RECENT DISSERTATIONS

KIRSTI MARIE JEGSTAD, 2018

Science education for our common future: Education for sustainable development in science teacher education
Department of Education, Faculty of Sciences and Technology
Norwegian University of Life Sciences

Abstract

The aim of this thesis has been to develop knowledge on how education for sustainable development (ESD) can be realised in the education of science teachers. The thesis is based on a case study, investigating the realisation of ESD in the science teacher education program at the Norwegian University of Life Sciences (NMBU). The teacher education program at NMBU has the overall aim of educating teachers who can contribute to sustainable development, making the institution a valuable case to study.

The first article is a theoretical article addressing how secondary school chemistry education can be an arena for ESD. The article provides a model consisting of five categories: chemical content knowledge, chemistry in context, the distinctiveness and methodological character of chemistry, ESD competencies and lived ESD. Through the model, we aim to support chemistry teachers in their educational planning and the model visualises how ESD can be realised in chemistry education, even when sustainability is not specifically taught as content.

The second article investigates how ESD was realised in the science teacher education at NMBU, and provides an example of how ESD can be realised through a strengths approach, where ESD is founded in the strengths among the teacher educators and existing teaching practices. The results indicate that an emphasis on sociocultural learning theory and experiential learning builds a thorough foundation for ESD. The sociocultural learning theories contribute to the social aspect of ESD through a university culture of the teacher education institution that mirrors the school culture of a sustainable school, with a particular focus on collaboration and the learning environment. Furthermore, through a focus on experiential learning, teaching approaches such as context-based teaching, outdoor education, phenomenon-based teaching and inquiry learning were included, enhancing the emphasis on pupil participation and science in context. However, the teaching has to be explicit in order to reach all student teachers.

The third article explores the realisation of ESD in a residential field course. It, thus, provides a more in-depth exploration of one part of the teacher education program discussed in Article II. Through the residential field course, the student teachers gained experience in outdoor education, experience in spotting subject issues in nature and they gained inspiration and ideas from each other. The residential field course also provided the student teachers with experience of stepping into something unknown, which is an important exercise in preparing for ESD, since ESD requires teachers who are willing to explore content knowledge without fixed answers and the inclusion of pupil-centred teaching approaches.

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Contact: kimaje@oslomet.no