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Strategies for Innovative Learning

Virtual Ocean Exploration

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Modality: Virtual or Blended

Training area: Undergraduate

Course code: BIOL_1331_B

Numbers of credits: 3

Characteristics essentials

'Ocean Exploration' (EO) aims understanding the Ocean as the last exploration frontier on Earth. EO highlights the importance of the deep-sea for human development and its potential to sustain human life despite the current lag in exploration and technology. The EO class, implemented for both blended and virtual learning, offers an expanded learning environment, where students develop authentic tasks with emphasis on research, innovation and of course exploration. The hallmark of the EO class is engaging students in real-time deep-sea exploration through telepresence. EO also nurtures self-learning and promotes networking and collaboration among students, which are essential competences in any discipline.

Transformation elements

EO invites students to engage three roles during the class, researcher, explorer and entrepreneur, which correspond to three modules respectively. Each module starts with on-line introductory material supported by technology information media and applications, which bear active learning or simple near-ludic assignments. Following, each module presents a more demanding and creative assignment, which contains most of the class grading load.

Pedagogical-. EO offers students three professional profiles: explorer, researcher and entrepreneur as a way to approach the class. Thus, during the explorer profile, the student participates in ocean exploration and is exposed to cutting-edge technology. As a researcher, the student, hands-on, searches for scientific literature on deep-sea hydrothermal vents using tools for reference management. As an entrepreneur, students identify innovative businesses and opportunities for Ocean resources based on a sustainable use approach.

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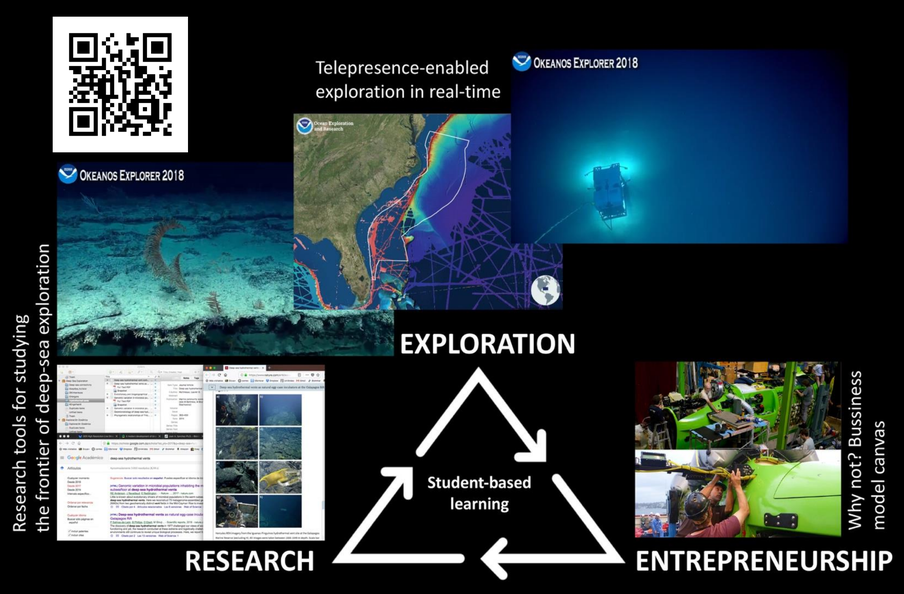

Since the class is offered to any major, the student is challenged in a different manner at each role/module, sometimes totally out of his/her comfort zone. This also encourages the interdisciplinary team work.

Technological-. Today it is possible to follow real-time expeditions from the deep ocean using telepresence[1]. Ten years ago this was only possible at a few institutions using 2 Gb internet. Recent developments in data encryption and transfer made possible to stream this expeditions even through a smartphone. At EO, students follow a real deep-sea expedition from thousands of meters deep, via streaming[2], and create a daily blog of discoveries analyzing technological challenges during the expedition.

Lessons learned

In Colombia, this type of learning is still new and unfamiliar. Although students express curiosity on the virtual environment, there are barriers to engage students in autonomous self-learning, which could be the product of many years of traditional lecture-based scheme. The whole class material is usually readily available from day one in virtual learning. Yet, students tend to accumulate classwork too close to the deadlines, sometimes not able to comply accordingly, which comprises the major challenge faced during the class.

Effect and impact evidences

Students design an entrepreneurship project using the Ocean through new lenses. This project is an invitation for students to dive into a topic of interest amongst the ones covered during EO. According to the course assessment, this was one of the most appreciated and relevant activities for the students' learning processes.

Telepresence from deep-sea expeditions greatly impact students, whom expressed openly that their view from the Ocean changed completely.

References

1. Van Dover, C. L., German, C. R., Yoerger, D. R., Kaiser, C. L. & Brothers, L. (2012) Telepresence field research experience for undergraduate and graduate students: An R/V Okeanos Explorer/AUV Sentry success story. in *AGU Fall Meeting Abstracts*
2. *Oceanexplorergov YouTube Channel: https://www.youtube.com/channel/UCe_3CoEeinvPMze2u_aENBg (accessed on June 18, 2018)*