How to implement technology in learning easily

Abstract
Implementing technology in university education can be a challenging process, as it requires a significant investment of time and resources. However, the benefits of using technology in education can be significant, including increased student engagement and improved learning outcomes.

This module enables HE staff to design their programs using technology to ensure that it has an impact on students and other stakeholders of all kinds. To do so, we propose to deploy the universal design learning (UDL) framework, which reveals how the application of multiple means of representation (what), engagement (why), and action (how) may assist teachers in the development of innovative approaches to their teaching, learning and assessment activities to ensure that all students are able to use technology to be engaged in the process and satisfy their learning needs.

Our goal, then, is to explain how technology can be a useful instrument to ensure that all learners may achieve the expected goals; this is, to learn how to transform courses to use technology by embedding technology in learning interventions in an efficient manner. The three-step process of UDL is presented as a guide to achieving this goal.

Image from https://www.freepik.es/foto-gratis/mujer-usando-simulador-realidad-virtual-biblioteca_5890248.htm

1 Introduction

There is a myriad of options to implement technology in university education to enhance the learning experience. Some of these are:

1. Online learning platforms, such as Blackboard or Moodle, which hold course materials, facilitate discussions, and provide feedback to students.
2. Virtual classrooms, such as Zoom or Google Meet, to hold live, online lectures and discussions with students. This can be especially useful for students studying remotely or in different locations.

3. Educational apps that provide interactive learning experiences for students, as a complement to traditional course materials or as stand-alone learning resources.
4. Virtual reality technology to create immersive learning experiences for students.
5. Collaborative tools such as Google Docs or Canva for collaborative posters, which might be useful for synchronous and asynchronous activities.

Now, are all technologies susceptible to being properly used by all students? Is there a way to facilitate this use? Can we avoid the impulse to use these tools just for the sake of the tool itself? To answer these questions, the UDL framework provides teachers with a set of guidelines or parameters that can lead us to an accessible and inclusive use of technologies in the classroom.

"Technology will never replace great Teachers, but in the hands of great teachers, it's transformational." George Couros

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2 Technology implementation

The UDL framework is an educational framework that aims to design instruction, materials, and environments in a way that maximizes the learning potential of all students, regardless of their individual differences or needs. It is based on the idea that goal definition (together with strategy planning), lesson contents, learning activities and instructional materials and methods, including evaluation processes (initial/continuous/final), should be flexible enough to accommodate these differences (CAST, 2023).

When introducing classroom technologies, the successful deployment of this framework starts off with a simple issue: consider what you want to accomplish and how you can use technology to do so. This information-gathering process has three steps:

1. define appropriate teaching and learning goals that allow for multiple means of attainment;
2. assess diverse learner needs; and
3. evaluate the barriers that may exist within the current curriculum and context.

With this information, the teacher should consider the use of technology in the development of (https://udlguidelines.cast.org/):

- Multiple means of representation: the teacher must take into account the perceptual aspects of the learning process; namely the language, expressions, and symbols used.
- Multiple means of action and expression: the teacher must find learning paths that require the least amount of physical effort from the students in their expression and communication tasks.
- Multiple means of engagement: teachers must develop different ways to capture the students' interest; maintain their effort and perseverance and promote students' self-regulation.

The fact that we are talking about "multiple" does not mean the introduction of several technologies at the same time. Instead, the teachers should focus on the identification of those tools that are feasible for the majority, if not all, students. Therefore, less will probably be more, since effort will be laid on a few technologies that are used to maximum effect.

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Examples

Rao & Torres (2020) have published three factsheets with a list of digital tools and their uses (in general and for online classes), and their affiliation to the UDL guidelines:

- Digital Tools for Engagement
- Digital Tools for Representation
- Digital Tools for Action and Expression

In these factsheets we can establish that the starting point is always to identify the learning goals. We should not forget that technology is merely a support, a tool. Also, it can be seen that one technology might cover several guidelines, which is a benefit for the learning intervention because it promotes maximum efficiency.

"Teachers need to integrate technology seamlessly into the curriculum instead of viewing it as an add-on, an afterthought, or an event." – Heidi-Hayes Jacobs

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General recommendations

- Oftentimes the solution is not how sophisticated a technology is, but how many people are able to use it properly. Start with popular technologies, free ones even, to facilitate the use by all the students.
- Consider the creation of learning and teaching networks. Relatedness is one of the weak points of asynchronous online learning interventions (Ismailov & Chiu, 2022).
- The use of online technologies should consider the safety and confidentiality of the students (Rao & Torres, 2020), to which we add that the teachers' privacy is also at risk and should be a concern.
- To ensure that all needs are met, accessible technologies and materials should be a priority.

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3 References

Ismailov, M. & Chiu, T.K.F. (2022). Catering to Inclusion and Diversity with Universal Design for Learning in Asynchronous Online Education: A Self-Determination Theory Perspective. *Frontiers in Psychology*, *13*:819884. doi: 10.3389/fpsyg.2022.819884

Rao, K. & Torres, C. (2020). *Technology and UDL*. Retrieved January 17, 2023, from https://schoolvirtually.org

CAST. (2022, February 8). *About universal design for learning*. Retrieved January 17, 2023, from https://www.cast.org/impact/universal-design-for-learning-udl

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