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Round table discussion: 'Science Activities at Home'

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Disposition:

- Theoretical framework
- Clarifications and limitations
- My research questions
- Possible procedures and methods
- Discussion issues
Theoretical framework 1(3)

- Many students fail in scientific subjects. Various studies show that students with low socioeconomic conditions and students with foreign background that arrive to Sweden after the school, tend to fail to in a higher extent. Language problem can create a barrier for these students (National Board of Education, 2005; Hyltenstam, 1996).

- Learning takes place in a sociocultural perspective where language is significant for learning (Dysthe, 2003; Lave & Wenger, 1998; Säljö, 2003; Säljö 2005, Vygotsky, 1978).
Theoretical framework 2(3)

- Laboratory work is common in science education and considered to be an important part in learning and development of scientific understanding. In order to be able to generalize and theorize observations and experiments, students' linguistically need revision. Otherwise, students often acquire a collection of isolated facts and empirical data without understanding and appropriation (Bergqvist & Säljö, 1994; Lemke, 1990; Sutton, 1992; Wickman, 2002; Wickman & Östman, 2002; Wickman, 2004).

- Learning in scientific subjects can be supported by simple experiments in a home environment following communicative situations in school. The laboratory work give students a scientific experience and something to communicate with peers and teachers (Cardoso & Solomon, 2002; Solomon, 2003; Watts, 2001).
Theoretical framework 3(3)

• Peers and teachers can function as supportive dialog partner to help students to abstract and generalize experiences and observations (Lemke, 1990, Wickman, 2004, Vygotsky, 1978).

• The western modern science can be seen as a culture with its own discourse (Fraser & Tobin, 1998; Jegede & Aikenhead, 1999; Lee 2003).

• Students from diverse background are kept out from the scientific subjects and understanding. Culture, language and lack of experiences creates barriers for understanding. In communicative situations you can investigate discourse transitions which can show how and what students learn. Skolverket, 2005 (=National board of Education); Lee, 2003; Wickman, 2002; Wickman & Östman, 2002; Wickman, 2004).
Questions

1. How do students perceive and manage the task to carry out simple home experiments?

2. How do students create meanings in the home experiments and in following communicative situations?

3. What meanings do the students create in the home experiments and in the following communicative situations?

4. How do the home experiments and following situations influence the transitions between discourses and cultures in relations to a scientific context?
Clarifications and limitations

Focus on the students. (Cardoso & Solomon, 2002; Solomon, 2003; Watts, 2001) have shown several of interesting discoveries about parents, teachers and home culture and my aim is therefore to investigate these aspects in a later study.)

Not a study to find the best teaching sequence

Not focus on gender or power issues

Why in a *home setting*?
- Gives students an experience in an everyday surrounding
- Gives the student possibility to talk and act in an everyday surrounding
- Earlier result have shown interesting results which need to be investigated further
- Home works are very commonly in a school setting but rarely home laboratory works
Possible procedures and methods

Earlier research (Cardoso & Solomon, 2002; Solomon, 2003; Watts, 2001): Data collection in the home with tape recordings and interviews, questionnaires with the parents, observations at school.

My data collection started v. 10, 2006 and in this first study I will use:
• questionnaires with students and parents
• observations at school
• interviews with students and teachers at school

The school has been chosen because it has students from diverse background and cultures and the students have diverse mother tongue.
Discussion issues

1. Opinions and questions?

2. How to deal with the notion diverse/foreign background. I have the possibility of scrutinize this further but I can also consider socioeconomic factors or focus on the relations between everyday discourse and scientific discourse. Is it important for me to focus on diverse background or should I focus on the language?

3. No observations at home, how to collect the conversations at home?

4. Analyzing the material? Bernstein, Bourdieu, discourse analyze? Some advice?

5. My aim is to say something about the society without generalising. How do I do that?

6. I have a sociocultural framework but I am interested in background and earlier experiences not only the situations and the present context. A contradiction?
Thanks for your attention!

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