

## Report on organizing the ROSE survey in Denmark

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Henrik Busch,  
Science Education Research Unit  
The Danish University of Education  
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### The Danish organization

The ROSE survey has been carried out by members of the Science Education Research Unit at The Danish University of Education<sup>1</sup>. The project leader during the design- and sampling phases has been Associate Professor Annemarie Møller Andersen. The Danish survey was supported financially by the Ministry of Education and The Danish University of Education, each contribution app. EURO 12.000. This funding has enabled the design process and sampling procedure to be carried out, but so far no funding has been obtained for carrying out the analysis of data. The analysis of data will be intensified from mid-April. A national report on the Danish ROSE survey will be published in the end of 2004.

### Translation

The Danish ROSE questionnaire is mainly based on a translation of the Norwegian questionnaire. Questions were translated from Norwegian to Danish and were subsequently crosschecked with the English version. In cases of discrepancy a Danish formulation was constructed based on the English version.

A pilot questionnaire was finished late January 2003 and was tested in 3 school classes. Research assistants from the Danish ROSE team instructed the pupils and observed their reactions and behavior while they were answering the questionnaire. Interviews were subsequently made with a few students. Formulations of a few questions were modified as a result of the pilot test.

### Danish questions

Like the Norwegian questionnaire the Danish version contains additional items with respect to the English versions. The two Norwegian items K og L were included:

**K.** What profession would you like to have when you are grown up? .....  
(open ended)

**L.** Below is a list of possible goals people may find important. In what degree do you find these goals important for our society?  
(response in a Likert scale with ten categories from "not important" to "very important")

1. Achieve high economic growth
2. Protect untouched Danish nature
3. More emphasis on medical research (e.g. on cancer and HIV/AIDS)
4. Protect the environment against pollution
5. Give the elderly safe and decent conditions
6. Preserve law and order
7. Enhanced emphasis on research on new technology
8. Bring in prohibition of smoking
9. Provide protection of our big predators
10. Prepare Denmark for welcoming more refugees and immigrants
11. Eradicate all forms of poverty and distress in Norway
12. Lower taxes and duties

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<sup>1</sup> A list of participants in the Danish ROSE-group is included in the end of this paper.

13. Use gender quotas to have more women in senior appointments
14. Enhanced emphasis on education and better schools
15. Give economic support to poor countries
16. Provide a society free from drugs

In addition five more groups of times were included:

**M. Some of my science interests outside school**

How often have you done the following outside school?  
(Four categories ranging from 'never' to 'often')

1. read science books out of curiosity
2. searched for information about science on the Internet
3. watched science programs in TV
4. read science magazines

**N. How I feel about science in school?**

To which extend do you agree with the following  
(Four categories ranging from 'disagree' to 'agree')

1. I like physics/chemistry
2. I liked biology
3. I liked geography
4. I liked nature, science & technology
5. I do well in physics/chemistry
6. I did well in biology
7. I did well in geography
8. I did well in nature, science & technology

**O. What was your last grade in physics/chemistry?**

**P. What is science? Write a few sentences (open ended)**

**Q. What would you prefer to learn about in science? Write a few sentences (open ended)**

## Sampling and participation

The target population is the cohort of 15-year-old pupils in Denmark. The Danish population is ethnically homogeneous compared to most other European countries.

The grade level in Danish compulsory lower secondary school where most 15-year old pupils are likely to go is called grade 9. As a consequence grade 9 classes were selected for participation in the survey.

*The Danish questionnaire was Internet based, i.e. students responded in front of a computer, using mouse and keyboard. Teachers in charge of a participating class were required to allocate one computer for one student for 60 minutes. The Danish ROSE team offered to be present in order to answer questions and help dealing with technical problems. Around 50 percent of the participating schools accepted this offer.*

There were several reasons for choosing to perform an Internet based survey. The main reason was that there is a significant "survey- and evaluation fatigue" in Danish primary schools these years – too many actors demand too much work from teachers and schools in the search for knowledge about what goes on in schools. Thus, we wanted to minimize the required work for the participating teachers and schools. Furthermore, our low budget for the ROSE survey forced us to develop a cheap and cheap easy solution and hence a HTML-based questionnaire was developed. The electronic questionnaire was designed to resemble the paper-version as much as possible though small differences remain.

The data sampling took place in the period from March 19<sup>th</sup> to June 16<sup>th</sup> 2003.

Originally 36 schools were selected for participation using a random procedure, which ensured a representative selection covering geographic and socio-economic variations. School directors were contacted by mail and subsequently by phone in order to establish contact to a teacher in charge of the selected class. The number of students per class and number of classes agreeing to participate were lower than expected. Therefore a range of 38 other schools was selected for participation.

537 pupils from 32 9-grade classes on 30 schools responded.

The age-distribution of the respondents is as follows:

Age	14	15	16	17	18	?
#	97	313	110	1	1	14

The gender-distribution of the respondents is as follows:

Gender	Female	Male	?
#	271	263	3

## Coding and analysis

The Danish ROSE responses were cleaned, coded and formatted according to the guidelines in the ROSE handbook and sent to the international ROSE project team before December 1<sup>st</sup> 2003.

Preliminary analysis of ACE-items, K- of B-items has been carried out. A more systematic and thorough analysis will take place from mid-April and will result in a national Danish ROSE-report to be published before the end of 2004.

## Further developments – STK-ROSE

A supplementary study (STK-ROSE) to the Danish ROSE-survey has been launched February 16<sup>th</sup> 2004. This study is part of a research project<sup>2</sup> focusing on the change of attitudes towards science and the change of local science education cultures in a local area as a result of an ambitious science education development project financed by a private foundation. The *Science Team K* ([www.scienceteam.dk](http://www.scienceteam.dk)) involves 17 (lower secondary) schools and one upper secondary school in the city of Kalundborg and in the surrounding rural area.

A slightly modified ROSE-questionnaire has been designed with the purpose of characterizing the attitudes towards science and school science in a local target group consisting of all pupils in grade 8-10. The target group is expected to contain around 1000 students and a very high response rate is expected. Eight days after launching the Internet-based STK-ROSE questionnaire, 322 students had responded. The data sampling will finish March 22<sup>nd</sup> 2004.

The difference between the ROSE and the STK-ROSE questionnaires is the fact that pupils are asked to write their names, their class identifier and the name of their schools. Furthermore two additional questions are added in the end of the questionnaire – concerning the personal relationship to people with a science background and concerning their wish to follow science courses in secondary school.

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<sup>2</sup> The research project is carried out by Henrik Busch (project leader), Jan Sølberg (Ph.d-student) and Hanne Lillemose Sørensen (student).

The STK-ROSE questionnaire is accompanied by another questionnaire (NaKu) aiming at characterizing the local science education cultures. The target group of this questionnaire is all lower and upper secondary school science teachers at the 17 participation schools; i.e. 150 potential respondents. Teachers are asked to provide background information about the classes they teach and about the school affiliations. We are thus able to correlate the pupil-responses to the STK-ROSE questionnaire with teacher responses to the NaKu questionnaire and to follow up with qualitative studies.

### **The Danish ROSE team**

The following people from The Science Education Research Unit at The Danish University of Education have been/are involved in the Danish ROSE project:

Annemarie Møller Andersen; Associate Professor, Project leader until April 1st 2004  
Henrik Busch, Associate Professor, Project leader after April 1st 2004  
Helene Sørensen, Associate Professor  
Peter Allerup, Professor  
Jan Sølberg, Research Assistant  
Finn Horn, Research Assistant  
André Torre, Research Assistant  
Birgitte Arnvig, student  
Hanne Lillemoose Sørensen, student

#### **Contact:**

Henrik Busch  
Email: [busch@dpu.dk](mailto:busch@dpu.dk)  
Phone: (+45) 88 88 96 36

### **References**

*ROSE questionnaire: ???*

*STK-ROSE questionnaire: <http://www.inquisiteasp.dk/surveys/CPJNVB> (Please to not click the "SEND"-button after viewing the questionnaire!)*