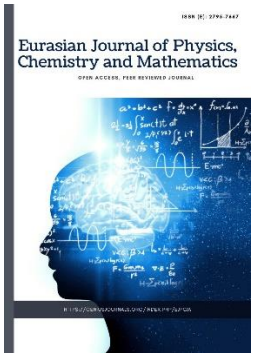

Importance of Chemistry Education and Methods That are Used in Teaching

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ABSTRACT

Through this article, we are going to explore important peculiarities of teaching chemistry and ways that are used in classroom. Moreover, different techniques of teaching chemistry were discussed.

Keywords: Chemistry education, physical sciences, transferable skills, Laboratory courses, Chemistry lectures, Workshops, Tutorials, Electronic resources.

Chemistry education is important because the field of chemistry is fundamental to our world. The universe is subject to the laws of chemistry, while human beings depend on the orderly progress of chemical reactions within their bodies. Described as the central science, chemistry connects physical sciences with the life sciences and applied sciences. Chemistry has applications in food, medicine, industry, the environment, and other areas. Learning chemistry allows students to learn about the c method and gain skills in critical thinking, deductive reasoning, problem-solving, and communication. Teaching chemistry to students at a young age can increase student interest in STEM careers. Chemistry also provides students with many transferable skills that can be applied to any career

The most common method of teaching chemistry is lecture with a laboratory component. Laboratory courses became a central part of the chemistry curriculum towards the end of the 19th century. The German scientist Justus von Liebig plays a major role in shifting the model of lecture with demonstrations to one that includes a laboratory component. Liebig was one of the first chemists to conduct a laboratory and his methodology became widespread in the United States due to the efforts of Eben Horsford and Charles W. Eliot. After working in Liebig's laboratory, Horsford returned to the United States and helped establish the Lawrence Scientific School at Harvard University. The school was modeled after Liebig's methodology and established the first chemistry laboratory course. Two years later, Charles W. Eliot started to volunteer at the laboratory. Eliot's interests in the laboratory grew, and he eventually took charge of it. Eliot was later elected as Harvard's president in 1869. Eliot also served other powerful roles in education, which allowed him to influence the widespread adoption of laboratory methods.

Today, the American Chemical Society on Professional Training requires students to gain 400 hours of laboratory experience, outside of introductory chemistry, to get a bachelor's degree. Similarly, the Royal Society of Chemistry requires students to gain 300 hours of laboratory experience to get a bachelor's degree. However, since the twenty-first century, the role of laboratory courses in the chemistry curriculum has been questioned in major journals. The main argument against laboratory courses is that there is little evidence for their impact on student learning. Researchers are asking questions such as "why do we have laboratory work in the curriculum? What is distinctive about laboratory work that cannot be met elsewhere in the curriculum?" Researchers are asking for evidence that the investment of space, time and resources in chemistry laboratories provides value to student learning.

Chemistry is a subject that involves experimentation which could be more exciting whenever conducted through laboratory experiment where the results are more memorable by their senses . It is also a study of the composition, properties and behaviour of matter. Sirhan stated that chemistry is one of the vital branches of science since most of the topics basically about the structure of matter which provides explanation and enables the students to understand the occurring phenomena. Lunette et al. explained that experiment is a learning experience in which students communicate with materials or with secondary sources of information to observe and understand the natural world. There are many purposes of doing experiment in chemistry. Some of the most frequently stated reasons are to encourage precise observation and explanation, to make situation more real, to stimulate and maintain attentiveness, to promote a logical and reasoning technique of understood. Professional chemists need to be able to make connections between topics in separate subjects. They need to think through problems in a clear and logical manner, find the most efficient way of analysing or synthesising compounds and clearly explain their views or conclusions to people. There some useful ways of teaching chemistry. For instance,:

Chemistry lectures are as interactive as possible, with discussions, question and answer sessions and informal quizzes as well as the more conventional lecture style. In most lectures you will be provided with handouts to summarise key points and structure your note taking.

Workshops convert your knowledge to understanding. Working in small groups of peers, you will explore problems and link to material recently covered in lectures. Workshops allow you to learn from each other and gain confidence in your own abilities.

Tutorials involve a group of six to eight students and one tutor. You will work on problems in advance of the tutorial and submit your work for assessment. The tutor then tailors each session to suit your developing knowledge. You will have the opportunity to lead as well as contribute to discussions, and these sessions provide a forum at which you can present your ideas.

Electronic resources that are Blackboard is our virtual learning environment, where copies of lecture notes and other alternative teaching media like videos and self-assessment tests are posted for you to access to enhance your self-study.

Laboratory work and practical sessions. You will spend up to six hours a week in practical sessions, developing your lab technique and exemplifying the theoretical concepts covered in lectures. These sessions are hard work but sociable, and allow you to obtain your own results and generate supporting laboratory report.

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