

THE HISTORY OF PHYSICS SCHOOLS

The Working Group “History of Physics” of the Italian Association for Physics Education (A.I.F.) is involved in a series of activities: it arranges training schools and thematic seminars, manages working sessions at international meetings, participates in meeting of European Physical Society with speeches about research into educational and historical subjects, takes care of educational topics and publishes copy-books and teaching tools.

The website is: www.lfns.it/STORIA/.

The schools of History of Physics.

The purpose of the training schools - the first of whose took place in 2001, December - is to improve historical and epistemological aspects of physical theories, above all of the XX century's Physics. The main aim is to refuse the thesis according to which the scientific education runs out by introduction experimental results and by laws that rules the nature. The study of history of science is not indeed only an enhancement of our store of knowledge, but it is also the way to understand how to make science and how to think about moral and social involvements to make science.

The schools are over all directed to train teachers and also, secondly, to be good for didactics.

For the purpose of emphasizing the training intention of the schools, we called the first School “The history of science as foundation of scientific intellectual training”, because we are utterly convinced that history is the way to penetrate scientific and critical knowledge and to re-evaluate the scientific knowledge for its educational, not instrumental, value.

In the field of didactics, we consider the history of science as the keystone to accept science in a different and better way. Already, more than thirty years ago, the Project Physics Course (PPC), that had Gerald Holton as leader, had as purpose the education founded on understanding the development of science and its impact with culture and society and not on future physicists becoming.

The school appears as the best training modality to implement an involving in service education. The School, lasting 6 days and scheduled in winter, aims to bring together some teachers working for the improvement of their didactic and disciplinary expertises, under the supervision of experts and tutors. Sharing time 24 hours a day and having a sort of collegial life is the best way to have a didactic and cultural exchange much better than the mere communication of contents and techniques. Moreover, the resulting free exchange of ideas allows to make a much deep remarks about educational role and teaching profession.

The experts and the tutors, belonging to University and High School, handle the scientific plan of the activities.

The schools dealt in the most important events of history of physics about mechanics, thermodynamics, electromagnetism, the theory of relativity, the quantum physics.

The methodologies are: theoretical interventions and working groups.

The lessons take place chiefly in the morning. Because of the different features and interests of experts, the lessons are integrated one another. Some teachers have a preference for the so-called “inside” history of physics and so they show how the cognitive models of reality change because the laws are essential part to scientific development; some teachers instead insert the historical evolution of science in the cultural and social background of the places where it was born.

In the afternoons are scheduled the team works under the guidance of a tutor, in the presence of the experts. The purpose is to develop the consciousness about an historical research, to tackle some conceptual problems, to organize some activities that come in handy for didactics.

The arrangement of the team works is mainly based on the critical readings of original topics, on the presentation of didactic experiences, on commentary on films and on exchange of ideas and experiences. Sometimes some examples of so-called “informal learning” founded on history of science are given; it is useful to show the science as intellectual adventure, to feel the thrill of a discovery and to emphasize the big links between science and society.

At the end of the week the ones who attended the school come in a questionnaire about the activities.

Finally, they can ask for a certificate showing his acquired competences; the certificate will issue after the assessment of a voluntary work done after the end of the school.

Some plain information's is yielded about the drafting of this work; at the end the acquired expertises are certified without any value judgment.