THE USE OF ACTIVE METHODOLOGIES IN THE PHYSICS TEACHING AND LEARNING PROCESS: INITIATION OF SCIENTIFIC RESEARCH IN SCIENCE AND TECHNOLOGY

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INTRODUCTION

Theoretical concepts in physics are better assimilated by students of technology and innovation courses when they work in a cooperative and integrated way, building prototypes and physics experiments, thus observing the problems of the nature of science and technology. This way of working by students promotes critical and epistemological debate, in addition to contributing to their perceptions of socioeconomic and cultural implications to have more and more space in the construction of social rationality. The objective is to show, based on the teacher's change of attitude in relation to the application of active methodologies in technological teaching, that students began to think about the concepts of physics from the theoretical synthesis with the experimental practice.

METHODOLOGY AND DESCRIPTION OF RESULTS

According to Carl Wieman (2017), the construction of new approaches to science learning is increasingly necessary to ensure that students and teachers can, from interactive methods based on evidence, understand more and better the new concepts originating from modern science, especially the concepts derived from Classical to Quantum Mechanics transition. The methodology applied consists of the division by groups of students, whose objective would be to prepare a seminar out of an experimental situation. The seminar groups allowed students to be evaluated in four learning areas: 1) Textual construction; 2) Mastery of the theoretical content researched; 3) Clarity and conciseness in the presentation of ideas and 4) Experimental construction. After the small group (classroom) presentation, the students would present their prototypes and experiments in the broad group (Expo Lattes—CITE—Technological Circuit). One of the proposals would be the construction of the cloud chamber or Wilson cloud chamber for the detection of cosmic particles, in addition to other prototypes such as the Electromagnetic Engine of architecture V8. The fundamental idea of this prototype would be to start the mechanical movement of the V8 electromagnetic motor with a distribution of magnets to shape a magnetic coupling and then become this system.

CONCLUSION

It is possible to understand that several paths can enable students to better learn the theoretical concepts of physics and other sciences such as biology and chemistry, considered as exact sciences. However, it is possible to apply some methodologies that decisively facilitate the understanding of students about the evolution of concepts, such as History of Science, Computer Simulation and, Experimentation with the creation of prototypes (Rosa, 2019).

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