BioTriCK Workshop What is Blended Learning?

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What is Blended Learning?

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Blended learning is the combination of face-to-face class- and online based learning.

Studies show that medical laboratory science students who participate in blended learning using the online video format had statistically better practical examination scores and final grades compared to the control group (Donkin et. al, 2019).

Donkin, R., Askew, E., & Stevenson, H. (2019). Video feedback and e-Learning enhances laboratory skills and engagement in medical laboratory science students. BMC Medical Education, 19(1), 310.

Hartfield P. (2013) Blended learning as an effective pedagogical paradigm for biomedical science. High Learn Res Comm. 3:3–4.

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Experiences from Bergen

At the BLS study program at Western Norway University of Applied Sciences (HVL), the website ePraksis.no has been continuously developed since 2015. This website contains information about practice and various e-learning resources used to prepare students for practical laboratory training. The website and content of ePraksis.no is an open resource containing various learning tools for our medical laboratory courses like:

1. short informative YouTube videos on analysis principle, instrumentation, data tools and programs
2. digital knowledge tests
3. digital clinical cases where students can apply their knowledge to find a matter solution
4. podcast episodes where biomedical laboratory scientists are sharing their work life experiences from the hospital laboratories
5. Practical information regarding clinical practice as well as laboratory training in the university laboratories.

ePraksis.no is now an integrated part of the study program and an established learning resource for the BLS students at HVL.

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Flipped Classroom

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To facilitate deeper learning in practical laboratory training and clinical practice, the concepts of blended learning and flipped classroom teaching has been implemented into our study program since 2015. Most teachers originally considered the two elements of physical and virtual classroom -to be kept separated where digital learning tools were considered to be only complementary to the real world teaching arena. Utilizing the virtual classroom for teaching during the years, teachers realize that the value lies in the combination of the two learning environments, and now prefer using both the properties implemented into each other according to the model of blended teaching.

By flipped classroom teaching, times spent on traditional lectures are reduced. The students acquire theoretical knowledge by themselves in the virtual classroom. As a result, the students are better prepared and have acquired the information they need before entering the physical classroom, in this case the laboratory. If the digital activity is combined with a short e-test, the students also can have an assessment of their level of knowledge, both before and after going to the physical laboratory and classrooms. In this way, teachers are more available for supervision, feed back and discussions with the students.

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Games for Learning

The project "EduGameLab" aims to elucidate how computer scientists developing digital learning resources can possibly close "the gaps" between educational arenas and clinical laboratories. This research project consider possible changes in learning and teaching due to handling digital technologies with focus on virtual simulation and gamification. An example from this project is StikkApp, which is a game application developed to practice the procedure of phlebotomy (Frøland et. al, 2020). When implementing StikkApp into the practical training, BLS students using this game for learning responded more accurately to questions related to understanding the phlebotomy prcedure than the control group (Frøland et. al, 2022)

Frøland TH, Heldal I, Sjøholt G, Ersvær E. Games on Mobiles via Web or Virtual Reality Technologies: How to Support Learning for Biomedical Laboratory Science Education. Information. 2020; 11(4):195. https://doi.org/10.3390/info11040195

Frøland TH, Heldal I, Braseth TA, Nygård I, Sjøholt G, Ersvær E. Digital Game-Based Support for Learning the Phlebotomy Procedure in the Biomedical Laboratory Scientist Education. Computers. 2022; 11(5):59. https://doi.org/10.3390/computers11050059

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Clinical Cases

Another project at HVL is developing clinical cases to improve the correlation between the theoretical knowledge and practical skills of the students. Both students and supervisors has contributed as co-creators of clinical cases. Collected cases has been digitalized and adapted to be used as learning resources in the study program. An example is now included at the BLS Academy webpage: https://www.blsacademy.net/digital-cases/

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Podcast

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Recently, we also have started using podcast to vary the form of digital tools for blended learning of our BLS students. In the podcast a HVL teacher is conversating with a biomedical laboratory scientist working at a hospital laboratory about various topics. This is a great way to link the theoretical knowledge to the clinical working tasks. The students find the different podcast episodes very useful and consider them as complimentary compared to other digital learning tools. So far, podcast episodes are published in our learning management system, where the different episodes are less available than intended to be. Further on, we will publish our podcast on a suitable platform for increased accessibility to our students.

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Example from Coimbra

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The BLS Academy will be an open access website for sharing digital learning tools for blended learning to the biomedical laboratory scientists. The web page will be a natural site to seek knowledge and information regarding the BLS education in Europe. In a future persepective, the BLS Academy will contain contributions from stakeholders all around Europe. In this way, the BLS Academy will be a site for collaborations facilitating for blended learning.

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