Tecnológico de Monterrey

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CASE STUDY

Prof. Lizette Susana Hernández Cárdenas

General Description

Tecnológico de Monterrey is one of the most respected universities in Mexico and Latin America. Founded in 1943, it has a presence in 29 cities in the country and has more than 94,000 students, 44 academic programs, and a total of 150 patents thanks to research projects.

Tec is characterized by its academic excellence and its educational innovation, global vision, and DNA of entrepreneurship and innovation. Currently, the institution is a pioneer in using Labster in Latin America, having an impact on more than 3,000 students doing virtual laboratory practicals.

Challenge

The challenge was to provide Tecnológico de Monterrey students with access to virtual laboratory practices. A total of 300 students participated in this course.

Bibliography

Professor Lizette Susana Hernandez Cardenas has a postgraduate degree in Sciences with a specialty in Chemistry, both degrees from Tecnológico de Monterrey, an institution where she works as National Coordinator of Academic Communities and professor in the Department of Basic Sciences of the School of Medicine and Health Sciences, teaching courses in the areas of Cellular Biology, Chemical Bases, and Metabolism. She participated in the curricular design of the new Tec21 Educational Model. She is the recipient of the Educational Innovation Award 2010 and 2014. She has participated in conferences and research articles on innovation and educational simulation for the health area.

Case Study Highlights

Number of Students Using Labster: 300
Labster Simulations Used: 8 Simulations in: Physiology, Cellular, and Molecular Biology, Microbiology, and Biotechnology.

> ***"During the pandemic, Labster helped us to take advantage of technology so that our students learn to perform lab techniques, even though there was no access to the physical facilities."***
>
> *— Prof. Lizette Susana Hernández Cárdenas*

Labster

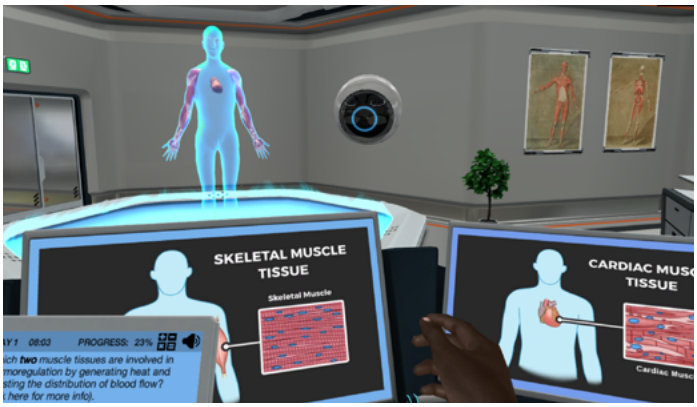
In the words of Professor Lizette S. Hernandez Cardenas

Labster in remote, face-to-face, and hybrid classes

Professor Lizette teaches Cellular Biology, Chemical Bases, and Metabolism to students in the first semester of Tecnológico de Monterrey. Hernandez commented that some of her students had not had the opportunity to work in the lab in person due to the pandemic.

“Labster provided them with a safe space, where they can make mistakes, experiment, start the simulation again or go back a few steps,” the professor shared. She added that in Labster they can be practicing while being supported with the theoretical part of the simulation.

Tecnológico de Monterrey began working with Labster several years ago, before the COVID-19 pandemic hit. **“Teaching students only the theory is not the same as teaching them to practice. Students who work with simulations have active learning, they are involved in the simulation. We also learn by doing,"** she stressed.



“We are going to continue using Labster even though we have returned to face-to-face classes, as these technologies enrich learning. In the face-to-face model, students visit the laboratories and are in contact with their equipment. However, to learn the technique we will definitely continue using the simulation,” the teacher commented.

Working as a team with virtual laboratories in class

Tecnológico de Monterrey works with all the tools provided by Labster in an integrated manner with its LMS learning platform, Canvas. In Lizette's courses, before starting the simulation, students review the theory regarding the technique they are going to practice, answer questions and take a short quiz to assess their knowledge of the technique. Then, they carry out the simulation in small teams or individually.

According to Professor Hernandez Cardenas, including Labster simulations in face-to-face courses also helps with teamwork, especially if students have doubts about certain concepts or theories.

The simulation takes place during class, and afterward, the quiz scores taken by each student in the simulation are automatically uploaded to Canvas.

At the end of the class, the students share conclusions and make a report on the technique they learned in the simulation: how they experienced it, what they did, what the technique was about, and what usefulness they see, and submit it as part of your session evaluation.

Labster

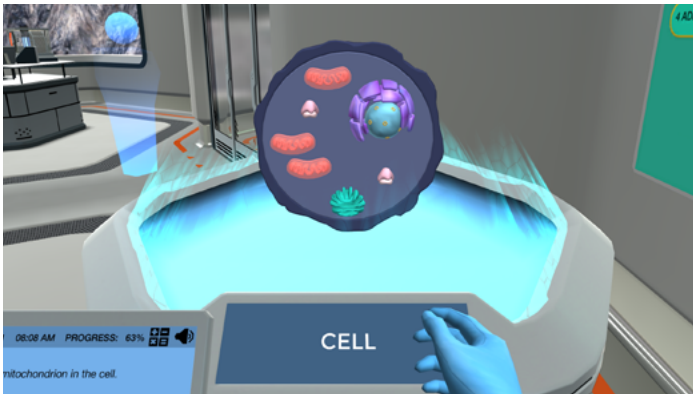
In the words of Professor Lizette S. Hernandez Cardenas

Students are more motivated and expand their vocabulary in English

Professor Lizette observed that students are motivated to work with the simulations and learn in different formats, in which they can learn, make mistakes safely and start the simulation again while working in an immersive laboratory environment.

In addition, she pointed out that the students get involved, participate, ask questions and look for the applications that the learned technique can have. "The students give us very good reports as a result of the experiential learning that the simulations provide them," said Hernandez Cardenas.

Labster has simulations in English and translated into Spanish, and Tec students practice with simulations in both languages. According to the teacher, **"Labster helps students enrich their vocabulary in English, learning specialized terminology of the area they are studying."** In this way, students can learn in a practical way the appropriate lexicon of the health area they are studying, since it is not a colloquial terminology that is learned when they study the English language.



"I am very grateful to Labster, for its commitment to the quality of the simulations and the content it offers. In addition, they ask us what we would like to do and what we need for our classes," added Lizette. Labster has technical support in Latin America, which benefits in the speed of its response times, the increase in the range of simulations translated into Spanish, as well as in the training it provides on how to use the tools and search for simulations.

> ***"Labster has helped us deliver our classes and courses in a more interactive way, I will definitely follow using Labster simulations in the future."***
>
> *—Prof. Lizette Susana Hernández Cárdenas*

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