

Sorting through simulation options

The future of e-learning lies with simulations that engage learners in realistic and fun experiences

BY MATHEW GEORGHIOU

In years technology-based training has offered great potential and promise, and it has delivered in some ways. In particular, it has allowed people to choose where and when they learn, thereby reducing cost and increasing accessibility and convenience.

But one important area where e-learning has failed is in not sufficiently improving how well people learn. That's because the focus has been placed on technology and delivery mechanisms, not on how humans learn best.

According to many cognitive experts, educators and instructional designers, humans learn best through experience. They learn by going out into the world and doing the things they want to learn. When learning-by-doing is not feasible in the real world, one option is learning-by-doing in a simulated environment.

Following are a list of the various types of simulations. Bear in mind that more advanced simulations often use several of these approaches in a single simulation.

- Software application simulations: These show how to use software programs (such as Excel or Word), taking the learner through precise sets of mouse clicks and keystrokes.

- Procedural simulations: These visually demonstrate a procedure, such as how to assemble a product or fill an order.

- Device/equipment/technical simulations: These recreate a piece of equipment, allowing learners to interact with the equipment as they would in the real world.

- Process modelling simulations: These are used to mathematically (and often visually) recreate a system, such as a chemical process, manufacturing line or a distribution channel. Through process modelling, learners identify and manipulate key variables that affect a system or a process. These simulations are ideal for performing sensitivity analysis, risk assessment or forecasting.

- Forecasting simulations: These programs attempt to predict future results based on various mathematical algorithms and past results. They are rarely ideal for learning. Forecasting simulations need to be as accurate as possible, whereas many e-learning simulations are more focused on introducing the variables and interactions of an experience, and therefore must often exaggerate and accelerate consequences in order to facilitate the learning.

- Role-playing simulations: These put a learner in a scenario where she must interact with simulated people. The learner chooses from a list of preset responses and the simulated people respond according to what is selected. This can be used to simulate a sales or a customer-service interaction.

- Virtual worlds or spatial simulations: These demonstrate a place that may or may not yet exist. An architect, for example, can render a walk-through of a building or a spacecraft.

- Games: The computer gaming industry is replete with examples of advanced simulation programs, some of which can provide valuable learning opportunities. Take the city planning game SimCity. Even immersed in the pleasure of playing the game, a player will likely learn something about balancing resources, contingency planning or problem-solving. These types of advanced games, however, are often designed specifically for entertainment, not learning. There are a variety of basic games used in business environments, such as trivia games to present corporate information or reinforce general knowledge.

- Experience simulations: These model a personal experience by immersing a learner in a specific aspect of life. The learner could be put in the role of an entrepreneur to start and manage a business, a stock-broker trading on a virtual exchange, a manufacturer managing a virtual production line or a sales manager interacting with virtual customers. These non-linear experiences enable learners to do in the simulation what they would do in real life, analyzing information, making decisions and realizing the consequences.

Uses and limitations

Simulations can be used for training, testing and assessment, planning and forecasting, as well as marketing and branding. They are ideal for modeling complex non-linear situations that have multiple variables and no perfect outcomes. They are also useful for situations that are dangerous, costly or difficult to set up in the real world. Simulations are not as suitable for replicating situations that involve subtle nuances such as certain types of human interaction.

When considering adopting simulation, evaluate the suitability for learning, realism, depth, ease of use, flexibility, time commitment and affordability. Challenges include finding good quality programs and companies with the capability to develop them. And then there is cost. The more depth in the simulation, the more time it takes to develop. A recent study estimates that e-learning simulation takes three to six times more effort to develop than conventional e-learning — not to mention a high level of design expertise. The good news is that quality and affordability are improving as simulation is more widely integrated into off-the-shelf e-learning.

The extra effort needed to evaluate and choose a simulation, or the increased developments costs, should be considered in light of the potential for simulations to offer a better learning experience, which could mean faster learning and improved employee participation, satisfaction and on-the-job performance.

Well-designed simulations bring learning to life by making it realistic, engaging, and even fun.

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