

COUNTRY REPORT - CHILDREN

- Ernest Kofi DAVIS
Institute of Education,
University of Cape Coast, Ghana
- Hisashi KUWAYAMA
Graduate School of Education,
Hiroshima University, Japan

Acknowledgement

- This project was enabled by the following fund:
“Empirical Study on the Evaluation method for International Cooperation in Mathematics Education in Developing Countries”
Hideki IWASAKI, International Research funds No. 16402046

1. Educational Context in Ghana

- Ghana presently practices 6:3:3 system of pre-University education(1987 educational reforms)
- Pupils are supposed to start school at age six
- The school year begins in September and ends in June/July, it is separated into three terms namely first, second and third terms.
- First term begins in September and ends in December, second term from January to March and third term from April to June/July

Educational Context in Ghana Cont'd

- School mathematics curriculum (syllabus) is centralized
- There are however, different kinds of mathematics textbooks by different publishers for use in Basic Schools
- Mathematics textbooks at all levels are written in English
- Schools have the autonomy to choose from any of the textbooks which they think will lead to the attainment of the objective of teaching mathematics.

Educational Context in Ghana Cont'd

- Medium of instruction at the lower primary level (grade 1-3) is usually Ghanaian language but from upper primary through to the University is in English (language policy 1973)
- Assessment: both continuous and summative assessment exist, continuous constitute 30% of students overall scores and end of term examinations constitute 70% of students scores.
- It must be noted that the influence on examinations is very great, teachers prefer to cover examination syllabus than the school syllabus.
- Promotion is usually on wholesale basis

2. Field research and Findings 2-1 First-year Survey

- Sample: Consisted of two average schools, one each from urban and rural areas in Cape Coast municipal area in the Central Region of Ghana.
- Sample Procedure: Schools in Ghana are classified into three categories namely schools A, B and C. These categorizations were done based on schools performance in the Performance Monitoring Test (PMT) and Basic Education Certificate Examination (BECE) results
- Since this study focused on an “average school” two B basic schools, one each from urban and rural areas were selected from a list of B schools from GES district office for the purpose of the study

First-year Survey cont'd Sample size

- In each of the two school types, both grade 4 and 5 pupils were selected for the study. This was because the grade 4 pupils had just spent just one month in primary 4.

Sample Size of Pupils

	Number in the Class		Number in Analysis	
	P4	P5	P4	P5
Rural Primary School	28(9)	31(10)	24(8)	26(10)
Urban Primary School	49(24)	47(27)	38(21)	28(15)
	Total		62(29)	54(25)

(The numbers of female are in brackets)

First-year Survey cont'd

Background of Schools

- The rural school was located about 25km north of Cape Coast
- Had staff strength of 15 teachers consisting of two KG teachers, six primary school teachers, six JSS teachers and a head teachers who was detached
- The students population was 180
- The urban school was located in Cape Coast town
- Had staff strength of 18 teachers consisting of five KG teachers, six primary school teachers, six JSS teachers and two head teachers one each for KG and Primary/JSS who were detached
- The students population was 300 pupils
- Fulfillment of equipment was average in both school types

First-year Survey cont'd Major Findings

From Students Questionnaire:

- Less than half (44.8%) of pupils indicated that they always or almost always use English at home. It is however not clear whether pupils understood the item since 79.1% P 4 pupils in rural areas indicated that they used English always or almost always as compared to 38.5% P5 pupils. This finding is very difficult to interpret.
- Oral translation of the items and unfamiliarity to the questionnaire might have affected pupils' responses to some of the items.

First-year Survey cont'd Major Findings

- Pupils in the urban school possess more books at home than those in the rural school. Majority (60%) of rural school children had between 0-10 books with only a few (6%) having between 26-100 books whereas only 18% of the urban school children had between 0-10 books with the bulk (43.9%) of them having between 11-25 books and about a quarter of them having 26-100 books.
- Pupils in the urban school live in a better material conditions at home as compared those in the rural school except for desk and chair (rural 84% and urban 59.1%). This may reflect on their learning environment at home

First-year Survey cont'd Major Findings

- It is difficult to tell the views of pupils about mathematics since pupils agreed or strongly agreed to all eight positive attitudinal items eg "I usually do well in mathematics (1.7)", "I would like to do more mathematics in school (1.2)", "I enjoy mathematics (1.3)" etc. and also almost agreed to all the two negative attitudinal items that is "Mathematics harder for me than for my classmates (2.2)" and "I am just not good at mathematics (2.2)"
- Here also one is not sure whether they really understood the questions. Further studies on attitudes may be required

First-year Survey cont'd Major Findings

- Pupils had positive impression about the school. They believed their teachers cared for them (1.1) and liked being in school(1) among others.
- All may not be well with the teaching and learning of mathematics. Children indicated that they are able to explain their answers in about half of the lessons (1.7) and listen to teacher talk in some lessons (2.6). This is an indication that children are usually not the center in some lessons but the teacher.

First-year Survey Cont'd Major Findings

Achievement Test

Distribution of students' score by their grade and school location (%)

		Average	SD	Highest	Lowest
P4	Combined	43.6	9.10	65.8	21.9
	Rural	42.5	10.04	63.0	21.9
	Urban	44.3	8.51	65.8	31.5
P5	Combined	51.4	10.38	69.9	15.1
	Rural	53.7	8.49	69.9	35.6
	Urban	49.2	11.60	65.8	15.1

First-year Survey Cont'd Major Findings

Distribution of students' score by their grade and gender (%)

		Average	SD	Highest	Lowest
P4	Combined	43.6	9.10	65.8	21.9
	Male	43.1	8.33	64.4	26.0
	Female	44.3	10.17	65.8	21.9
P5	Combined	51.4	10.38	69.9	15.1
	Male	54.0	8.27	69.9	31.5
	Female	48.3	11.82	67.1	15.1

First-year Survey Cont'd Major Findings

Average correct answer of content domain (%)

Content Domain	P4		P5	
	Multiple Choice	Short Answer	Multiple Choice	Short Answer
Number	42.1	37.9	58.8	59.3
Number (Fraction)	50.2	24.2	60.8	40.7
Measurement	51.9	14.5	45.2	31.5
Geometry	52.0	40.9	51.4	46.3
Data	63.7	14.1	48.1	35.2
Patterns	54.8	67.7	70.7	53.7
Algebra	43.1	54.8	49.5	40.7

2-2 Second-year Survey Sample size

- In each of the two school types, grade 5 pupils were selected for the study. This was because the grade 5 pupils had just completed the syllabus for primary 4.

Sample Size of Pupils

	No. of Pupils	Male	Female	Age
Urban School	35	11	24	11.74
Rural School	27	19	8	11.67
Total	62	30	42	11.71

Second-year Survey Cont'd Major Findings

Overview of the Result in the Achievement Test

	Average	Male	Female	Highest	Lowest
Urban School	45.37	52.82	41.96	73	15
Rural School	42.96	46.42	34.75	66	18
All	44.32	48.77	40.16	73	15

(%)

Second-year Survey Cont'd Major Findings

Difficult Items (%)

	Overall Total	Urban School	Rural School
Q2	9.7	17	0
Q4 (2)	0.8	1.4	0
Q4 (3)	21.0	27.9	12
Q5 (1)	50	40	63
Q5 (2)	3.2	5.5	0
Q5 (3)	24.2	28.5	18.5
Q6 (3)	20.0	26.8	11.1
Q7	12.9	14.3	11
Q8	14.5	11.4	18.5
Q10	26.6	27.2	26

Second-year Survey Cont'd Major Findings

Students' Error in Problem Solving Level by their performance

Q. No.	Frequency of failure on Problem solving level									Explanation in English	No. of students with Correct Answer				
	I. Reading			II. Understanding of Problem			III. Process								
	H	L	T	H	L	T	H	L	T					H	L
Q5(3)	2	3	5	2	7	9	3	10	13	4	0	4	5	1	6
Q6(1)	1	2	3	0	0	0	0	1	1	6	3	9	10	9	19
Q8	3	5	8	7	10	17	8	10	18	1	2	3	3	1	4

H: High Performance, L: Low Performance, T: Total

3. Discussion of Major Findings

Pupils Questionnaire

Material conditions

- The number of books and the material conditions of the rural school children reflect the poor economic background of their families. Thus opportunity to learn through the media is almost non-existent

Status of training

- There are still quite a number of untrained teachers in the Ghanaian school system, incidentally one of the teachers from the rural school was untrained. These teachers might have got enough subject matter knowledge (SMK) but they may lack the pedagogic content knowledge (PCK). In addition to that some of the trained teachers do not have access to regular in-services training hence they lack professional support. It is therefore not surprising that the study has revealed that pupils said they sometimes listened to their teacher talk.

Discussion of Major Findings

Influence of Examination

- Pressure to complete textbook may also contribute to the problem of teachers dispensing knowledge instead of facilitating learning. The system is influenced by examination

Impression about School

- Pupils' impression about the school was very good. This is probably due to the introduction of policies such as Free Compulsory, Universal Basic Education (1996) and abolishment of corporal punishment. Attendance is expected to improve further with the introduction of capitation grants, free bus ride for all school children and school feeding programme for some selected schools in deprived areas (2006)

Discussion of Major Findings

Achievement test

Pupils performance

- It is not surprising that grade five pupils performed generally better than grade four since the former had had more exposure to mathematics than the latter
- Pupils' performance in mathematics has not been good (GES, 2005) and a number of factors accounts for this phenomenon. One of them is the way how mathematics is taught in schools (Davis, 2004)
- The difference in strengths and weakness of pupils may reflect the teachers' strength and weakness (chief examiners report UTDBE, 2006)

Discussion of Major Findings

- The difference in score is also due to support pupils receive through extra classes (for P4 urban school) and teacher absenteeism (P5 urban school). Interview with urban grade four teacher revealed that majority of his pupils attend extra classes after school. Whereas interview with Head teacher of urban school also revealed that grade 5 teacher had not been regular at school because he was taking an upgrading course. This is an example of poor teacher supervision in schools.
- Implementation of old mathematics curriculum instead of new one also resulted in the situation where urban grade four pupils performed well in areas the researchers thought they could not do.

Discussion of Major Findings

Achievement test

Pupils performance in fraction

- Whether they are in urban or rural, apart from their understanding the concept, many pupils could read/pronounce the question, but could not explain the situation.
- Some pupils could explain their process with procedural knowledge and skill in English, but most students cannot explain why in English.

End of Presentation

Thank You
Questions & Contributions