Inquiry Based Teaching: an experience with TEMI E.U. Project

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Abstract. *The Department of Physics at University of Salerno has planned and implemented various didactical activities for high school teachers and students in recent years. The main purpose was to reduce the gap between high school and university studies, by offering didactical strategies and specific tools for physics teaching. From this perspective, the Department has been involved in the European project (Teaching Enquiry with Mysteries Incorporated) [TEMI], giving to high-school teachers the possibility of a TEMI training. As it is required by this project, a group of teachers has been involved in a four days' Workshop, which has consisted of sixteen hours of lessons and laboratory activities.*

The project was carried out in three steps over four months. The first step consisted in seminars with practical IBSE (Inquiry Based Science Education) activities, concerning various physical phenomena (from mechanics to the nature of the light). Starting from the introduction of "Mysteries", we proposed interactive lessons based on the principles of "Inquiry based learning" and mainly concerning: the gas laws, the oscillations, the electrical circuits and the eddy currents.

In the second step of the project, teachers have been motivated to implement in their own classes some of the activities proposed in the first step, using TEMI methodology. Finally, as a third step, besides having proposed other laboratory activities, we have discussed a comparison of the results obtained by the teachers into the classes.

At all stages, the "Inquiry" methodology has been activated by the universitary trainers, so teachers could better stimulate learners to make questions and formulate scientific hypotheses. Many experiments with poor materials were proposed, in order to help teachers to more easily guide their students during the investigation about physical phenomena.

The experience was successful: many teachers showed a great amount of creativity, and they were satisfied to have introduced many interesting arguments and new strategies to their own classes. From their side, the students appreciated the educational strategy and the attention paid by the University of Salerno and by the TEMI project to their educational pathway. In conclusion, teachers participated actively to the project, answering to the main scientific questions and producing very interesting and original experiences.

Current implications of this study is to give contribution to promote and evaluate new teaching methods and curriculum resources. The EU-funded TEMI is designed to equip students with the skills they need to do science, and with the motivation they need to learn well. We will contribute to the challenge that is to persuade teachers of the benefits of enquiry teaching, and training students to take more responsibility for their own learning.

In this talk, we will briefly describe the TEMI training methodology, giving some examples of the work produced by teachers in their classrooms during our project, with comments and discussion.

TEMI (2016). Available at http://teachingmysteries.eu/en