

---

## **Report on organizing the ROSE survey in Ghana**

Ishmael Kwesi Anderson, [ishkandy@yahoo.com](mailto:ishkandy@yahoo.com), University of Education, Winneba,  
May 2004

### **1. ROSE team**

The Ghana Rose team consists of Ishmael Kwesi Anderson (contact person, lecturer and Ph. D. student based on Rose project survey) and Professor Jophus Anamuah-Mensah (coworker and Vice chancellor of University of Education of Winneba). We are all at University of Education, Winneba. Ishmael Kwesi Anderson is located at the Department of Science Education, while Professor Jophus Anamuah-Mensah is the Head of the University.

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

The country's education system at the beginning of the 1993-1994 academic year comprised Basic Education, Senior Secondary Schools, Polytechnic (technical and vocation) Institutions, Teacher Training Colleges and University-level Institutions. In addition, there are special international schools, which follow the curricula of some foreign examination syllabuses. The Basic Education now consists of six years Primary Education followed by three years Junior Secondary. The Education Reform Programme introduced in 1987-1988 and the Free Compulsory Universal Basic Education (FCUBE) 1996 program have made Basic Education level to be free and compulsory, although students/pupils have recently began to pay textbook fees.

At the moment, in the public sector there are 12,225 Primary Schools and 6,418 Junior Secondary Schools with total enrollment figures of 2,216,792 and 767,303 respectively. In the private education sector, the number of pupils in private basic schools is 550,423.

Ghanaian children enter class one (first grade) during the calendar year in which they reach the sixth birthdays. For the first three years, teaching may be entirely in English or may integrate English and local languages. The majority of teachers are trained, having graduated from three-year Teacher Training Colleges. Children are taught to read in English, and all textbooks are in English.

Junior Secondary (JSS), comprises Forms I through III (grades seven through nine). Admission is open to any pupil who has completed primary six; there are no entrance exams. Junior Secondary Schools are usually sited on the same compounds as primary schools, and the school year for both systems run for forty weeks, from October to August. A normal school day lasts from 8:00am to 2:00pm (six hours per day). The majority of JSS teachers are trained.

At the end of JSS form III (ninth grade, most of them fifteen years of age); about two hundred thousand students take the Basic Education Certificate Examination (BECE). A curriculum material, including syllabuses, schedules, exams, marking systems, and to some extent textbooks, is determined by the Ministry of Education and is identical in all Basic Education level schools. Pupils are not repeated in any class except on request by a parent or guardian. However there are also specialized schools responsible for children with disabilities. There are plans ahead to integrate pupils with special learning needs in

ordinary public schools. Integrated science is taught in the Primary School, which is more of Biology, Agriculture, and Health Science, than the other science subjects. Junior Secondary Schools learn General Science comprising Physics, Chemistry Biology and Agriculture, which are taught separately.

### **3. Translation**

ROSE instrument developed in and sent from Norway was in English. English is Ghana's official language. It is used for all government affairs, educational instruction, and in national radio and television broadcast. The ROSE instrument was not therefore translated.

### **4. National questions**

We included in the questionnaire a set of national items as a request for demographic information. They were placed between the end of "start here" and before "A items". The National (local) items were:

- Name of school
- Location of school (town/village)
- District
- Place of birth (mother tongue area)
- Father's occupation
- Father's education
- Mother's occupation
- Mother's education

### **5. Piloting**

In January 2003, we pre-tested the questionnaire with some respondents from the groups of interest. We did that to understand the meaning of a question to respondents, how they arrive at their response and know the length of questionnaire. We recognized that:

- Some of the words/statements/items were not familiar due to different cultures and traditions.
- Some of the pupils had difficulty with reading and took longer time to complete the questionnaire.
- Explaining some of the items in local language was helpful, though the explanations could carry different connotations.

### **6. Official permission**

In January 2003, the Head of Department of Science Education of University of Education, Winneba wrote letters on our behalf to Directors of Education in each of the districts of interest. These letters, which contained information on the ROSE project, were meant to seek for permission to use their schools. Headmasters of selected schools were informed through the Directors. The Directors scrutinized the items in the questionnaire and after they were satisfied with the demands of the questionnaire, permission was granted.

### **7. Population**

The target population comprised all the pupils at the last year of the compulsory schooling in Ghana in 2003. It is the third year in Junior Secondary School (JSS3 or ninth

grade). The pupils' age is mostly between 14-16 years, but the most popular age is 15 years. Most of these schools have mixed population (male and female pupils). We balanced 'ideal' requirements against practical and economical constraints and therefore confined the study to the whole twelve (12) districts in Central Region in Ghana.

## **8. Sample and participation**

The Central Region in Ghana has twelve (12) districts. In each district, the District Education Office provided us with the list of all the schools and we clustered them into Urban and Rural schools. We regarded all schools in the district capitals as Urban. Localities of 5,000 persons and above have been classified as urban since 1960. Secondly, Urban areas in Ghana have customarily been supplied with more amenities than rural locations. We were therefore very certain that the district capitals could merit these conditions.

A total of 1200 pupils from the terminal classes (JSS 3) of 24 Junior Secondary Schools with an average class enrolment of about 50 each were targeted to take part in the survey. The 24 JSS were randomly selected from the twelve (12) districts in the Central Region of Ghana. The schools were representative with respect to geographic distribution (urban and rural). Two schools each (one each from both urban and rural areas) were randomly selected from each district. Simple random sampling was used to choose the schools. A Table of random numbers was used to ensure that each school in each locality (urban/rural) has the same probability of being selected. The whole terminal classes of each of the 24 schools were used in the study. Once the schools were selected, letters of notification of and participation in the survey were given to us by various District Directors of Education to be sent to those schools personally. We did that in order to introduce ourselves to the heads of school and to brief them on the nature of the survey. We did not send the letters by mail because some of the selected rural schools are in very remote areas with unreliable postal services. Since we conveyed to the heads of school the aim of the survey and its importance and assured them of confidentiality, all the selected schools were encouraged to participate in the study.

Out of 1,200 pupils targeted, a total of 1027 responded to the questionnaire representing 85.6% response rate. Though we balanced 'ideal' requirements against practical and financial constraints and confined the study to 12 districts in Central Region in Ghana, we however believe that these districts are representative of the rest in Ghana and findings could thus be generalized to reflect the entire country. Our reasons are that the Junior Secondary School science curriculum, including syllabi, schedules, exams, marking systems, and to some extent textbooks, is determined by the Ministry of Education and is identical in all 6,418 Ghanaian Junior Secondary Schools with the total enrollment figure of 767,303 in the public sector. Therefore, all pupils potentially have the same opportunity to learn the same concepts. All of them take one national examination conducted by the West African Examination Council at the end of the compulsory schooling.

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

We went to the two schools selected from each district for the survey personally with letters from the Directors of Education in the districts to notify the heads of school. We took along a set of 50 printed questionnaires to each school at the time we presented the letters of notification. We did that to reduce the cost of traveling.

A copy of the ROSE questionnaire was sent to us by e-mail from Svein Sjoberg, (ROSE project leader) in Oslo, Norway. The questionnaire was down loaded, national items added and a copy was printed for duplication. We duplicated about 1,300 copies, which was partly borne by the ROSE project. At each school, the terminal class was briefed

about the exercise by the head of the school and we went in to administer the questionnaires ourselves. One teacher or two in some cases assisted in administering the questionnaire either by reading through the items or explaining some of the unfamiliar words to the respondents. We did that in order to keep the answering of the questionnaire within a reasonable length of time and to overcome the possibility of lack of comprehension and reading ability. We rewarded the assistants with token fees, which was provided partly by ROSE project. We started data collection in the first week of February 2003 and lasted for one and half months. We collected the answered questionnaires the same day that questionnaires were administered.

## **10. Feedback and experiences**

Some of the pupils complained that the questionnaire was lengthy. Thus items were considered numerous, some alien and difficult to understand their meanings. We also agreed with some of the sentiments expressed by the pupils about some of the items. Some of the pupils felt very proud and important to join in such an international survey. They also felt the survey could help to improve their school system.

## **11. Coding**

We did data entry directly into the coded SPSS empty data files that was sent to us by e-mail from Svein Sjoberg. We entered the data according to the guidelines in the 'ROSE Handbook', which was also provided. The original ROSE questionnaire had two categories in the scale middle untitled; we inserted titles to avoid confusion. The entry was therefore not complicated because the data entry was done on a scale from 1 to 4, according to the place of the tick. This made it straightforward. We had our own coding format for the national items and fitted it into the original coded SPSS empty data file in a coordinated fashion. In all the questionnaires, any respondent who did not satisfactorily fill the categories including symmetric patterns, empty space and page, and choice of two or more categories for an item, those variables were coded with 9 (missing). We used this coding for our national items, except items like "rural/urban" and "district" which is a general characteristic of each respondent in a particular school. We did not therefore code '9' for missing these variables.

We did data cleaning of the file by looking for empty cells, cells coded with two digits, and cells coded with letters different from the allowed letters for the question. Since we provided each questionnaire respondent with an identification number, it was easy identifying any questionnaire with coding error for a question. We believe therefore that Ghana ROSE data file is of good quality and reliable.

## **SUMMARY STATISTICS**

Of the 1027 respondents, 551 representing 53.7% were boys.  
The age range of the respondents is found in the table 1 below

Table 1: Age range of respondents

Age (in years)	Frequency	Percent	Valid Percent	Cumulative Percent
10	2	.2	.2	.2
11	2	.2	.2	.4
12	13	1.3	1.3	1.7
13	73	7.1	7.1	8.8
14	225	21.9	21.9	30.7
15	334	32.5	32.5	63.2
16	223	21.7	21.7	84.9
17	86	8.4	8.4	93.3
18	50	4.9	4.9	98.1
19	16	1.6	1.6	99.7
20	1	.1	.1	99.8
22	1	.1	.1	99.9
23	1	.1	.1	100.0
Total	1027	100.0	100.0	

From the table, the age ranges from 10 years to 23 years.

The overall mean age is 15.2 years with a standard deviation of 1.43  
The mean ages for boys and girls are shown in the table 2 below

Table 2: Mean age of boys and girls who participated in the study

SEX	Mean	Frequency	Std. Deviation
girl	15.17	476	1.33
boy	15.22	551	1.51
Total	15.20	1027	1.43

The urban-rural distribution is as below

Table 3: Urban-Rural distribution of respondents

	Frequency	Percent	Valid percent	Cumulative Percent
Urban	613	59.7	59.7	59.7
Rural	414	40.3	40.3	100.0
Total	1027	100.0	100.0	

We finalized Ghana ROSE data file at the end of July 2004.

Winneba, Ghana May 2004

Ishmael Kwesi Anderson