Quick Guide to Developing a Learning Simulation

What is a learning simulation?

A computer simulation tries to recreate a scenario or event. Some are game-like and simulate cities, theme parks, lives and so on. A learning simulation is used to train or teach. Flight simulators to train pilots and army simulators to train soldiers are examples of learning simulations.

They should be accurate enough that they reflect real life, but not too realistic that the learning process cannot occur: they must be **real enough**.

1. Analysis & Initial Design

This is where the audience must be established, the learning objectives discussed, method decided, subject matter experts consulted and so on.

The initial design will be the bare bones of a simulation.

2. Detailed Design

The Detailed Design will specify look & feel, user interface (UI) and user experience (UE). The simulation must be **real enough** (not so real it is boring and overly complex, but not too trivial..

Did you know?

- In 2007 the serious game market was estimated at $400 million (Source)
- Serious games are predicted to grow to be a billion-dollar market within the next decade (Source)
- Workers trained with simulations do their jobs better, with greater skill and higher retention of relevant information (Source)

3. Algorithm

Any decision that the player makes will affect parameters in the underlying algorithm. The algorithm is the code behind the simulation. It is a set of interlinked equations rather than a simple decision tree. With a complex simulation, there can be many parameters to define. A typical algorithm might contain thousands of lines of code.

4. Media and User Interface

Screens are developed to be as user friendly as possible. The simulation should also be as engaging as possible, so interesting images and animations are used where possible.

5. Build

This is where everything comes together. Developers use the detailed design to tie the algorithm and media together.

The learning simulation is more or less complete but it needs to be fine tuned.

6. Testing & Tuning

The learning simulation will go through a series of tests and re-tunes until it is ready to be piloted. The tests are for playability. Does it feel right? Is it challenging enough?

7. Piloting

The learning simulation should be piloted with the target audience. They will give their feedback and their 'gameplay' will be monitored. The simulation is tweaked accordingly.

8. Train the Trainer

The learning simulation will now be ready. Holding Train the Trainer sessions will be necessary to skill up an internal team. Producing manuals / training guides is also useful.

Benefits of Learning Simulations

- They make learning fun - neurologists suggest fun is required for learning (Source)
- Authentic, practical, learning by doing/experiential learning, supports different learning styles (visual etc.)
- Safe environment to make mistakes (can be only way to train e.g. soldiers, surgeons)
- Engaging, challenging, interactive, motivating

9. Roll Out & Continual Improvement

The training programme can then commence. Feedback is used to improve the product and learning approach.

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