TEACHER DILEMMAS WHILE WORKING WITH CONTROVERSIAL SOCIOSCIENTIFIC ISSUES – COMPARING DIFFERENT CULTURAL CONTEXTS

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This study has followed groups of teachers within an Erasmus+ partnership, in which the teachers have conducted a reflexive and interdisciplinary teaching about complex and controversial issues, including socioscientific issues. Five schools, with students aged 12-16 years, in different countries with different cultural contexts were compared. The overall research design is inspired by models where researchers and practitioners cooperate and share responsibility and iterative systematic investigations have been done. With support of a didactic model the teachers created interdisciplinary arenas in their respective context. Through focus groups and participant observation, the study aims to describe the appearance of various didactic dilemmas that teachers encountered in the dilemmatic space this form of teaching is framed in. Preliminary results show didactic dilemmas anchored both at macro level, concerning different types of curriculum goals and related to politics and religion, as well as didactical dilemmas at micro level and at levels in between. For instance, dilemmas about student controlled activities versus teacher controlled and about the teacher’s level of objectivity and neutrality emerged. With an approach of comparative didactics, a special focus is put on exploring the essence of the Swedish teachers’ didactic dilemmas in their dilemmatic space, in order to highlight some aspects of the “taken for granted” in their teaching.

Keywords: socioscientific issues, society and environment education, teacher professional education

INTRODUCTION

In this study, we have followed groups of teachers who have conducted a reflexive and interdisciplinary teaching about complex and controversial issues in line with Sjöström and Eilks’ (2016) Vision III for an eco-reflexive science education (Sjöström, Eilks & Zuin, 2016) with the aim to explore challenges teachers may face. This teaching is Bildung-oriented and holistic, and ethical and political aspects of science are foregrounded. An important objective is to give all students the opportunity to develop as independent political subjects, by giving them chances to both challenge the existing views in society, examine their own stance on societal issues, as well as enable them to take their own position (Hasslöf & Malmberg, 2015).

In the process of testing this, the teachers needed to apply a new form of teaching, which meant that they faced various didactic dilemmas. These challenges were to some degree handled by conscious choices and actions, but teachers also acted without reflection and with routinized operations. The study aims to examine the didactic dilemmas that emerge and analyse their essence.

THEORETICAL FRAMEWORK

With a starting point to view the concept of didactics as the professional science of teaching (Seel, 1999), the overall research design was inspired by models where researchers and practitioners cooperate and jointly make iterative and systematic investigations. With the support of a common didactic model (Ingerman & Wickman, 2015) teams of teacher at each school (see further below) created interdisciplinary arenas for reflexive teaching about various complex and controversial issues.

This study aims to adopt an activity theory perspective on the collective and complex activity systems of the schools’ in order to examine how participants’ actions and operations are influenced and affected by both internal and external factors. Different didactic contradictions and dilemmas that occur in the complexity of everyday teaching may be viewed as obstacles for successful teaching and learning, but by identifying these dilemmas and then discuss them among the teachers, this may instead be a starting point for a permanent transformation and a spark for school development. This can be done by considering this form of teaching as a dilemmatic space (Fransson & Grannäs, 2013) in which the dilemmas are ever-present. The dilemmas are the result of social constructions but the dilemmatic space is constantly in a dynamic process, where everyday positions and negotiations both redefine the dilemmas and the actors.
RESEARCH METHODS

The study was done in the form of a didactic modelling project and five European lower secondary schools (in five different countries) were studied when they were working together within an EU-funded Erasmus+ partnership. The teams of teachers worked over a two-year period and with the help of a didactic model they designed their own teaching set up, based on their own school context. In order to support the teachers, the didactic model didn’t just include a common student task, it also included a theoretical framework on how the teachers could implement an inquiry-based approach of this reflexive and interdisciplinary teaching. This framework was based on methodological models from Bybee et al. (2006) and Presley et al. (2013). Inspiration and ideas concerning teaching about controversial and socioscientific issues were also provided from Ekborg, Ideland and Malmberg (2009) and from Zeidler and Kahn (2014).

Teachers and students worked on different controversial sustainability issues containing both scientific, technical and social science content, as well as socio-political and ethical aspects. The student task was inspired by the Storyline method (Bell, 2008) in which the students were placed in a scenario where they landed on an imaginary, and newly colonized, planet named PromethEUs (Rydberg, 2015). On this imaginary planet, students should together create a new society, which meant that the issues were mainly at structural level. A companion meaning (Roberts & Östman, 1998) of the teaching was that students would gain insight into the fact that political decisions on complex issues like these – with both scientific, social, economic, political and ethical aspects – is not about "right or wrong". Rather, it's about weighing the advantages against the disadvantages and in this process try to make reasonable and acceptable decisions.

The work at the schools was done in three cycles, where each of these ended with a transnational meeting with both teachers and students. In conjunction with these, data collection was done, primarily using focus group interviews. Furthermore, during a third cycle, when the schools were working on issues related to the use of robots and biotechnology in the future, participant observations were carried out. This collective and multiple case study (Goddard, 2009; Stake, 2013) applied a flexible research design and as a result of the research process, the research questions have emerged.

First, the didactic dilemmas which participants at the five schools experienced in the work with the reflexive teaching were studied. These descriptions created basis for a comparative analysis where “taken for granted” in the teaching was made visible when both researchers and teachers studied the similarities and differences of the teaching in the various cultural contexts. Comparative didactics like this can contribute to more accurate descriptions of the teaching and thereby new knowledge is generated (Almqvist, 2015). The focus in this part of the study is on how the Swedish participants’ didactic choices and actions could be mirrored against others. Based on variation of different positions on a selection of the didactic dilemmas, in-depth focus groups with the Swedish teachers was conducted.

PRELIMINARY RESULTS

The study is ongoing, but in the data from the international focus groups different didactic dilemmas have been identified, analysed and grouped. Some of the dilemmas identified had an emphasis on a macro level in terms of contradictions between primary working toward the educational goals in the curriculum, or putting more emphasis on the social and democratic goals. This is also linked to dilemmas concerning assessment, national tests and teacher autonomy. At the macro level some teachers also experienced didactic dilemmas that can be related to the prevailing political forces in the country or to religious values in society. Furthermore, the teachers described didactic dilemmas on intermediate levels, which among other things had to do with the teachers working interdisciplinary and how to organize this. Dilemmas also arose at the micro level, the classroom teaching. For example, whether the fact-finding primarily should be done by letting the students work individually using their computers, or if the teacher would present relevant facts and information about the issues through more traditional methods. Other didactic dilemmas concerned whether the teacher should choose a whole class approach versus group work when discussing the controversial issues, as well as about the teacher's objectivity and neutrality during these discussions.

This is followed up with a second stage of analysis, examining a selection of the didactic dilemmas from a Swedish point of view of. The focus of this analysis is primarily on the aforementioned didactic dilemmas at the micro level. This will be done using data from the in-depth focus group interview with the Swedish...
teachers, but also using empirical data from the Erasmus+ partnership. This aims to describe the essence of these didactic dilemmas, both in terms of underlying causes, as well as possible consequences, according to various positions in the dilemmatic space of this form of teaching.

PRELIMINARY DISCUSSION

When it comes to carrying out an interdisciplinary and reflexive teaching with discussions about complex and controversial issues the teacher needs to move beyond the traditional teacher role. In an altered form of teaching with a partly new motive, the teacher need to be aware that previously taken for granted and operationalized actions might not be valid anymore. The teachers have to renegotiate their positions in the various didactic dilemmas they constantly experience in their everyday teaching. This study aims to highlight the dilemmatic space of this form of teaching and deepen some key didactic dilemmas that arise.

The study may also provide a basis for a discussion tool with the aim to provide support for teachers in order to develop their shared procedural knowledge. This could contribute to developing the individual teacher action competence and expand the teacher's repertoire of strategies for dealing with the didactic dilemmas that this teaching holds.

REFERENCES


