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Enhancing hybrid teaching in higher education through chatbots

Hybrid teaching in Bioinformatics at Kaunas University of Technology

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The creation of this resource has been partially funded by the ERASMUS+ grant program of the European Union under grant no. 2021-1-DE01-KA220-HED-000023203. Neither the European Commission nor the project's national funding agency DAAD are responsible for the content or liable for any losses or damage resulting of the use of this resource.

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INTRODUCTION

This case presents the model of a hybrid module implementation, in which laboratory work was supposed to be done face-to-face in regular computer classrooms equipped with a particular software, and theory lectures and seminars could be delivered both, virtually and in presence. Students could therefore choose hybrid mode when attending lectures or seminars.

GENERAL CONTEXT OF THE HYBRID TEACHING PRACTICE

- Implementer: Kaunas University of Technology (Kaunas, Lithuania)
- Course: Bioinformatics (Bachelor degree)
- Lifetime: Individual case from October 2021 to February 2022
- Reference: Based on the interview with Dr. Evelina Stanevičienė
- Compiled and structured by Kaunas University of Technology (KTU)

PARTICIPANTS AND THEIR PREVIOUS EXPERIENCE

Hybrid teaching was implemented under the Bachelor course Bioinformatics at KTU. There were about 15 students in the course, with an average of more than ten online and about five on-site. The student groups were mixed; however, most of them were females. The average age was about 20 years. Neither course teachers no participants had experience with teaching and learning in hybrid settings.

INITIAL SITUATION

The use of hybrid teaching began during the pandemic, which has influenced and opened up new opportunities for the work of university management, where remote work elements were already or would be applied in the future. Their use has led to closer communication between the central university leadership and the faculty administration.
Furthermore, new forms of study have been opened, not only nationally but also internationally. All universities involved in the research confirmed the realization of a mixed form (blended learning) Master's degree, as well as expanded opportunities for foreign student studies and their mobility and that of lecturers. For this reason, hybrid studies would be applied in many cases. Online, partially online, or mixed learning processes are most frequently related to the inverted class method. However, regardless of the selected online learning method, the most important points of the online learning process for students are the promotion of self-learning, interaction with teaching staff, planning activities, including the preparation of an appropriate environment, the use of multimedia, and a proper and accepted evaluation system.
Last but not least: the pandemic has opened up opportunities to provide services internally and to other institutions at the national and international levels, including the provision of didactic training for teachers or other distance courses/training.

CURRENT REASON

The current promotion of hybrid teaching responds to the needs of the university to ensure access to the successful qualitative learning process for students living in both, urban and rural areas. The biggest challenge is to have the necessary equipment (high-quality internet, cameras, software) on both sides of the teaching and learning processes. Lithuanian educational institutions can quickly adapt to changing situations, and all they need are the right tools!

LEARNING OBJECTIVES

Upon completion of the course, students were expected to acquire basic multidisciplinary skills in Information Technology and Education and to demonstrate their knowledge in the practical areas during laboratory work, followed by an exam.

HYBRID TEACHING SCENARIO

The entire course was delivered through a mix of different learning settings as follows:

- **Theory lesson plan:** a lesson in which mixed groups of on-campus and distance students collaborated.
- **Teamwork lesson plan**: a group work-based task where students worked in teams across multiple weeks to prepare a report about a particular theme.
- **Seminar lesson plan**: students presented their reports remotely or face-to-face.
- **Laboratory lesson plan**: Laboratory work was conducted with students physically working in the lab.

The hybrid approach was therefore applied for the delivery of theory lectures and as part of seminar sessions.
Laboratory work was conducted on campus as it required particular software. Laboratory classes took place in regular, equipped computer classrooms.

HARDWARE AND SOFTWARE USED

Zoom platform was used for communication and collaboration in real time. LMS Moodle was employed for the design and delivery of the course modules.
Though, according to the interviewed teacher, university could pay more attention to the development and accessibility of digital learning tools. Virtual labs, learning data analytics, artificial intelligence applications and other innovations could be tested in higher education first. The solutions tested here could be replicated in the general education sector as well, involving teachers in the development of teachers' digital competencies.

INTERACTION AMONG PARTICIPANTS

Zoom platform was used for communication and collaboration among students. Feedback and reflection on the practical assignments were provided either asynchronously in the virtual learning environment Moodle, or synchronously in face-to-face format.

ASSESSMENT

The standard formative and summative assessment procedures were used.

CONTENT CREATION

The teacher mainly relied on recordings, assignment textbooks and paper-based books. Descriptions of laboratory work, theoretical lecture slides, previous lecture recordings, links to valuable sources, and short instructional videos were provided via the LMS Moodle. Additionally, digital contents of general universities were accessible.
At this point, no tools or strategies of inclusive or diverse education were used.

STUDENT EVALUATION

Students rated the hybrid teaching format very positively.

TEACHER EVALUATION

The teachers found hybrid teaching settings suitable for the time being. Based on teacher observations, attendance at theoretical lectures slightly increased when they were organized using hybrid mode. No significant change was observed in the grades and marks.

QUALITY ASSURANCE

Feedback from students on the module contents and delivery format was collected to ensure the quality of the learning process.

TRANSFERABILITY AND SUSTAINABILITY

Hybrid teaching was considered a flexible option for teachers to respond to the individual needs of learners, who were sick, hospitalized, injured, infected with COVID-19 etc.

FURTHER REFERENCE

https://www.mdpi.com/2071-1050/14/3/1933