

PRISMA+ Colloquium

Oct. 30, 2019 at 1 p.m.
Lorentz-Raum 05-127, Staudingerweg 7

Verena Spatz
TU Darmstadt

Physics Education

Physics Education It is a widely held view that in the field of physics education the implementation of scientific findings into instruction practice should be a critical issue, however the record of research results on genuine classroom activities is generally poor. In the seminar, a project will be presented, that aims at closing this research-practice gap. In the project, novel teaching units on the introduction to Newtonian mechanics were developed and evaluated, based on empirical studies concerning common pre-instruction ideas, which students bring along into school.

Some of these ideas are appropriate, whereas many are inappropriate to build upon in physics lessons. A very popular erroneous idea about motion is that a force is needed to keep an object moving at constant velocity. This novices concept has to be changed into an experts concept, that a force is needed only to change the velocity of an object. As illustrated in this example, teaching and learning physics often requires conceptual change. Considering this, the content area itself had to be restructured and teaching materials had to be prepared to meet students learning needs. An accompanying quasi-experimental field study with grade seven classes showed a significant improvement of students conceptual understanding.