

GROWTH OF CONTENT IN STUDENTS' MENTAL MODELS OF MAGNETISM

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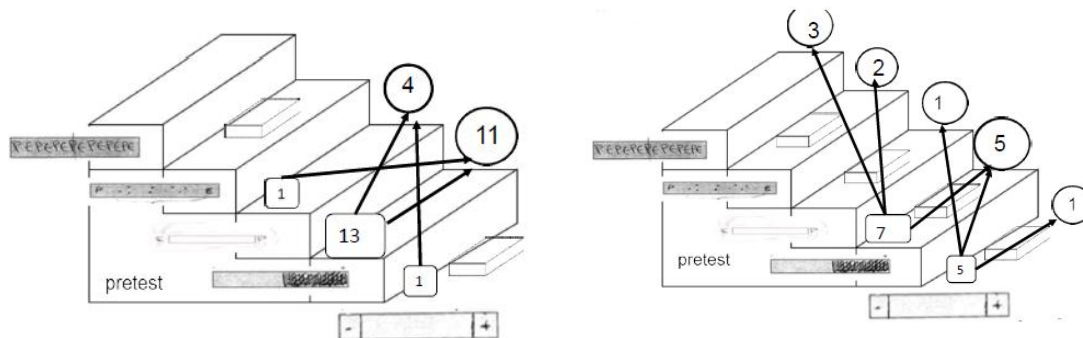
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Many studies have shown that students have difficulties understanding the concepts of magnetism, and construct a useful model of magnetism.

The purpose of this study was to investigate how teacher can guide students' generation of their own unique mental models. Three groups of lower secondary students (N=47), who had not previously studied magnetism in school, participated in the study. Students' average age was 15 years.

Data collection included video recordings of lesson implementation and classroom interactions analysed with Atlas.ti software, audio recording of one student group's discussions, pretest and posttest responses and photocopies of students' investigation sheets (text and drawings). From data has analysed what kind of models students created and what kind of critical actions, scaffolding-steps, there were.

It has determined that a relationship does exist between a teacher's use of guidance and the models that the students create. Students need to be provided multiple types of guidance in an appropriate ways with explicit steps (scaffolding-steps) to produce more sophisticated models.



Picture 1. Teacher1's and teacher2's students' models and used explicit guidance represent with steps. □ is pretest and ○ is posttest.

It proved difficult for students to notice significant and meaningful details of the model without any help. It is important that teachers are aware of the most important elements of their students' mental models and to use this knowledge to provide appropriate guidance for students to be able to create models aligned with the targets of instruction.

Key words: magnetism, models, guidance