DIRENE glossary on mobile learning

Flipped classroom /Inverted classroom model
Flipped classroom is a hybrid approach to learning, using technology to move the classroom lecture to homework status and using face-to-face classroom time for interactive learning (Lee & Martin, 2020). Flipped classroom is redesigning the face-to-face classroom as an interactive learning environment where higher-ordered learning takes place, while providing traditional pedagogical experiences (of transferring basic information) through pre-class learning activities (Youhasan et al., 2021). In this context can also been spoken of an inverted classroom.

Lee Y, Martin KI. The flipped classroom in ESL teacher education: an example from CALL. Educ Inf Technol. 2020;25(4):2605–33.
Youhasan, P., Chen, Y., Lyndon, M., & Henning, M. A. (2021). Exploring the pedagogical design features of the flipped classroom in undergraduate nursing education: a systematic review. *BMC Nurs, 20*(1), 50.

Peer-assistant learning (PAL)
Peer assistant learning is defined as "People of similar social groupings who are not professional teachers helping each other to learn and learning themselves by teaching" (Topping & Ehly, 1998 in (Nshimiyimana & Cartledge, 2020; Ross & Cameron, 2007). PAL's success stems from learners' approximately equal status, their high level of interaction, and their joint task processing. It increases students' confidence in clinical practice, participation, leadership, learning opportunities, and can increase student-teacher satisfaction (Nshimiyimana & Cartledge, 2020). Alternative can been spoken from peer teaching (Ten Cate & Durning 2007).

Nshimiyimana, A., & Cartledge, P. T. (2020). Peer-teaching at the University of Rwanda - a qualitative study based on self-determination theory. *BMC Med Educ, 20*(1), 230.
Ross, M. T., & Cameron, H. S. (2007). Peer assisted learning: a planning and implementation framework: AMEE Guide no. 30. *Med Teach, 29*(6), 527-545.
Ten Cate O, Durning S. Dimensions and psychology of peer teaching in medical education. Med Teach. 2007;29:546–52 Available from:
http://www.tandfonline.com/doi/full/10.1080/01421590701583816

Machine Learning and Deep learning (
Machine learning describes the capacity of systems to learn from problem-specific training data to automate the process of analytical model building and solve associated tasks. Deep learning is a machine learning concept based on artificial neural networks. The evolution of artificial neural networks (ANNs) towards increasingly deep neural network architectures with improved learning capabilities summarized as deep learning (Janiesch et al. 2021).

Janiesch, C., Zschech, P., & Heinrich, K. (2021). Machine learning and deep learning. *Electronic Markets, 31*(3), 685-695.

Problem-based learning
Problem-Based Learning (PBL) has been defined as an instructional method, which uses well-constructed clinical problems as a context for students to learn problem-solving skills and acquire knowledge about the basic and clinical science. Problem based learning is being implemented due to its perceived advantages including improvement of problem-solving abilities, increased knowledge

retention, better integration of basic science and clinical skills, development of communication skills, creation and development of critical thinking skill, and making of individuals to be lifelong learners & responsible for their own learning process (Tadesse et al., 2022).

Tadesse, S. G., Tadesse, D. G., & Dagnaw, E. H. (2022). Problem based learning approach increases the academic satisfaction of health science students in Ethiopian universities: a comparative cross sectional study. *BMC Med Educ, 22*(1), 334.

Simulation-based learning

Simulation-based learning offers learning with approximation of practice, allows limitations of learning in real-life situations to be overcome, and can be an effective approach to develop complex skills. Beaubien and Baker (2004) define a simulation as a tool that reproduces the real-life characteristics of an event or situation. A more specific definition suggested by Cook et al. (2013) stated that simulation is an "educational tool or device with which the learner physically interacts to mimic real life" and in which they emphasize "the necessity of interacting with authentic objects" (zit. in Chernikova et al. 2020).

Chernikova, O., Heitzmann, N., Stadler, M., Holzberger, D., Seidel, T., & Fischer, F. (2020). Simulation-based learning in higher education: A meta-analysis. *Review of Educational Research, 90*(4), 499-541.

Self-directed learning

Self-Directed Learning (SDL) is defined as a process in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes. SDL is considered by many to be the most appropriate approach for life-long learning (van Lankveld et al. 2019).

van Lankveld, W., Maas, M., van Wijchen, J., Visser, V., & Staal, J. B. (2019). Self-regulated learning in physical therapy education: a non-randomized experimental study comparing self-directed and instruction-based learning. *BMC Med Educ, 19*(1), 1-9.