RECOMMENDATIONS FOR CREATING IMMERSIVE LEARNING SCENARIOS

Simulation-Based Learning

SUMMARY
This presents a summary of some of the key benefits to creating immersive learning scenarios, plus an eight-step process to developing the content to support a simulation.

Dr. Audra Diers-Lawson

A Brief Review of Key Factors in Developing Immersive, Scenario-Based Education

In his recent review of literature on simulation-based education as well as primary research on the topic, Avarmenko[1] (2012) summarises many of the key scenario-based education considerations and benefits to immersive simulations for students.

Avarmenko identifies ten benefits to business simulation as well as the key authors (p. 357).

Benefit	Description	References
Teamworking	Helpful in developing teamworking skills	Fripp (1997); King and Newman (2009)
Motivation	Stimulates enjoyable learning	Fripp (1997)
Risk-free environment	Provides an opportunity to experiment with certain decisions which could be too risky to implement in practice	Fripp (1997)
Variety	Useful addition to lectures or case study teaching, another way of engaging learners	Doyle and Brown (2000); Whiteley and Faria (1989)
Experiential learning	Ensures quick and detailed feedback to learners to reflect upon their actions	Adobor and Daneshfar (2006); Fripp (1997); Musselwhite (2006)
Value for money	A cost-effective alternative to real-life practice with a relatively high effectiveness compared to alternative methods of teaching	Doyle and Brown (2000); Musselwhite (2006)
Quantitative skills	Effective in improving quantitative skills	Whiteley and Faria (1989)
Critical thinking	Tends to assist in enhancing critical management thinking skills, if facilitated	Doyle and Brown (2000); Lane (1995); Martin and McEvoy (2003); Sun (1998)
Simplified real world	Focuses learner's attention on a specific element by the simplification of the real world	Doyle and Brown (2000); Low et al. (1994)
Learning by comparison	Allows players to compare their performance against each other and against the industry's real-life data	Musselwhite (2006); Whiteley and Faria (1989)
Negotiation skills	Supports augmentation of potential to negotiate within a team and where necessary across teams of players	Doyle and Brown (2000)
Time management	Provides practice of working towards deadlines	Doyle and Brown (2000)
Support for independent learning	Helps learners to understand theories and encourages to think	Sun (1998)

---

[1] Avramenko, A. (2012). Enhancing students' employability through business simulation. *Education+ Training, 54*(5), 355-367.

In identifying the key drawbacks, he also provides considerations for scenario-creators to manage in developing their own scenarios (p. 359):

Drawback	Description	References
Gaming	Winning in simulation can be attributed to luck and not skill	Thorngate and Carroll (1987)
Not adequate for theory learning	Simulation games are not suitable for gaining theoretical knowledge	Whiteley and Faria (1989)
Need for combination	Lessons learnt in simulation games might not be obvious to all learners, lectures are still needed	Doyle and Brown (2000)
Need for purpose	Without a specific focus or context a game can be easily perceived as a time wasting activity	Doyle and Brown (2000)
Time and resource commitment	Intensive teaching requires time and resources to facilitate an appropriate level of learning and learners' engagement	Anderson and Lawton (2009); Faria and Wellington (2004); Lean et al. (2006)
Simulation model	The model used by simulation software is often quite limited in its application of the relevant theory	Faria and Wellington (2004); Feinstein et al. (2002)
Too complex	The latest computer-based simulations offer a high number of variables and their relationships for consideration	Anderson and Lawton (2009); Low et al. (1994); Wolfe (2004); Lean et al. (2006)
Cultural differences	Business games do not always allow students of different cultures to learn effectively, there is the possibility of "losing face"	Chang et al. (2003); Moore (1998)

Finally, Avarmenko (2012) reviews student experiences and assessments of the simulations both after the scenarios and after securing employment.

Student Views of Scenarios
- Most students appreciated the opportunity to apply theoretical concepts learned during their course. Unfavourable comments reflected the time-demanding nature of the simulation and their experience in teamwork (this simulation required participation for two weeks). However, participants felt like they experienced decision making and teamwork in a profession context.
- Students understood that the simulation wasn't exactly like real life but they felt more connected to work in the field.
- Students reported being more aware of the impact of the external environment as well as the interconnectedness of main business functions (i.e., comms, operations, HR, finance).

Alumni Views of Scenario Participation
- One year after gaining employment, former students were contacted and reported several benefits.
    - It was a point of discussion during employment interviews, steering interviews in directions of strength of candidates
    - It was viewed as an advantage to those students with no previous employment or placements because they could discuss non-formal work experience
    - It improved student confidence, demonstrating 'practical' experience

- o Students felt like they had rehearsed key soft skills like decision-making, communication, team
- o It gave students an opportunity to position their theoretical/ conceptual knowledge

In short, Avarmenko's (2012) article provides guidance about the functions, benefits, and design cautions about approaching the development of scenarios.

Getting Started on Developing Short-Term Simulation Experiences

This process is certainly still being developed, but it is based on a background in online instructional design, research in experiential education, and a research background in experimental design.

Step 1: Assessing Suitability of Simulations in Meeting Overall Objectives

For most, as when we develop a simulation, it should be in the context of specific and measurable learning objectives. Specifically, the learning objectives appropriate for simulations focus on skill or knowledge application. Simulations are not the place to learn new information – they are the place to apply existing knowledge, discover understanding gaps, and rehearse key skills. Avarmenko's literature review also supports the need to combine traditional learning (e.g., lecture, case studies, readings) and simulation experience. As such, the design of the learning objectives must facilitate both aspects of learning.

Some practical considerations on assessing simulation suitability:
1. Align objectives to connect theory and application.
2. Simulations should be meaningfully integrated into the design of the learning or assessment time; they should not be viewed as extras or add-ons.
3. Participants in simulations should have had the opportunity to develop conceptual or background knowledge BEFORE participating. Simulations are meant to apply knowledge not create it.
4. Critical evaluation of simulation performance should be actively integrated into any concrete assessment strategy. .

Step 2: Identifying Specific Objectives for Simulations

Before creating a simulation, it is important that it will meet your needs. As a starting point, the simulation's objectives need to identified and aligned with the overall objectives identified in step 1. At this point, you will want to: (1) make sure you have institutional support for your choices, especially if it requires resourcing support and (2) that you have SMART objectives (see below).

Step 3: Brainstorming Interesting and Useful Scenarios for Your Topic Area

Here is where the fun and work really begins. I recommend 'cheating' a bit – in all fields, there are great case studies that we read identifying key problems to solve. Reading through case studies that have inspired major changes in the field, types of cases that are emerging in your field's context, or cases that participants are likely going to find will help you to begin your own story. So, the search for possible scenarios could be just a brainstorming exercise, going through your own literature, or even looking at news trends related to your field.

Decisions that you will need to consider in choosing/ brainstorming a scenario:
- Will this be interesting for the participants?
- Is this a situation that could be relevant for the next few years (once you create a scenario, you do not want to have to recreate everything around it each time)?
- Is this a situation that has transferrable attributes – that is, it is not so specific that work done could not be applied across other types of situations?
- What industry will be interesting and useful? If you are in a field like 'business' or 'public relations', the industry is a contextual factor to add interest, but it should probably be chosen for strategic reasons.

Step 4: Create a Broad Narrative for the Scenario

Spend some time sketching out the broad story for the scenario. If you are basing it on a news story or case study, think about the big events that happened. But also consider the basic aspects of a story like who, what, when, where, why, and how. Once I have decided on the basic industry and type of problem I want to introduce, then I try to tell the backstory of the organisation and what situation they create a bit of a story around it to help me develop the scenario. I ground mine in terms of what are the key elements that I need to consider, key features of the story that are conceptually interesting, and develop a broad sketch of what I want to happen in the simulation.

Step 5: Create Your Organisation

Now, this can get as detailed as you want and you can 'borrow' heavily from other organisations, but you need to create the story of the organisation. Think about who its founder is, what is their story, what is the organisation's mission, value proposition, and create a basic backgrounder on the company/ organisation. You will fill in more details once you start to design the scenario; however, at this point you also need to consider where your students and the simulation will enter the organisation's life.

My own research has definitely found that where possible, it is important that the organisation itself be likeable and socially responsible in order to maximise the learning outcomes. This is important to keep in mind. You will want your participants to identify with the organisation and *want* to be a part of it.

Another vital component to consider, what is the entry point for your participants. Though many simulations and simulation 'experts' will think it makes sense for 'traditional' undergraduate students to suddenly emerge as seasoned professionals 5-10 years down the road, from an experimental

perspective this does not work because the students do not have the life experiences to project into being mid-career professionals. Yet, for professional training or adult participants, the entry point into the organisation can be quite different. Experimental design suggests that to simulate an experience, participants need to draw on their understandings, knowledge, and experience, so creating an entry point into your organisation's story that's realistic for the participants that you are designing the simulation for is critical to maintain the realism and experience for them – to ensure they get the most authentic experience possible.

In creating the organisation, I tend to write the front end of what I want the company to be and then 'borrow' heavily from the materials available about organisations with similar ethics and approaches to business as the one that I have created. There is no need to reinvent the wheel – and borrowing from existing materials (updating and modifying them as needed) also means that students will be exposed to information they would normally encounter in the real world.

Because you know the direction you're going with the simulation, some other things to consider:
- How much 'branding' do you want to create? For example, because I am very particular, I create a whole branding scheme for the organisation including visual materials, background media, etc. This will largely depend on your own abilities and interests. For me, it adds more realism.
- How much documentation do you realistically need to have about an organisation? Keeping in mind that participants understand it is a simulation, you do not need to have 15 years of annual reports, but the amount of information that would be readily available on a basic company website is probably going to be a good idea.
- Most of this should be created AFTER you develop the specific objectives for the simulations.

Step 6: Create the Simulation's Structure and Key Events

Your specific objectives for the simulations are largely independent of the particular scenario that you are creating; however, I think that it is easier to make sure that the entire scenario is well-aligned to get some basics down about what you want to achieve and the boundaries of the world that you want to create at this point.

You need to begin to think in terms of a rough timeline that you are going to create. Thus, for a simulation you need to:
- Decide what are the key activities that you need the participants to experience in order to meet the broad objective (see step 2) you have within the context of the overall objectives (see step 1). Use the SMART objectives to ensure that the structure and key events are realistic within the time that you have.
- Decide how long the total simulation will be in real time (how many hours – keeping in mind that most recommendations suggest a minimum of 3-4 hours in a single immersion and scaling across to several immersions if you think is necessary and can develop that).
- Create mini-objectives for each activity you will have the participants complete. For example, if you have 3 key activities, then each one of them should have a point that is directly connected to your SMART objectives.
- It is useful to think about objectives as related to: the process (if relevant), the application of theory, and the skills you want to develop.

Step 7: Get Feedback on the Basic Simulation Design, Objectives, and Scenario

In the first iteration of the scenario, it is important to have the basics 'right'. Later, complexity and more flashy content can be created but what you need to begin is a sound, well-constructed, and well-aligned scenario.

At this point, begin to consider the practicalities of delivering the information. For example, do you want want the simulation to run automatically, do you want total control of it, what kinds of features do you want to include?

Step 8: Developing the Materials

I like to work through the scenarios in a linear way – develop any materials that would be needed at the beginning of the scenario and then work your way through each of the sessions. There will be aspects of the scenarios that you like developing more than others – do not do those first … try to be linear so that you are considering the development of the narrative and the experience as the participants will.

Some practical recommendations:
- Borrow as much content as possible. If you want a lot of news stories about your organisation or industry, for example, do not try to write 30 news stories, go to a news source(s) and borrow and adapt them as much as possible. You can make strategic choices about whether you want to use 'real' stories from 'real' news companies or create your own news company to give you more ethical flexibility in adapting the content, but adaptation of material that already exists is useful.
- Consider 'red herrings' in the scenario. If there is a path or a couple of paths that would be 'best' decisions for participants to make, they will not learn much if they cannot make 'bad' decisions as well. Introduce enough complexity into the materials and scenario so that they have genuine choices to make. This will be bound to your scenario, objectives, industry, and conceptual content but they are an important part of an authentic experience – especially since simulations are places for participants to make bad decisions without consequences to their organisations or lives.
- Think about the emotions you want to create or manipulate within the scenario. There is an important ethical and practical component to creating scenarios. Emotion is an inherent part of our lives, but understanding what the sources of emotion and stress would be in the scenario and protecting the participants from undue negative emotion are vital to creating both an effective and safe learning environment. If the situation itself is emotionally charged, you should try to limit other emotions you introduce. If the situation is not particularly emotionally charged, you might want to add emotional complexity into the environment. But make choices purposeful both in terms of conceptual and experience emotion.
- If you can work in multi-media materials it will enhance the participants' immersion into the situation. This could involve phone messages, customised news reports, or even finding relevant multi-media materials that have already been created from other sources and are useful.

The only limitation is your own creativity and abilities. However, try to avoid getting carried away with yourself. Make sure that everything that you include has a purpose. This will save you a lot of time and create a tighter more effective open world experience for your participants.