What is a simulation?

Simulations are instructional scenarios where the learner is placed in a "world" defined by the teacher. They represent a reality within which students interact. The teacher controls the parameters of this "world" and uses it to achieve the desired instructional results. Students experience the reality of the scenario and gather meaning from it.

A simulation is a form of experiential learning. It is a strategy that fits well with the principles of Student-Centred and constructivist learning and teaching.

Simulations take a number of forms. They may contain elements of:

- a game
- a role-play, or
- an activity that acts as a metaphor.

Simulations are characterised by their non-linear nature and by the controlled ambiguity within which students must make decisions. The inventiveness and commitment of the participants usually determines the success of a simulation.

Why use simulations?

Simulations promote the use of critical and evaluative thinking. Because they are ambiguous or open-ended, they encourage students to contemplate the implications of a scenario. The situation feels real and thus leads to more engaging interaction by learners.

Simulations promote concept attainment through experiential practice. They help students understand the nuances of a concept. Students often find them more deeply engaging than other activities, as they experience the activity first-hand, rather than hearing about it or seeing it.
Simulations help students appreciate more deeply the management of the environment, politics, community and culture. For example, by participating in a resource distribution activity, students might gain an understanding of inequity in society. Simulations can reinforce other skills indirectly, such as Debating, a method associated with some large-scale simulations, and research skills.

Common issues using simulations

Resources and time are required to develop a quality learning experience with simulations. Assessment of student learning through simulation is often more complex than with other methods.

Simulated experiences are more realistic than some other techniques and they can be so engaging and absorbing that students forget the educational purpose of the exercise.

If your simulation has an element of competition, it is important to remind the students that the goal is not to win, but to acquire knowledge and understanding.

How to achieve effective teaching with case studies

In a simulation, guided by a set of parameters, students undertake to solve problems, adapt to issues arising from their scenario and gain an awareness of the unique circumstances that exist within the confines of the simulation.

Some simulations require one hour, while others may extend over weeks. Scope and content varies greatly. However, similar principles apply to all simulations.

1) Prepare in advance as much as possible

- Ensure that students understand the procedures before beginning. Frustration can arise when too many uncertainties exist. Develop a student guide and put the rules in writing.
- Try to anticipate questions before they are asked. Some simulations are fast-paced, and the sense of reality is best maintained with ready responses.
- Know what you want to accomplish. Many simulations have more than one instructional goal. Developing evaluation criteria, and ensure that students are aware of the specific outcomes expected of them in advance.

2) Monitor the process closely

Teachers must monitor the simulation process to ensure that students both understand the process and benefit from it. Ask yourself:

- Does this simulation offer an appropriate measure of realism for my group of students?
- Are the desired instructional outcomes well defined?
- Is the level of ambiguity manageable for this group?
- Does the student demonstrate an understanding of his/her role?
- Are problem-solving techniques in evidence?
- Does the research being generated match the nature of the problem?
- Is cooperation between participants in evidence?
- Has the student been able to resolve the issue satisfactorily?
- Does the student provide meaningful answers to probing questions?
- Will follow-up activities be necessary?

3) Consider what to assess

You might find it best to use simulations as part of the process of learning rather than as a summative measure of it. Use follow-up activities to establish a measure of comprehension and as a de-briefing mechanism when students return to reality (e.g. use reflection on the process as the assessable component of the activity, rather than participation in the simulation itself).

Using rich media to create simulations

For help using rich media to create simulations contact Creative Development and Educational Media Production.

https://teaching.unsw.edu.au/simulations