TEACHING EXPERIMENTS DURING DISTANCE LEARNING

by:
Alyssa Buenaagua

Experiments play a significant role in science teaching, particularly in chemistry. It requires students' critical thinking and research skills in practical laboratories. However, amidst the Covid-19 pandemic, all schools worldwide were encouraged to conduct classes thru distance learning. Consequently, the chemistry/science teachers have been placed in difficult situations as they need to organize their theoretical knowledge and practical education of experimental and laboratory activities in an online environment.

According to Babinčáková and Bernard (2020), distance learning became a challenge for science teachers to introduce experiments and laboratory activities during distance learning as the students were not exposed to hands-on activities, and the teachers should innovate science teaching strategies. Nevertheless, the technological advances and the development of information and communication technology (ICT) have created many opportunities to introduce students to the practical aspects of chemistry, such as through a description with photos, video recordings, live demonstrations of experiments using data acquisition systems, simple "linear" simulations, and virtual labs in advanced multithreaded simulations formed from a remote-controlled actual experimental device. Alternatively, students can perform experimental work using household substances or reagents at home.

Moreover, Bendici (2020) agreed that teaching practical subjects such as science is challenging for educators as distance learning was introduced in many schools. However, not allowing students to experiment, test, and explore directly encourages new teaching methods. Hence, when teachers are preparing to teach science remotely, they need to be reflective and understand that they cannot take their traditional classroom with students

sitting in front of them and replicate that online. They must innovate activities and pedagogies to cope with the necessary demand for education.

Thus, the discussions in conducting science experiments are essential and must be promoted during synchronization classes. The teachers must create an online environment where they and their students feel empowered to do the investigation. Nevertheless, simplicity is often the key to distance instruction. The goal is to make all experiment activities and science lessons as easy as possible for students and teachers. The given tasks must be technically easy to perform but still require in-depth knowledge, where teachers should engage a flexible instruction that encourages students to express their understanding differently. In addition, teaching science or experiments should be clearly outlined and concise. Creating infographics and flowcharts reduces the cognitive burden of having too much text that students may conveniently understand the process.

References:

Paweł Bernard - Department of Chemical Education, Jagiellonian University, 30-387 Krakow, Poland; http://orcid.org/0000-0002-8618-3447; Email: pawel.bernard@uj.edu.pl

Mária Babinčáková - Department of Didactics of Chemistry, Faculty of Science, Pavol Jozef Šafárik University in Košice, Šrobarová 2, Košice 041 80, Slovakia; http://orcid.org/0000-0003-2365-8545

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