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Contributions of History and Philosophy of Science course for undergraduate physics teachers students

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We live in a world widely influenced by Science, being perceptible its action in several areas of life. This overvaluation develops naive beliefs about the nature of Science and scientific work, impacting on science teaching that, after the end of the 50's, aimed to train student as "little scientists" through the scientific method. However, many studies in the fields of History, Philosophy and Sociology of Science, especially after the 70's, pointed out and criticized some deformities that science teaching could be playing, such as: the empirical and inductive conceptions, the infallible and ahistorical view of science, among other deformities. Understanding that contemporary visions of Science contribute to the improvement of Science teaching, it becomes important to analyze the perceptions of undergraduate physics teacher students in relation to the History and Philosophy of Science (HFS) course. Their perceptions about Science will impact their teaching and consequently the students' perceptions. In this perspective, this work presents results of an exploratory case study that investigated how the epistemological conceptions of a group of students evolved after the accomplishment of this course, as well as have been maintained over time. We attempted to answer the following research questions: in the context of the survey, how was the evolution of epistemological conceptions of the students? How this evolution has remained over time? The units of analysis were four undergraduate physics teacher students, from the Instituto Federal Sul-Rio-Grandense, in the city of Pelotas - Brazil. The study occurred after the first semester of 2017, when the compulsory course of HFS was taken. Two questionnaires were applied. The first after completion of the course. The other six months after the first. The answers obtained were compared in three aspects: the role of observation and experimentation in scientific research; possibility of transformations of scientific theories; and the role of error in scientific work. The students' answers showed a positive influence of the discipline for the construction of thoughts aligned with the contemporary epistemological conceptions. Science is seen, through these conceptions, as a human construction susceptible to error. Theory precedes observations, which are not neutral, and there is no rigid scientific method. We realized that, in general, these perspectives have been remained, presenting some maturity. The students had a more flexible idea about the role of observation and experimentation in scientific research. They also pointed out that the theories can change, thus contributing to the progress of Science. The same was observed with regard to the role of error in scientific work, where all the students stated that the error is present, since Science is built by individuals who can make mistakes. This work contributes to the discussion about the importance of the content of the HFS course to the initial formation of physics teachers, considering the indispensability of scientific literacy for the training of students as critical citizens, as well as understanding that teachers are able to perform the necessary transformations for this process.

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Primary author: Dr MÜLLER, Maykon (Instituto Federal de Educação, Ciência e Tecnologia Sul-rio-grandense)

Co-author: Mrs MENDES, Alex Antunes (Instituto Federal de Educação, Ciência e Tecnologia Sul-rio-grandense)

Presenter: Dr MÜLLER, Maykon (Instituto Federal de Educação, Ciência e Tecnologia Sul-rio-grandense)

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