

# Sustainable development as an interdisciplinary topic in education: A video study from geoscience in upper secondary school in Norway

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Sustainable development is an interdisciplinary topic in the latest Norwegian national curriculum implemented from 2020. Geoscience – an optional science specialization subject in upper secondary education in Norway is no exception. Here, sustainable development is described as follows (Directorate of Education, 2021; our translation):

*In geoscience, the interdisciplinary topic sustainable development is about understanding earth systems as foundations for natural resources that humans depend on. It is also about how human-induced and natural changes in earth systems can cause climate change, natural hazards and alter geological diversity, as well as how society can prevent and adapt to these changes. Further, it is also about finding solutions for a more sustainable use of resources today and in the future.*

However, little is known how sustainable development is taught in geoscience in upper secondary school. Therefore, the present study explores how sustainable development was enacted in a teaching period in geoscience, in order to discuss the challenges and opportunities for teaching sustainable development in geoscience for upper secondary school.

The teaching period was carried out by an experienced geoscience teacher and the class of grade 13 students aged 18. In this context, we collected data by interviewing the teacher before and after the teaching period, as well as videotaping the teaching practices, what learning activities that were provided to the students and how the students engaged in these learning activities.

The teaching was situated in the last part of a longer period in which the students had worked with natural and human-induced climate change. The teaching about sustainability consisted of the following: the teacher introduced sustainable development by referring to the UN's definition of sustainable development as three-dimensional – environment, social and economic, and then the UN's 17 sustainability goals. Then, the students were asked to discuss solutions to sustainability in all the three dimensions. Finally, the students were asked to prepare a role play regarding the different interest groups involved in mining. The role play itself involved roles as local politicians and representatives of the mining company, and representatives from nature conservation organizations.

Our analyses of the interview and video data focus on the possible tensions that occur during the teaching period, both tensions between the teaching and the learning, and tensions in sustainable development as a global, human idea. Preliminary findings indicate that the first tension come to the surface when students are introduced to sustainable development, as they are tired of learning about sustainable development in school. Then, during the learning activities, tensions arise between 'we' and 'them' who have different opportunities for contributing to a more sustainable development, between the anthropocentric and ecocentric perspectives, and between local initiatives and global responsibility. On the level of the individual student, there seems to be a tension between the feelings of hope and hopelessness as they engage in the various learning activities. Based on these preliminary findings, we suggest that the role of geoscience knowledge and skills appear to be a challenge in the teaching of sustainability in geoscience.

The main implication from this study is that teachers in geoscience for upper secondary school need to be aware that their students are not entering geoscience as empty boxes when it comes to sustainable development. In fact, they have learned sustainable development in many subjects during their previous 11-12 year education. Therefore, we argue that geoscience in schools may emphasize more the contribution of geoscience knowledge to sustainable development, rather than exploring the concept and dilemmas itself.

Directorate of Education, 2020: National curriculum for geoscience specialization. [Tverrfaglige temaer - Læreplan i geofag \(GFG01-02\) \(udir.no\)](#)