

## DD 40: Neue Medien III (NOS)

Time: Thursday 15:40–16:40

Location: EW 229

DD 40.1 Thu 15:40 EW 229

**Teaching science using case studies from History of Science: The design of science teachers' training e-modules** —

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Nowadays, science education research emphasizes on the importance of incorporating meaningful contexts like historical case studies in learning science (e.g. Stinner et al., 2003; Bevilaqua & Giannetto, 1998; Heering, 2000, Seroglou & Koumaras 2001) and the nature of science in instruction (e.g. McComas et al., 1998). It is asserted that the utilization of History of Science for proper science understanding, and hence the need for its inclusion in appropriate designed curricula (e.g. Matthews, 1994). The paper concerns the design and the presentation of modules appropriate for science teachers' e-training which are based on the aspect that History of Science promotes physics learning. The design of a training curriculum on the topics of electricity and electromagnetism was used for the development of a training e-material on the context of the "STeT project", that is a European Union Comenius 2.1 program - a cooperation of five European Universities - concerning the contribution of History of Science in science teaching. The use of ICT in Education, and especially in the procedure of teachers' training and retraining can renovate their education. This guides us to develop an interactive material based on socioconstructivist and sociocultural learning principles appropriate for distance-learning training.

DD 40.2 Thu 16:00 EW 229

**Role playing in science teaching: Using the history of science for nature-of-science activities in teacher (e-) training.** —

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Two nature-of-science activities for teacher (e-) training have been designed, developed, applied and evaluated in the context of two european research projects: The MAP prOject and STeT.

Both activities are based on the history of science and use narratives

(short films) presenting the life and work of scientists in the past as well as their social and cultural context. The first activity focuses on Galileo's work on free fall while the second activity focuses on Faraday's work in electromagnetism.

During the activities teachers attend the films and develop and perform role-plays inspired by the films. The role-plays that take place in face-to-face teacher training courses are videotaped and included in the teacher e-training courses that are supported by the web sites developed in the context of The MAP prOject and STeT.

Both the films and the videotaped role-plays provide a range of opportunities for discussion and meta-reflection on aspects concerning the nature of science: the role of observation in an experiment, idealization and its impact in the relation between theories and experiments, the theoretical versus the practical approach to a scientific problem, the interrelations between science and society (religion, funding, class etc.)

DD 40.3 Thu 16:20 EW 229

**History of electromagnetism and Web 2.0 educational technologies: the Pavia approach** — •LIDIA FALOMO and FABIO BEVILACQUA — via Bassi 6, 27100 Pavia, Italy

The Pavia Stet Project deals with the history of Classical Electromagnetic Theories. Two chapters have already been realised, both dealing with Alessandro Volta (1745-1827): the controversy with Coulomb (1736-1806) on the quantification of electrical interactions and the debate with Galvani (1737-1798) on animal electricity.

Relevant primary sources have been selected, analysed and digitalised (Volta's collected works, manuscripts, instruments; Coulomb's first (1785) and second paper (1787) on electricity, electric torsion balance and pendulum devices; Galvani's Commentarius (1791-2) and his experiments). Historiographical debates have been promoted and published.

The results have been utilised for a pedagogical experiment: through extensive use of web sites, animations, movies, interactive exhibits, exhibitions. Today we are committed at a widespread utilisation of these results in the framework of the newly available Web 2.0 technologies, namely the Wiki software.