

## The Benefits of Simulation-based eLearning

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### Introduction

It has long been recognised that simulation-based eLearning, or 'learning by doing' is a highly effective way of embedding knowledge in long-term memory and creating unconscious competence in learners. Yet many eLearning courses still focus on traditional page-turning 'learning by reading', which relies on a student's short-term memory and often doesn't translate to on-the-job performance.

This whitepaper will look into what simulation-based eLearning is, its advantages over traditional eLearning, and how it benefits on-the-job performance. This whitepaper will also present two case studies that demonstrate how Workstar utilises simulation-based eLearning solutions for our clients.

### What is simulation-based eLearning?

A simulation allows learners to experience an event as if it was really happening. 'Simulate' means to replicate the essential features of a task or situation. Learners interact with simulations in a similar manner to how they would react in the real world (Blignaut, 1999).

Simulations also arouse curiosity and stimulate the learner through the storyline whilst challenging the learner with goal-based scenarios. The result is increased motivation, and eLearning won't work if learners lack the motivation required to facilitate learning.

*"The purpose of a simulation is to help the student build a useful mental model of part of the world and to provide an opportunity to test it safely and efficiently"*

(Alessi & Trollip).

Simulation-based eLearning is designed to do four things:

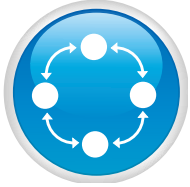
1. Contextualise the learning in a real life scenario that learners may face on the job.
2. Provide a safe, simulated environment where learners have the opportunity to practice their skills without fear of real-life consequences.
3. Utilise remedial feedback to explain the consequences of mistakes and reinforce best practice.
4. Simplify and control reality by removing complex systems that exist in real life, so the learner can focus on the knowledge to be learnt effectively and efficiently (Alessi & Trollip, 1991, p.119).

## Types of simulations

There are four main types of simulations:



**1. Physical simulations** replicate a physical object on-screen for the learner to 'play' with. For example, the learner can experiment with the settings on a digital camera and view the resulting photo.



**2. Process simulations** are used to inform learners about a process or concept that does not manifest itself visibly. For example, how the laws of supply and demand work (Blignaut, 1999).



**3. Procedural simulations** teach learners about how to perform a sequence of actions that result in an outcome. For example, how to save a document in an application.



**4. Situational simulations** deal with the attitudes and behaviours of people in a situation (Alessi & Trollip, 1991, p.127). For example, calming an angry customer or counselling an employee.

## What is the advantage over traditional eLearning?

Simulations offer the possibility of **learning by doing, instead of learning by telling**. Rather than just presenting knowledge to be learnt, a simulation places the knowledge into a scenario and allows the learner to experience it occurring.

Roger C. Schank states that the problem with traditional eLearning is that it's just like school. When you think back to school you can quickly reminisce on a teacher standing at the front of the class imparting knowledge that you needed to commit to memory in order to pass the upcoming test.

Sure you probably passed the test, but how much of that knowledge can you recall today? Compare that to something that you learnt by doing, such as riding a bike or operating a computer. If you were to retake that same test from school would you fair better than being tested on how to drive a car? By comparing the teaching methods and the knowledge you have retained today, the advantage that simulation-based eLearning holds becomes clear.

Intuitively we all know we learn by doing. As a toddler we learnt to walk by practice and we learnt to speak through mistakes and corrections. We didn't have a teacher imparting knowledge and rigorously testing us. We learn by practicing our skills and receiving feedback, such as falling over or a parent correcting our pronunciation. The point is that none of this is memorised by instruction to our short term memory; instead it is practiced until we master it and remains in our long term memory for life. This is the advantage of simulation-based eLearning, it utilises the **natural way we learn – by doing**.

Simulation-based eLearning offers four distinct advantages to the natural method of learning by failure:

**1. Failure can be controlled** – By creating simulation failures, the focus is on learning targeted skills.

**2. Failure can be explained by experts** – Learners that have made mistakes can instantly view the right answer and an explanation as to the correct response.

**3. Failure is private** – Feelings are cushioned as there is no one around to observe the failure. People are more comfortable to have a go and make mistakes.

**4. Failure is without negative consequences** – There is a safety net to ensure mistakes don't have a real-life consequence. This allows the learner to make mistakes, fail painlessly, learn and then try again.

### **How does simulation-based eLearning benefit on-the-job performance?**

Roger C. Schank points out that given enough time, people are great on the job learners (Schank, 2002, p.7). However most organisations don't have the time to wait for staff to learn on the job and can't afford to pay for novices mistakes. It is necessary to speed up the 'learning by doing' process, and simulation-based eLearning is an effective way of achieving this.

Simulations make it possible for the learner to practice dealing with a dangerous situation (such as a hazardous substance spill) without the dangerous consequences that can occur in real life. The novice is able to build experience within the safety of the simulation before the organisation allows them to perform the tasks in real-life – ensuring the mistakes are ironed out before they become costly.

Simulation-based eLearning benefits on-the-job performance in the following ways:

- Knowledge is placed in work specific context which helps learners blend it into their existing knowledge of their job.
- Knowledge and skills required to be performed on-the-job have been mastered through practice.
- Progression from novice to master is rapid because knowledge is learnt whilst skills are practiced and confidence is built.
- The learner understands the consequences of mistakes without experiencing them in real life and therefore reduces the number of mistakes made on the job.

*“The educational model in school does not work. That fact, however, hasn't deterred business from adopting this model, which is based on the belief that people learn through listening. Memorize the teacher's words; memorize the training book's policies and procedures” (Schank).*

*“Learning by doing works because it strikes at the heart of the basic memory process that humans rely on. We learn how to do things and then learn how what we have learned is wrong or right. We learn when the rules apply and when they must be modified...we learn all this by doing, by constantly having experiences and attempting to integrate those experiences into our existing memory structures” (Schank).*

## Client Case Study 1: Vodafone SAM Wave 2

Mobile telecommunications provider Vodafone is one Workstar clients using simulation-based eLearning.

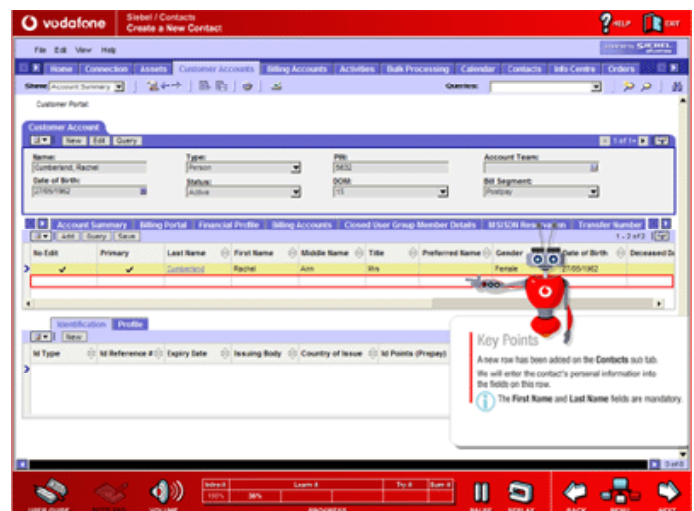
Vodafone implemented a world-wide enterprise CRM system. The SAM Wave 2 Learning Solution was designed to ensure Vodafone's people and partners had the knowledge and skills to operate, from day one, the new CRM system. The project provided an authentic and visually realistic learning experience to train staff in the new software and new business processes and procedures.



The eLearning modules were driven by an innovative simulation engine. The engine allowed learners to experience the 'real' application in a fail-safe environment, with the added benefit of instruction and feedback. Using typical customer goal-orientated scenarios, learners were able to practice solving the customer queries within the simulated CRM system.

The strength of courseware was its learning design, where learners are taken through a procedure via the *Learn it*, *Try it* and *Assess it* simulations:

**Learn it:** Work through a procedure; instructed, guided and assisted by a friendly robot mentor Oscar – Learning Mentor and Siebel Ace. Oscar's role is to instruct and to encourage in a friendly and quirky manner. Oscar was built in 3D so he could be animated, but without looking out of place in the 2D illustrated 'world'. Oscar was introduced to staff well before go-live and was the 'poster boy' for the project.



**Try it:** Practice what they have learned, still with guidance and feedback. Learners use the simulated environment as they would the live; including flexibility, window preferences, and order of task completion.

**Assess it:** The learner would now complete the procedure without assistance.

The *Try it* and *Assess it* sections summarise the learner's performance, and points to what they need to focus on; with quick navigation to the revision area.

Project SAM Wave 2 was able to demonstrate numerous advantages over traditional eLearning:

- It provided a controlled environment with built-in learning support and scaffolding, to guide the learner through the actual processes they would be required to perform within the real, working system.
- The learner gained effective 'hands-on' experience in an environment where it is safe to make mistakes, enabling the learner to build confidence along with proficiency. By 'go-live', users of the new system will have spent several months accessing appropriate training, gaining competency in the new system, and preparing for the change.
- Vodafone can rapidly realise the operational benefits of the new system, rather than endure a traditionally slow transitional phase.
- It enabled the training component of the new IT system to be commenced in parallel with the final stages of the deployment.

## Client Case Study 2: RailCorp Drugs & Alcohol Management

RailCorp is another Workstar client using simulation-based eLearning. RailCorp is responsible for train travel, infrastructure and safety within New South Wales. As a large entity with their own training college, the delivery of training that meets the business needs is of paramount importance.

RailCorp identified that frontline supervisors were not consistently meeting their responsibilities when dealing with human resources issues within their own teams and departments. This resulted in high levels of issue escalation to agencies within and external to RailCorp.

A Human Resources Management (HRM) course was already being delivered to supervisors face-to-face. Workstar's challenge was to devise a solution that supported this face-to-face training, while achieving an attitudinal and behavioural change in frontline supervisors so they didn't treat HR issues as 'too hard' to deal with.

The resulting solution was a simulation-based interactive online module that challenges learners to understand their responsibilities as supervisors. The use of the simulation places the learner into a storyline and allows them to explore various outcomes to the scenarios, using their own decisions to understand the consequence of their choices.

Of key importance is the integration of the online component as a key learning activity and the transfer to the workplace of the competencies gained during the course.

The module structure is simple, beginning with an interactive lesson that draws its foundation from relevant RailCorp policy. With this grounding, learners are then empowered to tackle the more difficult element: a real-life simulation.



The scenarios were written with input from RailCorp policy makers through to the frontline employees themselves and are based on the organisation's own cultural vernacular.

The simulation:

- Asks the learner difficult questions and presents them with up to four choices
- Demonstrates an outline of the choices they have made
- Tracks their responses to the natural conclusion

The realistic consequences have allowed learners to positively identify with the experience and take what they have learned back to their workplace. This high level of identification would not have been achieved if learners were presented with a more traditional method of learning.

## References

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*Schank, R.C. (2002) Designing World-Class e-Learning. McGraw Hill.*

## About Workstar

Workstar is a TodayCorp company providing total learning and development solutions to people and businesses across the globe.

Leading employers use Workstar's award winning technology, learning content, training and consulting services to deliver increased sales, productivity and compliance, whilst reducing training and recruitment costs.

Workstar have been awarded major national and international projects in education and training and have also received global awards recognition.

## Awards

2006 Australian Human Resources Institute: NSW Leadership Award- Consultants Category

2006 Australian Institute of Training and Development eLearning Excellence Award

2005 United Nations World Summit Award: Best eGovernment Product

2005 Australian Interactive Multimedia Industry Award: Best eGovernment Product

2002 Best eLearning Strategy Award (Human Resource Magazine for client Rebel Sport)

2002 Asia Pacific ICT Awards: Excellence in eLearning

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