RECENT DISSERTATIONS

ANNI LOUKOMIES, 2013

Enhancing Students' Motivation towards School Science with an Inquiry-Based Site Visit Teaching Sequence: A Design-Based Research Approach

Department of Teacher Education, University of Helsinki, Finland
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Abstract

An inquiry-based site visit teaching sequence for school science was designed in co-operation with researchers and science teachers, according to the principles of Design Based Research (DBR). Out-of-school industry site visits were central in the design. Theory-based conjectures arising from the literature on motivation, interest and inquiry-based science teaching (IBST) were embodied in the design solution, and these embodied conjectures were researched in order to uncover the aspects of the design related to students' motivation and interest. The aim of the research was to clarify which particular aspects of the design appealed particular students and enhanced their motivation and interest, and what scientific content students learnt within the project.

Lower secondary school students (age 14-15) participated a pilot cycle, two implementation-refinement cycles and a final trial. During the cycles, data were collected using a mixed-methods approach. The students' experiences of school science were mapped with the Evaluation of Science Inquiry Activities Questionnaire (ESIAQ) before and after the implementations. The students' Self-determination theory (SDT) based motivation orientations were examined using the Academic Motivation Questionnaire (AMQ) before the implementations. Students with different motivational profiles and their teachers were interviewed using a semi-structured interview protocol. The interviews were analysed by employing a theory-driven content analysis approach. The students' representations of the scientific content of the sequence were examined by comparing the informal mind maps they constructed before and after the sequence, and with interviews.

The results of the research reveal that an inquiry-based site visit teaching sequence contains the potential to enhance students' feeling of relevance of their science studies and promote motivation and interest in school science. When asked about the most motivating aspects of the teaching sequence, students emphasised different aspects depending on their motivational profile. The site visit teaching sequence offers science teachers an appropriate way of differentiating teaching according to students' different needs.

Because the research problems of this research project are multifaceted, concerning the design process, students' motivation and students' learning of the scientific content of the sequence, the problems of design, motivation and learning are reported in three different sub-studies, each containing specific research questions, data analysis and discussion.

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ISBN: *978-952-10-7881-1*
Contact: *anni.loukomies@helsinki.fi*
Download: *<https://helda.helsinki.fi/handle/10138/42269>*