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## **Report on organizing the ROSE survey in [South Africa: Western Cape]**

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### **1. ROSE team**

The South African ROSE data was collected in two provinces, namely Western Cape by Ph.D student Keith Roy Langenhoven located at the University Of The Western Cape, School Of Science and Mathematics Education and in Kwa-Zulu Natal by another researcher. I will be reporting on the ROSE survey as conducted in the Western Cape, South Africa.

### **2. School system and science teaching**

The South African school system follows the outcomes based approach which is in line with Curriculum 2005 system. There are two phases, namely General Education and Training or GET covering 10 years of compulsory schooling, from Grades R to Grade 9 and Further Education and Training or FET covering Grades 10-12. School fees are payable and costs are determined by the Governing Bodies of schools and is dependent on the economic status of the area supporting these schools. Natural Science is a common subject to the GET phase and consists of four knowledge themes: Earth and Beyond, Energy and Change, Life and Living and Matter and Material. There are THREE LEARNING OUTCOMES or LO's that are common to these themes, namely:

**LO 1** SCIENTIFIC INVESTIGATION PROCESSES,  
**LO 2** CONSTRUCTING SCIENTIFIC KNOWLEDGE and  
**LO 3** SCIENCE IN SOCIETY.

Information about the South African school system is available from <http://education.pwv.gov.za/>

The school population is large and class numbers are set at 35 pupils per class but due to teacher retrenchments, severance packages and merging of teacher training institutions, these numbers may soar to 60 pupils per class especially in the disadvantaged areas. Schools who can afford appointments made by School Governing Bodies are situated in the more affluent areas.

The Bill of Rights allows for freedom of association, religion, schooling, gender equity, special needs education, human values and rights and recognition of minority groups amongst others, is a democratic yardstick for schools. Integration of special needs children into the normal school system is promoted.

Although English and Afrikaans is upheld as the lingua franca, multi-linguism is encouraged with special emphasis on "mother-tongue" instruction. There are 10 other indigenous languages in South Africa, placed on equal footing with English and Afrikaans, and enshrined in the constitution.

### **3. Translation**

In the Western Cape, South Africa, three languages are spoken, English, Afrikaans and Xhosa. Translations were made from English to Afrikaans and Xhosa. The Afrikaans translation presented no problem but the Xhosa translation became problematic because of science related terminology that had no Xhosa interpretation. In addition Xhosa spoken at home had different connotations to that spoken in an academic (school) context. Sometimes a Xhosa phrase of 5 words was needed to explain the meaning of one English word. The problem was eventually resolved through much consultation by the Xhosa translator. Dominant languages in Kwa-Zulu Natal were English and Zulu and all schools communicated in English.

### **4. National questions**

I did not add any items for background variables, but recorded a stratification based on the segregated education divisions that existed prior to 1994. These divisions were racially motivated and designated schools along White, Indian, Coloured and black lines, the order thus recorded is based on skin colour. These racial divisions provided a funding formula used by the then government to subsidise schools. Schools therefore still have hangovers in terms of assets, economic strength and demographic sites that are either regarded as affluent or disadvantaged. This data was recorded purely for statistical purposes and to assess any differences if it existed. Categories recorded per school was:

House of Assembly (White Schools) HOA  
House of Representatives (Coloured Schools) HOR  
House of Delegates (Indian Schools) HOD  
Department of Black Affairs

Furthermore a distinction was also made between urban school, township/squatter schools and rural schools. Private schools were excluded from the survey.

### **5. Piloting**

A pilot run was made in 2003 with 5 schools and the ROSE data used in November 2003 at Oslo University under workshop conditions to explore the use of SPSS. This was useful for the masters and Ph. D students who attended and generated debate about the ROSE project

## **6. Official permission**

Permission was obtained from the Western Cape Education Department and the school principals to run this pilot study. The authorities were amenable to surveys and all that is required is to keep them informed via reports on the progress and results of such surveys. The survey could then be completed at the end of April 2004.

## **7. Population**

The ROSE target population in South Africa was the cohort of 15 year old Western Cape, South African pupils and Kwa-Zulu Natal pupils living in our country in 2003/4. As ROSE samples school classes and not individual pupils, the target population was more precisely defined as the pupils at the grade level where most 15-year old pupils were likely to go. This means the grade level, which corresponds to grade 10 in lower secondary school (FET phase). These pupils, regarded as teenagers needed to choose an educational pathway that would lead to a career.

## **8. Sample and participation**

The South African Ministry of Education and Research has the register of all the schools and school statistics in our country. This database of schools was provided of which there were 310 Secondary Public schools. These schools were further divided into the four previously racially demarcated groups. Seven to Eight schools were randomly drawn from each group to make up a total of 30 schools. These schools generated a total of 800 if not more Grade 10 pupils. The final population figures will only be obtained after all the data has been captured.

A telephonic call preceded the letter sent to each of the 30 schools, who responded positively to the invitation to participate in the ROSE survey.

I believe that the sample is representative of the Western Cape population of schools and takes into account language diversification, all ethnic groups and school demographics such as urban, rural, affluent and poor areas. This population should produce a valid distribution of responses to the survey.

## **9. Data collection in schools**

At each school, the head teacher appointed one science person who could organize the project locally. Through these coordinators we could distribute one class set of printed questionnaires to each class. Successively as we received affirmative answers to our invitation, the class sets of questionnaires were sent to the coordinators at the schools or delivered personally with the letter of permission, letter of request and brief of the ROSE project. Completed questionnaires were collected for data capturing.

## **10. Feedback and experiences**

Comments from the participants and co-ordinators were mixed. Here are some responses.

"the questions are varied and simple"

"most of these things are interesting but not all"

"gives some kind of focus and makes one realize the vastness of science"

"are all these things to do with science?"

"the categories were well structured and did not lead to boredom-many pupils wanted to pick up a discussion of some of the topics"

"the topics provided interesting hooks for lesson ideas and exposed the relevant stuff that children would be more interested in"

"I would like to use some of this data to assess my own teaching practice in the science class"

The survey was conducted in 30 schools in the Western Cape, South Africa. After scrutinizing the questionnaire, decisions on the validity of the questionnaire needed to be taken. The criteria I used was to discard those with too many gaps, those where patterns were formed, either zig-zag patterns or ticks running down the left or right side only. In one school an entire batch had to be discarded since it was apparent that the teacher and the class had run out of time. Generally the survey flowed fluidly.

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

All the Western Cape, South African responses were coded by myself and my son Lyle (18). Coding was done directly into the SPSS empty data files that were distributed to all participants and according to the guidelines in the "ROSE Handbook". In general the job was uncomplicated and straightforward, though time-consuming.

The data was cleaned up by myself and recoded as per the workshop in Oslo (Nov 2003). Coding is almost complete with a deadline set for end April 2004.

In the latter part of the survey better results and quality were obtained when the survey was preceded by a short motivational speech on the nature of the research and how it would benefit better science classes.

A final gender and age distribution of respondents will only become available at the end of April.

The coding of the open-ended questions will be done later, and in a separate file, based on the file provided by ROSE on the home page. The emerging problems and uncertainties would be handled in a similar way as for the main file.

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