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Learners' and prospective teachers' productive intuitive conceptions in magnetism

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<p>During the past decades there has been an increasing interest in alternative conceptions in physics. An alternative conception in science refers to a conception which in some aspects is contradictory to or inconsistent with the concept as intended by the scientists. Research in this domain tries to answer questions such as which misconceptions occur, what are their origins, how extensive are they and what can we do about them? Investigations of conceptual change approaches to remedy learners' alternative conceptions often showed that they are resistant to change.

In this study we intend to follow a different approach that focuses more positively on productive intuitive concepts of learners and students, i.e. concepts that may serve as a potential base for further refinement towards the science concept. Students' and learners' initial conceptions are investigated and analyzed for productive resources. A teaching sequence will then be developed based on conceptual refinement of their resources rather than using a cognitive conflict strategy that intends to accomplish conceptual change of alternative conceptions.

The study is still in progress and the presentation will discuss the results of interviews conducted with learners in grades 10, 11 and 12 and with prospective teachers enrolled in the first year university physical sciences programme. The learners' and students' intuitive concepts were probed in the field of magnetism. A clinical interview approach was followed with semi-structured open-ended questions. The data was transcribed and coded according to a conceptual development scheme.

The results of the interviews will inform the compilation. The subjects in depth understanding of magnetic phenomena's and their positive intuitive concepts were probed and documented. The results of completing the interviews lead to the compilation of a structured questionnaire to investigate the consistency of potential positive intuitive concepts in magnetism. The findings lead to the potential refinement of specific magnetic concepts to the scientifically correct.

The results showed deficiencies in the subjects' knowledge in magnetism as well as productive intuitive concepts that can be used for further refinement to a more scientifically correct understanding of magnetic concepts.

Level (Hons, MSc,
   PhD, other)?

Hons

Consider for a student
   award (Yes / No)?

Yes

Would you like to
 submit a short paper
 for the Conference
 Proceedings (Yes / No)?

Yes

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