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Communication 31

Does the use of e-learning effectively support classroom learning?

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Citation

Heras, S., Ruiz S., Martínez-López, CR., García-Vázquez, FA. Does the use of e-learning effectively support classroom learning?

Abstract

In the era of Information and Communication Technology, students have increasing access to learning resources. Among these resources, tutorial videos are an ideal tool in education as they have several advantages. First, they are accessible anywhere, second, they can be viewed on different electronic devices (computer, mobile or tablet), and lastly and most importantly, they can be viewed an indefinite number of times, adapting to the learning curve of each student. However, the fact that students have access to multiple digital resources does not always correlate with an improvement in the learning outcomes. During the academic year 2022-23, we detected difficulties in the understanding of a practical lesson related to the calculation of cell concentrations (using counting chambers) by the students of the master's degree in Biology and Technology of Reproduction,

affiliated to the Faculty of Veterinary Medicine. In order to overcome this difficulty, during the following academic year (2023-24) new content related to this practical lesson was generated in the form of tutorial videos that complemented the explanation of the professor during class. The aim of this study was to evaluate the learning results by comparing the evaluation exams of the academic years 2022-23 (without tutorial videos) and 2023-24 (with tutorial videos) specifically on the content related to the practical lesson on cell counting.

For the practical lesson, in the academic year 2022-23 students had access to the protocol and the presentation used during the development of the practice. The students of the academic year 2023-24, in addition to the previous content (protocol and presentation), had access to the tutorial videos. The first of these tutorial videos, lasting 3min 39s, consists of an explanation of the characteristics of the counting chambers and their dimensions (referring to the counting area), while the second (7min 27s) explains how to count the cells and the different calculations performed to obtain cell concentrations. It should be noted that in both academic courses the practical lesson was taught by the same professor, who was also in charge of preparing and producing the tutorial videos. Since their publication (December 2023) the tutorial videos have obtained an average of 384 views (331 for the first tutorial video, and 437 for the second), although these visualizations cannot be attributed solely to the master's students, as these resources are published (open access) in the teaching TV channel of the Faculty of Veterinary Medicine of the University of Murcia (<https://tv.um.es/canal?serie=25664>).

The contents explained during the practical lessons were subject to evaluation tests in the final exam of the course. In the academic year 2022-23, only 38.9% (7/18) of the students answered correctly to the question related to the practical lesson. However, during the academic year 2023-24, to a similar question, 95% (19/20) of the students answered correctly during the exam. In conclusion, the increase in performance indicates that tutorial

videos favor the understanding of complex content, allowing students to learn at their own pace and view the material as many times as necessary. In addition, this study highlights the importance of testing learning outcomes when new resources or teaching methodologies are incorporated.