

GERMANY

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1. ROSE Team

The German ROSE survey was conducted by Dr. Doris Elster, University Kiel and Dr. Elisabeth Langer, teacher at the European High school in Vienna. In 2004 we both worked as in-service teacher trainers at the Pedagogical Institute of Vienna. Then I moved to the Leibniz Institute for Science Education at the University of Kiel from where I continued the Austrian ROSE survey and conducted the German survey.

2. School system and science teaching

The German education system has ten years of compulsory education and consists of three stages: first level or primary stage (“Grandchild”) for children aged between 6 and 10 years; second level or lower secondary level (“Mittelstufe”) for children aged between 10 and 16 years. Upper secondary school is for students aged from 16 to 19.

In the primary stage *class teachers* teach mostly subjects; in the lower and upper secondary school there are *subject teachers* in all school subjects.

All children who learn in grade 1-4 have nature lessons (“Sachunterricht”) one hour per week. In the “Gymnasium” the students learn science in different subjects: biology (beginning in grade 5), physics (beginning in grade 6) and chemistry (only in grade 9 and 10). In the 5th and 6th grade (“Orientierungsstufe”) and in the school-type “Integrierte Gesamtschule” there are subject- integrated science curricula. In the following grades and in the upper secondary level there is no subject integration.

Most of the children attend the state schools. About 5 percent of all children in German attend private schools basing their teaching on particular religions or alternative educational approach.

3. Translation

The English version of the ROSE questionnaire was translated into German by Elisabeth and by myself. Then we discussed our translations and developed a German version. This version we tested in two school classes in Vienna and then we made a revision. We used this German version for the survey in Austria and later on for the survey in Germany too.

4. National questions

We added three items for background variables:

- School-type (Gymnasium, Realschule, Gesamtschule, Hauptschule)
- Region (big town, small town, rural region)
- and co-operation in the European program EUDIST (European Development in Science Teaching).

5. Piloting

We made a pilot testing of the questionnaire in two classes (52 students) of a Viennese “Gymnasium”. There we could recognize some problems of the students when they filled in the questionnaire. Therefore we made again a revision of the questionnaire and then we brought the questionnaire development to a close.

6. Official permission

The German survey was conducted in two districts: in Rheinland-Pfalz and in Schleswig-Holstein. In September 2005 we informed the local Teacher Training Institute in Speyer/Rheinland Pfalz about the ROSE project and asked for permission and support. There was no official permission or registration required but we were asked to contact the principals of the schools to inform him or her about the survey. In each school a science teacher was contacted seeking her / his agreement to oversee the completion of the questionnaire in the school.

In Schleswig-Holstein principals and teachers who cooperated in the project "Biology in Context" were asked for cooperation. The local school authority supported the survey.

7. Population

The ROSE target population in German was a cohort of 15 years old German students living in the country in 2005. As ROSE samples school classes and not individual pupils, this corresponds to grade 9 that means the grade level with most pupils born in 1989.

8. Sample and participating

Twenty six (26) schools were randomly chosen from the database. Data collection was made in 19 schools of the type "Gymnasium" (446 students), 4 schools of the type "Realschule" (107 students) and 2 schools of the type "Integrierte Gesamtschule" (46 students) and 1 school of the type "Hauptschule" (27 students). The schools constitute a representative sample of all types of secondary schools. Only one class in each school was asked to participate. As an attempt to secure a national sample and taking into account the dispersion of the population in the country we asked students living in big cities (80 students), small towns (385 students) and rural regions (161 students). The participating schools were located in the districts Kiel, Dithmarschen, Rheinland-Pfalz, Speyer. We have some missing responses and out of about 675 students who participated in the research we finally had 626 students who have filled in completely the questionnaire. We believe that we can regard the sample being representative for the German target group.

9. Data Collection in schools

In each participating school a science teacher administrated the data collection. Thus the principal and/or the teacher at the school selected the class, he /she took part in the sampling process. A pre-paid and addressed envelope was used for returning the questionnaires. From October 2005 to May 2006 the schools conducted the survey and returned the filled-in questionnaire.

10. Feedback and experiences

There were only few responses of the teachers administering the survey in their schools. The survey was preferable be conducted before passover. 45 to 50 minutes (one lesson) have been sufficient for most of the students.

A complete description of fundamental data (in the form of frequency distribution) were sent to each school with a letter of gratitude.

11. Coding

The returned responses were coded in SPSS according the guidelines in the "Handbook" by research assistants of the University Kiel: Sabine Grosch, Julia Wegner and Eva Schubert. In the cases where the respondents had obviously not taken the task seriously, e.g. by making symmetric patterns in the response categories, the questionnaires were excluded. In the cases where minor parts of the questionnaire were not satisfactorily filled in, the variables were coded with missing ("9"). Otherwise the whole questionnaire was

excluded. The “open question” was categorized and coded according the guidelines of the ROSE website.

At the end of the school year the German SPSS file was finalized with 626 respondents.