

## **How primary school students in Sweden and England discuss global warming**

**Keywords: classroom discourse; socio-scientific issues; discursive repertoires**

### **Background, Framework, and Purpose**

Many researchers claim that school has failed to empower children as citizens of the future (e.g. Aikenhead, 2006), and reasons given include children's abilities to talk about controversial issues and teachers' lack of confidence in dealing with them. Our hypothesis is that when children engage in group discussions about future issues that are relevant to them it is possible to study how society outside school influences what is happening inside school, both when it comes to societal class structures and ongoing public debates. This paper aims to shed light on how 9-10 year old children use different resources in discussions about how to reduce carbon dioxide emissions through everyday actions and how these discussions reflect the students' identities and influences on their everyday lives. The study also aims to contribute to the knowledge about primary students' collaborative meaning-making. The students' discussions focused on global warming as an example of a socio-scientific issue that has potentially a large impact on society. Most existing research in education about socio-scientific issues has been conducted with secondary students, and there is a lack of research focusing on discussions in primary schools (Maloney and Simon, 2006). This paper aims to make a significant contribution to the existing small body of work on decision-making in SSIs because it:

- focuses on primary school children;
- explores how cultural backgrounds and different experiences are represented in how children talk about socio-scientific issues,
- examines the nature of children's discourse.

The project is a comparative study between 9-10 year old students in two cities: Malmö, Sweden and Southampton, UK. Whilst the cities themselves have been chosen for their parallels (similar size, traditionally working class, high ethnic diversity), the countries have some interesting differences – both when it comes to social classes, school systems and debates about socio-scientific issues. Sweden has far higher rates of cycling and recycling, and lower carbon emissions. In addition, the Swedish primary school system gives a much greater emphasis to cross-curricular teaching and, as SSIs are by their nature cross-curricular, this might influence children's discussions.

### **Rationale**

Sadler (2009) describes school science as a community of practice where identities and discourses are expressed and developed. If teaching is framed by issues important to the students themselves, they become central participants. Sadler promotes SSIs as a way to facilitate communities of practice where students' identities can be expressed and they can use already appropriated discourses. The current study analyzes how science is used within discursive repertoires in the handling of global warming as a SSI, and how these repertoires are used to legitimize opinions. To do this, we are using an analytical framework inspired from discourse psychology (Potter & Wetherell, 1987). We are also analysing how the use of repertoires are related to the identities the students express in their discussions. According to this theoretical framework, identity is a constantly ongoing process, which is shaped and

reshaped in relation to the context (Potter & Wetherell, 1987; Wenger, 2008). From this perspective, the research questions become:

- What repertoires become important in the discussions?
- Which identities do the students express in the discussions?
- What differences are there between children's discussions in the UK and Sweden?

### **Methodology**

The work was carried out with 9-10 year old children in their normal classrooms. A whole class introduction to global warming was given by the researchers, and four ideas were introduced as possible options that a government might consider to help reduce global warming. The options were deliberately chosen as ideas that children of this age could identify with, and that would have an impact upon their daily lives if put into operation. In small groups of 4-5, the children were asked to discuss the options and make decisions about which of the options they would prefer and why. In England, four classes of approximately 30 students were involved in the study, and in Sweden there were five classes of approximately 25 students. In total we have 25 transcripts of group discussions from Sweden and 15 from the UK. The empirical data has enabled us to categorize 'frequent' repertoires and compare how they are used in different school classes. Moreover we have begun analyzing how these repertoires are also used in the students' ongoing identity-construction.

### **Results**

Early findings shed light on how children handle everyday dilemmas with help from different discursive repertoires. In line with Sadler's (2009) notion about SSI as a community of practice, the students positioned themselves as legitimate participants in a societal discourse and included scientific ideas to help understand the problems that affected their lives. The findings indicate how they bring into the discussions aspects of family life (e.g. divorces), as well as habits connected to their identities and socio-economic status (e.g. expensive travelling, nice cars), values (e.g. fruit is healthy, cars are dangerous), and scientific knowledge (e.g. different energy sources). Different repertoires become available for the students when discussing the dilemmas. The most frequent repertoires identified are: everyday family life, environment, justice, self interest, compromise, justification, and science. At times conflicts occur between them. For example, everyday family life and environmental values can be in conflict when considering having a family vacation abroad, and the knowledge about huge carbon dioxide emissions from aircraft. The students also construct different identities through the repertoires. They use for instance everyday family life, self interest and compromise repertoires to construct the 'Normal Me', the environment and justice repertoires to construct the 'Responsible Me', and the science and justification repertoires for the 'Well-informed Me'.

The construction of identities mirror socio-cultural contexts. One example is how students from different areas handle the issue about going abroad. In the multicultural contexts 'home' is often abroad, and travelling to another country is seen as a necessity, whereas children in mono-cultural schools consider going abroad as a luxury because it is a vacation. Children seem to be quite aware of and able to express these differences. When such repertoires collide, students have to weigh up their own activities and values to handle the dilemma. In this example, students from multicultural backgrounds often use the justice repertoire as a strengthening argument for their travelling practices, ie they don't have to negotiate their lifestyles because the justice repertoire

strengthens their right to go abroad. But in monocultural contexts, the justice and environmental arguments weaken the right of the children to go abroad. Here the 'Normal Me' identity is colliding with the 'Responsible Me' and the 'Well Informed Me'.

Another preliminary result from this small-scale study is that the dialogic patterns in the classroom mirrored socio-cultural contexts in Sweden, whereas this was less obvious in the UK. In discussions among children from academic middle class areas in Malmö the argumentation is more intensive and elaborated, compared to discussions among children from multi-ethnic areas with lower socio-economic status. We tentatively interpret this as indicating that the middle class children are already 'involved in' climate change discourse, and are more used to discussions. In the UK these socio-economic differences do not appear to have such an impact, but children who had been taught to discuss issues as part of normal classroom practice were much more adept than their counterparts in other schools where this type of discursive lesson was new.

### **Conclusions and Implications**

Children in both Sweden and the UK use a range of similar repertoires when discussing global warming as a SSI. When these repertoires are in conflict with each other, students have to 'renegotiate' their own identities. Socio-economic status appears to have an effect on the intensity and depth of argument in Swedish schools, whereas in the UK the level and quality of argument seemed to be more closely connected to children's familiarity with a discursive classroom environment. It would appear that young children are quite capable of applying a variety of arguments that are logical to them according to the repertoire(s) they employ. If future generations are to take SSIs seriously then we must encourage changes to pedagogical practice that enables more opportunities for all children to engage in discussion and debate.

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