SIMULATION METHODOLOGY

Simulation methodologies allow the student to put into practice theoretical knowledge in controlled environments, representing situations close to the work environment. The goal is to "recreate" a real-life situation in which students must make decisions and can analyse the results, putting their skills into practice without fear of failure, learning from their successes and mistakes.

The particularity of the online environment is that it allows students to experience the practice of a certain discipline, activity, or task without having to be physically in a real environment.

How to implement it

To address the simulation methodology in online experiences, the following aspects must be taken into account:

► **Starting from a "real" problem or situation,** bearing in mind from the beginning the steps that the student must take, as well as the final objective to be achieved (for example: Diagnosis of a patient, conflict resolution in work teams, use of software to perform a certain task)
► **Reliable environments** and characters. The idea is that the student has an experience as close as possible to what will be the task to be performed in a real situation, hence both the environment in which this task must be developed and the people with whom he can relate, if it

were the case, must be the closest to reality (video and / or images and sounds of the workplace, interface of an application, patient with a specific symptom, type customer of a company)

► **Common processes, skills, and tools**. Like the environment and the possible people who make up a real scenario in a simulation, the steps to follow and the tools and resources that are needed to re-analyse them must also be adequate to carry out the task or achieve the objective that is proposed to the student.

A detailed outline of steps to follow and the correct workflow to perform the task must be made, anticipating the usual errors, the way in which a certain situation can be corrected or redirected. The more complete the experience, the simulation will make much more sense.

The simulations can start from relatively simple activities such as a **decision tree** in which, according to certain situations, different alternatives or options are proposed for the student to choose the most appropriate and choose to follow one way or another. A list of questions, accompanied by an image or description of the environment, appropriate feedback for each of the steps taken and reach a goal (or not).

The same scheme above can be developed using **videos** in which each phase or situation is recreated in small scenes in which the starting point and what happens is shown, making one decision or another. Applications that allow interactive videos can also be used.

In the case **of software learning**, the use of simulations is already highly developed and there are specific tools on the market that capture each step that a user takes and its results, without the need to have such software installed on the student's computer (Captivate is one of the best known)
On the other hand, there are specific simulation systems for certain disciplines, such as the practice of **medicine.**

Other disciplines that involve the **use of laboratories** such as chemistry or physics, also allow students to perform simulated practices , as if it were a real environment.

There are also **simulation programs for business**, specialised in areas such as finance, marketing or management and that allow students to face situations similar to those they may find in the work market.

Finally, there are complex simulation systems based on **virtual reality**, in which the student can experience an immersive situation as if it were real life. The selection of the type of tool will depend to a large extent on the resources available to the institution.

How to assess and evaluate it

It should be valued not only the accuracy of the task or action to be performed, but also the process, also measuring the progress of the student. Including short questions throughout a simulation or establishing a rubric system to evaluate the different phases of performance in a simulated situation, can be accepted evaluation systems for this methodology.

On the other hand, when recreating real situations in specific sectors in which unavoidable steps must be taken, the mere fact of reaching the final goal (repairing the breakdown of a piece of equipment or performing a diagnostic test)   is a way of assessing and evaluating learning.

Tools

In Moodle

Although there are no built in Simulation Tools in Moodle. You can easily add the following tools to your Moodle platform for simulation;
- ► Virtual Lab for Moodle
- ► Labster Simulations
- ► PraxiLabs Simulations for Moodle

Outside Moodle

- ► Tools to design Decision Trees (with or without scorm tracking): Storyline, isEazy Author
- ► Captivate and Storyline (Software simulations)
- ► Business simulators: Hubro education or Gestioned

Medicine/Nursing:

- ► Full code   https://full-code.com/
- ► Body interacts   https://bodyinteract.com/
- ► Patient Sim   https://www.patientsim.co.uk/

Online laboratories:

- ► Labster   https://www.labster.com/chemistry-virtual-labs/
- ► Online laboratories   https://onlinelabs.in/chemistry
- ► Online laboratories II https://library.csi.cuny.edu/oer/virtuallabs-simulations

Resources

► What Is An eLearning Simulation And How Do You Create One? (Sengupta, 2019)

► 5 Instructional Design Tips to consider for simulation training (Hughes, 2019)

► Engaging Learners Through Simulations Is Easy With These 4 Tips (McCool, 2021)