-learning.

Clive developed his interest in interactive media at American Express in the early eighties, where he was Director, Training and Creative Services. He was co-founder of Epic Group plc, where he played leading roles in the management, creative and technical sides of the business.

Since 1997, Clive has worked with a number of large public and private sector organisations on the application of the Internet and intranets to learning and employee communications. In his role as e-Learning Director for The Training Foundation, Clive developed an accreditation programme for e-learning providers, standards for e-learning materials and training programmes for e-learning designers and online tutors.

As well as consulting, Clive specialises in courses for educators, trainers and HR professionals in all aspects of e-learning, from strategic management through to content development and e-tutoring. He also undertakes design and development work for e-learning and blended solutions through Above and Beyond Ltd.

Clive has an MA from Lancaster University and is a Fellow of both the CIPD and the IITT. He is also a Member of the Chartered Management Institute. He is a regular contributor to technology publications and conferences, with two books and more than 70 articles published to date.

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