DD 20: Lehr-Lernforschung IV (NOS)

Time: Tuesday 14:20–15:20 Location: EW 229

DD 20.1 Tue 14:20 EW 229

Merkmale von Physik aus Sicht von Schülerinnen und Schülern — •Olaf Krey und Helmut F. Mikelskis — Institut für Physik der Universität Potsdam, Lehrstuhl Didaktik der Physik

Im Rahmen eines Projektes zur Untersuchung von Schülervorstellungen über die Rolle der Mathematik in der Physik wurden zunächst einige Interviews durchgeführt, auf deren Grundlage die Entwicklung eines Fragebogens erfolgte. Im Rahmen einer Pilotstudie, die vor allem die Erprobung des entwickelten Fragebogens zum Ziel hatte, wurden die Schülerinnen und Schüler der zehnten Klassen dreier Gymnasien des Landes Brandenburg (N=287) aufgefordert, bis zu fünf charakteristische Merkmale von Physik zu nennen. Die schriftlichen Äußerungen der Schüler wurden mit der Methode der qualitativen Inhaltsanalyse (Mayring 2003) kategorisiert und in Verbindung mit den relevanten Passagen der Interviews ausgewertet. Die Ergebnisse werden vorgestellt und diskutiert.

DD 20.2 Tue 14:40 EW 229

Physics from novices' and experts' view: a simple test instrument — •Peter Wächter and Susanne Schneider — IV. Physikalisches Institut, Universität Göttingen, Germany

Considering the scientific results dominantly originating from english-speaking researchers, the assessment of students' views on physics and learning physics using simple instruments is a desirable objective. For this reason, we present in this work a new, very simple questionnaire, which using an empirically defined experts' view permits to compare the experts' and student's perspective. Besides the description of development an design of the instrument, we present first results from recent studies and give suggestions for future questions.

DD 20.3 Tue 15:00 EW 229

Developing Students' Scientific Reasoning — •Nicos Valanides and María Papageorgiou — University of Cyprus, P.O.BOX 20537, CY-1678, Nicosia, Cyprus

Scientific reasoning is similar to problem solving and is characterized by a dual search process (Klahr & Dunbar,1988)that takes place in the hypothesis space and the experimental space. The search in the two spaces is mediated by an evaluation process, which assesses the fit between theory (hypothesis) and evidence. In the present study, individual interviews were conducted with 10 eight-grade students, as they were investigating the functioning of a device consisting of a wooden box with 8 small electric lamps in a line and 5 switches, in another line below the lamps, which could move up and down. The lamps and the switches were connected in a "hidden" circuit inside the box, while a "tester," located below the 5 switches, was used to test which lamp(s) was(were) lit on. Individuals could design experiments, make observations, collect, organize, and analyze factual knowledge, and draw conclusions. Each interview lasted between 40 to 60 minutes, was tape-recorded, and transcribed for data analysis. The results indicate that children of this age form hypotheses based on their prior knowledge and tend to mainly search the experimental space. They rely only on "positive" experiments and do not have the ability to effectively organize their results.