

Simulating Failure: Why Simulations Don't Always Work

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Abstract

This paper assesses the circumstance and environment that makes game-based simulations effective learning tools for educational leadership training. It examines why a simulation produced for a large UK training organization failed to meet its objectives within a larger blended-learning program.

Despite extensive user testing during development more than half of participants regarded the simulation as “Not much use” as a learning resource.

The production failed to take into account a number of important user and use characteristics such as: integration with the wider programme of study, system scaffolding and peer support.

However, when used as a catalyst for group activity, the simulation proved far more effective. Its failure to work as an individual exercise but its success as a group tool offer valuable lessons about program design as well as insights into user behavior associated with games used in formal professional development.

Introduction

The use of simulations within educational contexts is well explored (Pratchett, 2005; Sandford & Williamson, 2005; Ellis, et al., 2006) but there have been relatively few sims aimed at educational professionals. In contrast the published successes of Ben Sawyer's *VirtualU* (Sawyer, 2002) and David Gibson's *simSchool* (Zibit, 2005), *Virtual School*, a sandpit for UK teachers failed to meet expectations.

Virtual School was one of the components for a leadership program developed by the UK's National College for School Leadership. The College was established by Prime Minister Tony Blair in 2000 to help develop leadership skills within English schools. Although the College inherited a number of existing programs, there was a need to develop new courses to fill perceived gaps in provision. *Leading from the Middle* was the first original program.

Leading from the Middle is a blended learning program that combines face-to-face activity, a school-based project and coaching with online materials. The College collaborated with Manchester Metropolitan University and a specialist media production unit from the BBC (where the author was lead producer) to make the simulation.

Leading from the Middle is aimed at emergent leaders, that is, Heads of Department, subject specialists or teachers with whole school responsibility. The program has five areas of focus:

- Leadership of innovation and change
- Knowledge and understanding of their role in leading teaching and learning

- Enhancing self-confidence and skills as team leaders
- Building team capacity through the efficient use of staff and resources
- Active engagement in self-directed change in a blended learning environment

The objective of *Virtual School* was to help address these areas by providing a semiotic domain (Gee, 2003) and practicum (Shaffer, 2008) in which teachers could experiment and build confidence in leadership scenarios. Specifically, *Virtual School* intended to:

- Raise awareness of ongoing issues
- Provide a 'sand-pit' for experimentation
- Stimulate discussion in online forums
- Provide scenarios to develop key skills, particularly communications
- Offer users the chance to role-play
- Illustrate key points from within the program modules

An implicit goal for the College was the improvement of teachers' confidence and competence when using information and communication technologies (ICT). As a consequence, like many other organizations (Simmons, 2002), the College put the majority of the Learning from the Middle materials on the institution's learning management system in a deliberate ploy to compel online engagement.

Use Context

Individual teachers playing *Virtual School* would start by setting up their own custom environment. This included choosing the phase of the school, that is, a primary, secondary or special educational needs school. They then chose an avatar. With the environment set up, teachers could choose which of five program areas or 'development strands' they wanted to practice.

Teachers could explore their virtual school, walk around corridors, click on doors and enter the various rooms. There were classrooms (Figure 1), the teacher's own office, the senior management base and the communal staff room. By looking inside these rooms teachers could get an immediate impression of the situation. Teachers could interrogate characters by clicking on them, revealing both graphic and text information regarding their current state.

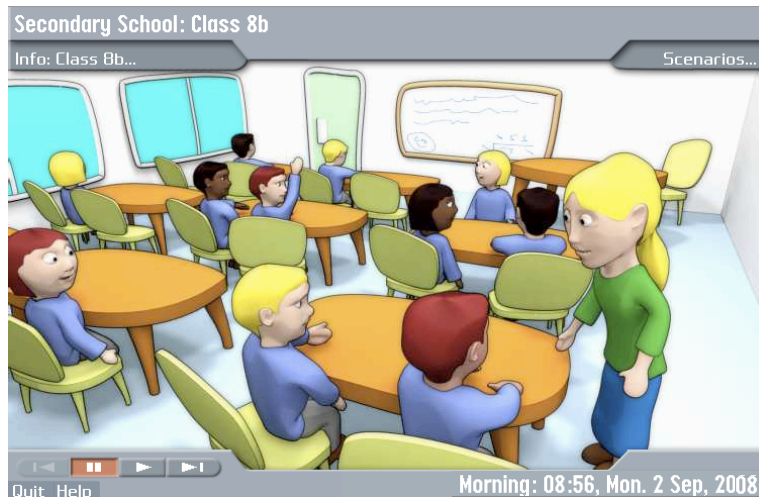


Figure 1. One of the classrooms in *Virtual School*.

At regular intervals, scenarios from the chosen development strands would appear. The scenarios in *Virtual School* were the backbone of the learning. They were developed over a number of weeks with educational experts coordinated by Manchester Metropolitan University. Great attention was paid to making these scenarios authentic and credible. Each one had levels of detail associated with it offering teachers as much information as they required to make an educated decision. Each scenario had three plausible and equally valid responses to choose from.

The teacher had the option of finding out more information about the context of each scenario by referring to the other online resources (called Learn2Lead) or by posing a question to be online communities (Middle Ground). There was also the option to propose an alternative solution.

Teachers would choose the option they considered the most viable before proceeding back into the school.

In order to increase the degree of believability, the effects of each decision were split into short and long-term consequences as they would be in reality. The short-term consequences revealed themselves over the course of a number of *Virtual School* weeks and longer term ones manifested themselves after a term or so.

Feedback appeared in three different forms. Most immediately the graphics within the simulation would change. For example, teachers would see a difference in the disposition of characters within the school or, on entering the classroom, see an entirely new scene (Figure 2). Feedback was also delivered quantitatively through key performance indicators such as graphs measuring morale, levels of confidence, hours' worked, etc., and qualitatively in the form of text feedback describing the influence of the teacher's decisions on the characters within the school.

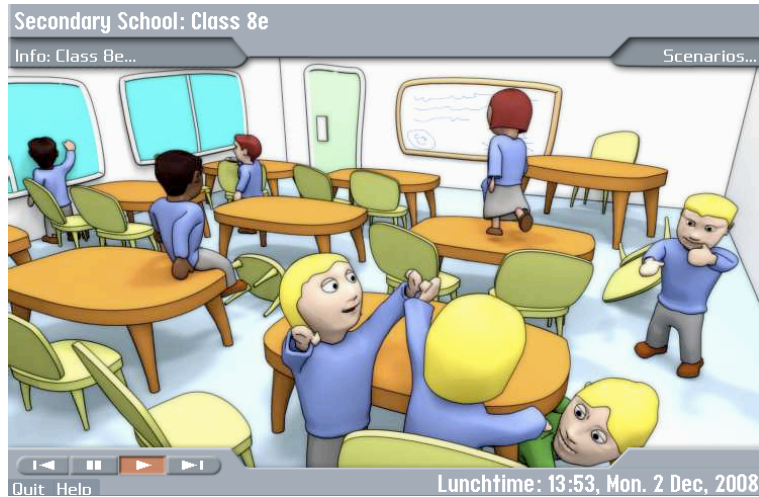


Figure 2. A transformed classroom within *Virtual School*.

However, despite numerous rounds of development testing and evaluation (Reed et al, 2003), *Virtual School* did not meet its learning objectives. In an evaluation conducted after the end of the first cohort, 51% of the participants stated that *Virtual School* have been of little use (Table 1) (Simkins, et al., 2004).

Table 1: Usefulness of online materials according to participants.

Which parts of the program did you find most useful?	very useful (%)	of some use (%)	not much use (%)
<i>Virtual School simulation</i>	11	38	51
<i>Learn2Lead materials</i>	41	47	12
<i>Middle Ground online communities</i>	7	39	54

What is more, there is no evidence to suggest that any participants completed the entire game. In fact usage dropped off dramatically after the first (mandatory) session (Figure 3).

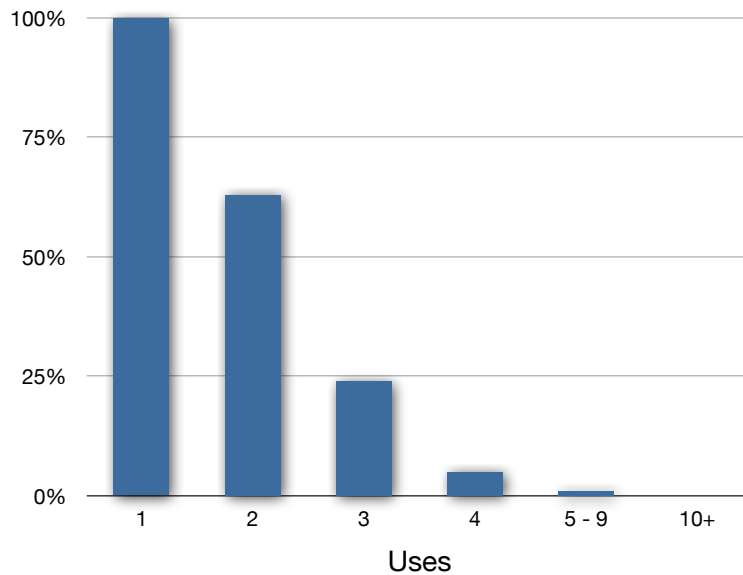


Figure 3. Participant usage of *Virtual School*.

Areas of failure

The failure of *Virtual School* can be categorized into five areas:

- Engagement
- Feedback
- Integration
- Collaboration
- Culture

Engagement

Garris, et al. (2002) describes the cyclical relationship between the enjoyment of gameplay, the user's intrinsic motivation and the decision to keep playing, however, this simulation fundamentally failed to engage its users. It demonstrated a lack of variety, ability to fail and reward for participation. In use, there was little variation in the experience with participants witnessing a stream of scenarios that looked and felt very similar. Although each scenario affected whole school parameters, they remained discrete events within the narrative, that is, one decision did not trigger any subsequent situations, they merely compounded effects.

Worse still, unlike in ordinary games, players of the school could not fail. For political reasons none of the options in each scenario was allowed to have negative outcomes. This meant that it was impossible to transgress, break the school or even fall softly. This lack of failure prevented the participants from learning from mistakes, experimenting with risky behavior or developing remedial actions.

The other key flaw in engagement was the lack of obvious reward for participation. Although users received feedback throughout play, there were no rewards before the end of year completion certificate. This lack of 'texture' and recognition fatally undermined participants' motivation for what was an optional activity.

Feedback

The feedback mechanisms within *Virtual School* failed to deliver or promote clear understanding. The scenarios mixed quantitative and qualitative feedback but because it was staggered it was often difficult to associate the consequences with decisions made earlier. This messy feedback system was a deliberate decision and an attempt to recreate the chaotic environment of schools where cause and effect are rarely clear-cut. Indeed the implicit relationship between actions and events was intended to promote enquiry and discussion among participants (Figure 4).

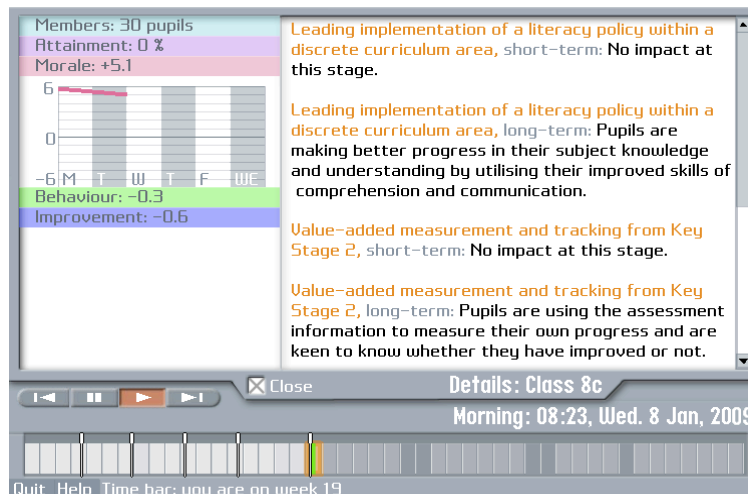


Figure 4. Feedback.

However the lack of connection between two events caused participants much frustration and prevented them from being able to see how actions and consequences were tied together.

At the same time, the mixture of quantitative and qualitative data proved contentious. For simplicity, the simulation attempted to quantify intangible characteristics such as levels of confidence but did not offer more familiar metrics such as exam results.

What was needed in terms of feedback was clarity—more obvious associations between action and consequence, both in timing and substance. The risk of users attempting to subvert the model by manipulating these rules would have illustrated a commitment to winning (Salen & Zimmerman, 2004, p275) and a deeper desire to understand the simulation enough to control it.

Integration

Notionally, *Virtual School* had numerous links to the other online program content but in reality, using these connections meant leaving one system and joining another—a clumsy and time-consuming process. These token attempts at connecting the simulation to the other elements resulted in it being an isolated and optional activity. This lack of integration sent a powerful message to dubious participants about the value of and faith in the simulation exercise.

Rather than forming a complementary part of the user's dynamic narrative (Reeve, 2009) by offering participants the chance to experiment with approaches discussed previously or providing catalyst material for post-play discussion, *Virtual School* became an apparently unnecessary task.

To appreciate the value of the simulation it must be embedded within the overall course design as a structured activity and with a clear position in the learning narrative. Its inclusion must demonstrate a pedagogic rationale and include integrated links to other resources that create opportunities for reflection and complementary experiences that collectively build deeper knowledge and understanding.

As well as the carefully considered arrangement of components across the program, the simulation itself warrants a logical flow of internal events. Scenarios need meaningful sequencing that reinforces the learning and offers users the opportunity to test developing ideas in new contexts. The order and timing of the scenarios must form a central part of the learning design to provide opportunities to analyze situations, test and retest approaches and solutions and reflect on the process in such a way that users can clearly articulate and refine their thinking.

Collaboration

Virtual school was designed as a single player game with opportunities to collaborate in online communities. However because of the technical difficulties of combining two different technology platforms this collaboration with peers rarely, if ever, occurred. One participant noted, “In *Virtual School*, no-one can hear you scream.” Even if unrecorded discussion occurred, there was little common ground in gameplay. The randomized sequencing of scenarios resulted in participants who had chosen identical options having entirely different experiences (or at least until they had played the whole *Virtual School* year).

Not only were players isolated from the real world, they received little support from characters within the game itself. Although the game included a school secretary, Margaret, she only appeared in the introductory tutorial and then disappeared from proceedings. She was the obvious candidate to provide feedback throughout the game and a little bit of scaffolding and moral support.

Culture

The final failure of *Virtual School* was the lack of appreciation of the participants’ professional sensitivities and the prevailing political culture. Both the commissioners and the users inhabit a world under extreme scrutiny. As a consequence it is generally risk-averse. Investing in a ‘game’ as part of its first new program was a very risky strategy for the College and one that various stakeholders remained dubious about throughout production. This atmosphere profoundly affected the presentation and content of the sim.

Although apparently of only superficial value to professional users learning in their working environment, the look and feel of the resource not only creates a crucial first impression, it provides ongoing feedback and is the user’s most immediate and intimate connection to the game. *Virtual School* demonstrated the characteristics described by Allen, Hays and Buffardi (1986) in that the visual accuracy of the environment is less important than the content to users. However, rather than providing a transparent window on the workings of the model, the look and feel became an issue for commissioners if not for users.

Response and revisions

Based on the evaluation, *Virtual School* was revised in a number of crucial ways stripping it of most of its game-like characteristics (Figure 5). Critically, the simulation was shattered into component parts: the scenarios were disaggregated so that participants could focus on one event at a time.

The design was also revised to be less cartoon-like and use photographs of real schools instead of graphics.

Crucially *Virtual School* became a more integrated part of the overall program meaning that there was a coherent narrative between components and a purpose for participating.

Perhaps the most significant change was the revision to use context. Rather than being a solitary activity, *Virtual School* became a group endeavor. Participants now look at a scenario together and discuss the most appropriate action before deciding on a response. Because of the disaggregated nature of the new version they can immediately see the consequences of their actions and debate the validity of the computer outcomes.



Figure 5. Revised Virtual School.

Conclusions

In her meta-analysis of the effectiveness of simulations, Sitzmann declares that:

Post-training self-efficacy was 20% higher, declarative knowledge was 11% higher, procedural knowledge was 14% higher, and retention was 9% higher for trainees taught with simulation games. (Sitzmann, 2011, p489)

However, she goes on to say:

Trainees learned less from simulation games than comparison instructional methods when the instruction the comparison group received as a substitute for the simulation game actively engaged them in the learning experience. (ibid)

For the Leading from the Middle audience, the effectiveness of substituted material proved entirely accurate. There are three key lessons that we can take away from this experience.

Authenticity is a double-edged sword. Whilst seeking to be credible, we run the risk of our games becoming too lifelike and dull. As Tennyson and Jorczak (2008) note, although simulations are distinguished by being based on reality they incorporate game mechanics to increase engagement. Yet for professionals, fun activities can appear suspicious, at risk trivializing or being perceived to trivialize important issues. As Sitzmann (2011) identifies, the entertainment value of simulations does not affect the amount users learn but it clearly influences motivation.

Games remain a contentious addition to the suite of learning formats in professional settings so users benefit from knowing why a game has been included in the resource list. A simulation needs a clear purpose within any blended program, that is, plainly identified objectives for its use and a specific role within the wider learning ecology. This clarity of intention is essential if users are to gain a sense of progress and meaning from a multitude of activities, particularly those not to the user's traditional taste or more usually associated with "unproductive fun".

Finally, peers are everything in adult learning. Just as games have the most impact when they become shared experiences (Caillois, 2001 p39) we know that adults learn most effectively through 'conversation' based on experience (Pask, 1975; Laurillard, 1993). Making the most of social interactions is central to these resources being effective. Greater involvement by the community in each user's experience would allow increased shared skill development. In these circumstances it is not the explicit transfer of information from more skilled participants but the evolved social understanding of the context that improves understanding (Lave & Wenger, 1991). Lave and Wenger characterized these 'communities of practice' by "joint enterprise", "mutual engagement" and a "shared repertoire of community resources." Furthermore, the ongoing nature of these communities encourages continuing professional development: learners remain current in their field through the connections formed (Siemens, 2004).

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