Author: Veronica Diaz (2021) @veronicadiazdr

The Future of Learning Design

Adaptive Learning in Higher Education provides a personalized course for each learner, made specifically for their strengths, weaknesses, goals and engagement patterns. In adaptive learning, learners receive the right content at the right time maximizing learning efficiency, effectiveness, engagement and retention. I am a proponent of the use of adaptive learning in instructional design and have used adaptive learning tools such as "smart" eBooks and interactive MicroLabs to enhance the learner's experience in business courses in an academic environment. These tools effectively provide a safe area for learners to practice until achieving mastery. Instructors receive immediate feedback, facilitating instruction that is tailored to student's needs. This design framework is conceived for an online course in a higher education environment (Diaz, 2021).

The pedagogical shift, from lecture-centered to student-centered environments and the increasing use of games as innovative learning technologies, calls for a transformation in higher education. Games and simulations are expected to play a significant role in the learning process (Vlachopoulos & Makri, 2017).

Benefits of Gamification

Gamification of eLearning motivates users to access and use the online learning material more frequently. Well-designed game environments provide continuous opportunities for player improvement (Kharod, 2021).

Benefits of Simulations

Simulations offer opportunities to practice complex skills and implement different types of scaffolding to facilitate effective learning. Simulations have positive overall effects on learning. Learners with high prior knowledge benefit from reflection, learners with low prior knowledge benefit by examples. Simulations are among the most effective means to facilitate learning of complex skills across domains (Chernikova, Heitzmann & Stadler, 2020).

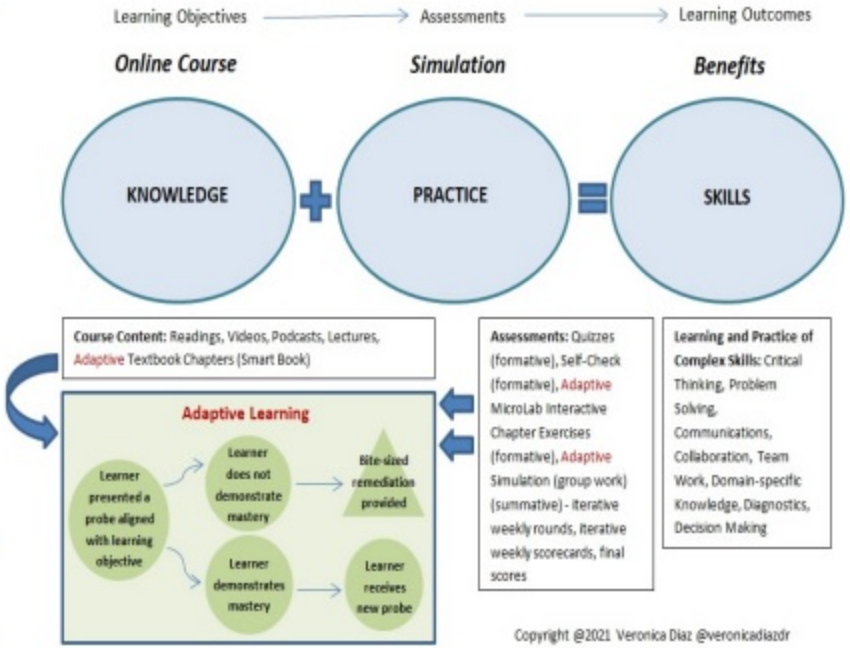
Adaptive Tools: Smart Books

SmartBook 2.0 creates a baseline of student knowledge and focuses their time on knowledge gaps, helps students better understand what they know and what they don't know. Adaptive questions are rooted in several learning science principles like spacing, chunking, and interleaving, SmartBook 2.0 creates mini-cycles of questions with smaller, easier to absorb "chunks" of content. (McGraw Hill, 2021).

Adaptive Tools: Simulations

In higher education, approximations of industry practice can be achieved with simulations, which allow students to use authentic problems and create a learning environment to practice and facilitate acquisition of target complex skills. Learning with approximation of practice helps overcome limitations of learning in real-life situations and can be an effective approach to develop complex skills (Chernikova, Heitzmann & Stadler, 2020).

Course Design Framework with Adaptive Learning



Adaptive Learning Process in Smart Books

Each mini-cycle utilizes questions that are different but with related ideas. Once students demonstrate that they understand a concept, the related questions will no longer appear. If students continue to struggle with a concept, they will encounter repeating questions. This limits guessing and short-term, rote memorization. This question approach improves comprehension and long-term retention (McGraw Hill, 2021).

Results

Gamification features increase students' performance in the learning process. If gamification elements such as points, level up, badges and leaderboard are effectively integrated into online courses to motivate students and promote learning, it may lead to better results in terms of attendance and performance (Saran, Al-Magsoosi & Mohammed, 2018).

Skills Development

Games and simulations are educational interventions that create a supportive environment in which students may acquire knowledge across subjects and disciplines. Simulations are often perceived as enjoyable learning tools that require active and collaborative participation and contribute to the improvement of critical thinking and reasoning, higher-order- and metacognitive thinking. Simulations provide students the opportunity to observe the outcomes of their actions, and take responsibility for decision-making via problem-solving competencies, thus leading to a more active, transformative and experiential reception of knowledge (Vlachopoulos & Makri, 2017).

Challenges

The high cost of designing games and simulations is still a significant challenge. To overcome this cost barrier, governments, researchers, instructors, instructional designers and game designers should collaborate to find affordable solutions for enabling the development of games and simulations (Vlachopoulos & Makri, 2017). Other challenges are related to staff workload and problems with technology, as most university staff members do not have time to explore alternative teaching-learning strategies (Mirata, Hirt, Bergamin & van der Westhuizen, 2020).

References

Chernikova, O., Heitzmann, N. & Stadler, M. (2020). Simulation-based learning in higher education: A meta-analysis. *Review of Educational Research* (90)4, 499-541. https://doi.org/10.3102/0034654320933544

Diaz, V. (2021). Adaptive learning in higher education. The future of learning design. [Academic Poster], United States.

Ekowo, M. & Palmer, I. (2016). The promise and peril of predictive analytics in higher education. A landscape analysis. https://files.eric.ed.gov/fulltext/ED570869.pdf

Juan, J.A., Loch, B., Daradoumis, T. & Ventura, S. (2017). Games and simulation in higher education. *International Journal of Educational Technology in Higher Education* (14)37, 1-3. https://educationaltechnologyjournal.springeropen.com/track/pdf/10.1186/s41239-017-0075-9.pdf

Kharod, S. (2021). Gamification in eLearning: Top things to try in 2021. eLearning Industry. https://elearningindustry.com/using-gamification-in-elearning-top-things-try-2021

McGraw Hill (2016). Six insights on adaptive learning technology in education. Adaptive learning technology insights . https://www.mheducation.com/ideas/thought-leadership/adaptive-learning-technology-insights-html.html.html.html

References

McGraw Hill (2021). How Smartbook 2.0 adaptive questions work. McGraw Hill Connect. https://www.mheducation.com/highered/connect/smartbook.html

Mirata, V., Hirt, F., Bergamin, P. & van der Westhuizen, C. (2020). Challenges and contexts in establishing adaptive learning in higher education: findings from a Delphi study. *International Journal of Educational Technology in Higher Education* (17)32, 1-25. https://doi.org/10.1186/s41239-020-00209-y

Riddell, R. (2013). Adaptive learning: The best approaches we've seen so far. Higher Ed Dive. https://www.educationdive.com/news/adaptive-learning-the-best-approaches-weve-seen-so-far/187875/

Saran, M., Al-Magsoosi, D. & Mohammed, D. (2018). Gamification in e-learning: The effect on student performance. [Conference Paper] 9th Annual International Conference on Computer Science Education: Innovation and Technology (CSEIT 2018), Singapore. https://bit.ly/2dsVu2O

Sengupta, D. (2019). How adaptive learning revolutionizes corporate training. https://elearningindustry.com/adaptive-learning-revolutionizes-corporate-training

Vlachopoulos, D. & Makri, A. (2017). The effect of games and simulations on higher education: a systematic literature. *International Journal of Educational Technology in Higher Education* (14)22, 1-33. https://educationaltechnologyjournal.springeropen.com/track/pdf/10.1186/s41239-017-0062-1.pdf