

Report on organizing the ROSE survey in Poland

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Lublin, November 2004

1. ROSE team

The Polish ROSE team consists of Dr. Elwira Samonek-Miciuk, Dr Ryszard M. Janiuk (contact person) and Dr Jarosław Dymara. We are all employed at Maria Curie-Sklodowska University in Lublin, the first person is from the Department of Biological Education and the other two persons are from the Department of Chemical Education.

2. School system and science teaching

According to the current compulsory educational structure pupils start learning in the six-year Primary School at the age of 7. The subject "science" is taught 3 hours a week in the grades from 4 to 6.

The next stage of compulsory education (for the children 13 to 16 years old) is the three-year Junior Secondary School. The science subjects (biology, chemistry, physics with astronomy as well as geography) are taught on the average 4 hours of each subject distributed in the period of three years - for example 1 hour of biology weekly in the first form, 2 hours in the second form and 1 hour in the third form. It is possible to increase a number of hours for science subjects by 1 or 2 from those which are at the headmaster's disposal. Junior Secondary School final exam is of external character including: part I – humanistic subjects; part II – math and science subjects. The score of this exam is decisive for further education.

Then learning can be continued in the not compulsory three-year Senior Secondary School ending with the school final exam. In the Senior Secondary School on the average 3 hours of each subject during the first two years are taught, obligatory for all pupils. During the third year maximum 8 hours are optional for one or two of these subjects in the classes of suitable range of interests.

Information about the Polish school system is available from:

<http://www.eurydice.org/Eurybase/Application/frameset.asp?country=PL&language=EN>

About a half number of Junior Secondary Schools is situated in urban areas. Mostly they are large schools with about 280 pupils on the average and 25 pupils in one class. The rest of schools are situated in rural areas. They are smaller with about 135 pupils on the average and 23 pupils in one class. As a result, 1155 647 pupils attend schools in towns and 547 699 in villages. Thus the ratio of both groups is about 2:1.

Junior Secondary Schools can be classified also according to the average scores obtained by pupils in the external examination including science subjects. As shown they are not uniformly distributed in Poland. There are two groups of voivodships where pupils obtained higher or lower scores than the average for Poland.

Most Junior Secondary Schools are opened and maintained by state (public state schools). However, there is a number of schools open by social as well as religious organizations and associations. Their number does not exceed 5%. Also the schools of national and ethnic minorities constitute not more than 2%.

Deaf children and those with very poor abilities study in integrational, therapeutic, compensating or main stream classes as well as individually.

3. Translation

Translation was made based on the English version ROSE instrument in October-December 2002. Both Elwira and Maciek were involved in the translation into Polish. The draft version was checked by Jarek in respect of correctness and clarity of expressions, wording and concepts in reference to the knowledge of pupils who were subjects of studies.

4. National questions

We did not add any items for background variables, but in the end of the questionnaire, we added one national question:

K. What caused the greatest difficulty for you in learning:

- ◆ biology
- ◆ chemistry
- ◆ physics
- ◆ geography

Also the information card about the school and science subject teachers in the schools under investigations was prepared. The questions included in it were about: conditions of science subjects teaching (laboratory equipment), after school activities, handbooks used by pupils as well as education (subject of university studies) and job experience of teachers.

5. Piloting

The questionnaire translated into Polish was read by a few pupils whose job was to pick out confusing or ambiguous fragments of the text. As a result some corrections were made. The final version prepared in March 2003 was used in piloting studies including 63 pupils (10% of the total number of pupils being subjects of investigations) of one of schools in Lublin. That allowed for testing some organizational elements of studies like: time needed for filling in the answer card and determining problems and doubts of pupils in the process of studies on questionnaire application. The information obtained in this way was made use of in elaboration of research organization instructions meant for the people responsible for carrying out research in different regions of Poland. The computer system for answer card information reading was also tested.

6. Official permission

According to the Polish legal regulations, the permission for research with pupils as subject must be obtained from school authorities. Therefore letters including the information about ROSE studies were sent to the headmasters of chosen schools. Permission for research was obtained in all cases.

7. Population

The research included the pupils of third i.e. last grades of Junior Secondary Schools At the time they started education in this class they were largely 15 years old. As the investigations were made at the end of school year, then most of them were already 16 years old.

8. Sample and participation

At the time of research the total number of Junior Secondary Schools in Poland was 5668 with 1703 346 pupils. To choose the sample schools there were taken into consideration: area (urban/rural) and region to which the school belongs based on pupils' achievements during external examinations (higher or lower scores compared with the average). Assuming that 25 schools take part in research, a suitable number of schools in voivodships in both regions belonging to urban or rural area was determined. This procedure assured that the number of pupils from urban and rural schools as well as from the regions differing in the pupils' achievements in external examinations was proportional to the whole population.

One class in each school was chosen for studies. Except one case, the number of pupils in the class was larger than 25. Only in one school two classes were combined so that the number of pupils from this school being subjects of studies was larger than 25.

9. Data collection in schools

To improve the data registration procedure requiring making the choice (A, B, C, D, E, F, G, H in the questionnaire), the reading device coupled with the computer was applied. The suitable answer sheets had to be prepared. Each answer sheet was marked with a four – figure number in which the first two were the code of the school and the next two were codes of the pupils in a given school.

Each pupil received the questionnaire and the answer sheet. Thus the questionnaires could be used several times. The pupils marked their choice only on the sheets.

The cooperating persons employed at universities in different regions of Poland helped with the research. They were instructed about the aim and organization of research. Each of them received a set of materials necessary to carry out the investigations by post. These were: a suitable number of questionnaires and answer sheets, information cards about school and teachers as well as the information about research aim and how to fill in the answer sheets to be read to pupils. Their job was to contact with the schools previously selected for studies, to fix the date of investigations, to carry out or supervise the investigations and send back all materials obtained from the investigations to the organizers.

The investigations were made in May – June 2003.

Due to a random error, one of the scheduled schools did not participate in the investigations. However, the number of participants exceeded the required number 625.

10. Feedback and experiences

No important remarks about difficulties in carrying out the investigations were received from the cooperating persons.

To each participating school we sent a written acknowledgement for recognition of their work and help.

From the viewpoint of the team preparing and supervising the investigations, the acquired experience will be very helpful in organization of similar investigations in future.

11. Coding (also of the open-ended I question)

For coding the answers requiring marking the choice (A, B, C, D, E, F, G, H in the questionnaire) a reading device coupled with the computer was used. Thus coding time was shortened and possibility of random errors was eliminated.

As in the case of investigations made in Norway a few respondents had obviously not taken the task seriously, e.g. by making symmetric patterns in the response categories. Such cards were excluded.

In the end of October 2003 the Polish excell file was finalized - with 654 respondents evenly distributed on:

- 368 girls
286 boys
- 104 15-year olds (15.90 %)
509 16-year-olds (77.82 %)
34 17-year olds (5.20 %)
5 18-year olds (0.77 %)
2 respondents with missing response for age

The completed Polish excel file was sent to the organizers of investigations in the end of 2003 by Jarek.

Open-ended question I has not been coded yet as during preparation for XI IOSTE Symposium organization it escaped our attention that the coding instruction appeared on the ROSE home page. We will do it soon and transfer the missing data.

Lublin, November 2004

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