

BECAS

Opportunity to Learn English and Mathematics in Ghanaian Primary Schools

**[A study conducted on behalf of Ghana Education Service, Curriculum Research
and Development Division (CRDD) to facilitate the Basic Education
Comprehensive Assessment System (BECAS)]**

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OPPORTUNITY TO LEARN ENGLISH AND MATHEMATICS IN GHANAIAN PRIMARY SCHOOLS

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Abstract

The Ghana Basic Education Comprehensive Assessment System (BECAS) is a new assessment system which replaced national tests that were instituted since the 1992 to monitor primary school pupils' achievement and progress in English and Mathematics.

To ensure the new system assesses closely what teachers actually teach, the BECAS Team carried out a survey of the contexts of learning in primary schools to inform the development of a new comprehensive assessment system. The study examined whether or not the opportunities provided in primary schools for learning are good enough to promote learning for all of pupils and assure high levels of outcomes for all pupils.

The study which involved 1,063 teachers sampled from the ten regions of the country was carried out in schools in July 2004. A questionnaire was used to gather data on teachers' schools, classes taught, location of schools, class size, gender, professional qualifications, instructional resources for teaching English and mathematics, instructional time for teaching English and mathematics, and coverage of content of English and mathematics in teachers' instruction over the year.

A major finding of the study was that OTL standards for most schools were very low and it was observed that the majority of teachers completed nearly 60% of the content of the mathematics and English syllabuses. The analysis also indicated that there were grave inequalities between schools as well as districts in the following

- availability and adequacy of textbooks,
- availability and adequacy of instructional materials,
- teachers' instructional practices and management of instructional time, and
- teachers' preparedness to implement the content standards.

These inefficiencies could be attributed to the fact that the curriculum content standards are clearly defined by the syllabuses of the various subjects taught at the basic level, no OTL standards have been set to guide their implementation. It is recommended that CRDD should be made to set OTL standards that will assure a high level of achievement for all pupils. That is, state the indicators that will assure a fair and appropriate provision of inputs and processes in basic schools. Also teacher education programmes should ensure that teachers are not only exposed sufficiently to OTL standards but also the strategies that they can be adopted to ensure such standards are maintained and improved.

Introduction

Five years after the Educational Reform Programme was initiated in 1987, a national test, designated Criterion Referenced Test (CRT) was instituted to assess Primary 6 pupils' achievement in English and Mathematics. Despite the fact that the CRT was a quality assurance measure, it was instituted principally to ensure whether or not the processes and inputs introduced during the educational reforms were helping to improve the quality of education (CRDD, 2001). The USAID assisted the Ministry of Education in the development and administration of the CRT from 1992 to 1999. Though the CRT indicated that less than 10 percent of the pupils are reaching mastery and the performance in both English and Mathematics has been rising slowly but steadily beginning from the base year of 1992, it could not provide enough information to assess the effectiveness of the processes and inputs introduced during the educational reforms.

It has been observed that pupils perform best on tests that assess subject matter content which pupils have had the opportunity to learn (Gamoran, Porter, Smithson, and White, 1997; Robitaille, et al, 1994). Though supported time and again by research, this observation is little more than common sense. In connection with assessment, Winfield (1987:438) notes that opportunity to learn relates to "the provision of adequate and timely instruction of specific content and skills prior to taking a test". She adds that opportunity to learn may be measured by "time spent in reviewing, practicing, or applying a particular concept or by the amount and depth of content covered with particular groups of students" (p. 439).

One the major limitation of the CRT was that the test coverage exceeded the realities of the classroom. Items for the CRT covered the entire curriculum (syllabus) for Primary 6 and outcomes pupils attained were compared with the entire intended curriculum, even though a substantial proportion of the content prescribed in the syllabus could not be implemented under the conditions that prevailed in schools. Though curriculum standards in the various Ghanaian primary school subjects are clearly defined by syllabuses designed by CRDD,

little is said about the processes and inputs required for their attainment. That is, the curriculum standards we currently have in this country are silent over the *opportunities to learn* that must be provided to promote high level of achievement for all pupils.

Opportunity To Learn (OTL) Standards

Opportunity to learn refers to equitable conditions or circumstances within the school or classroom that promotes learning for all students (Porter, 1993). It includes provision of curricula, teaching/learning material, facilities, teachers, and instructional experiences that enable students to achieve high standards. The term also refers to absence of barriers that prevent learning.

Delivery of educational opportunities (defined by the national curriculum and high expectations of student outcomes) includes a number of inputs and processes. OTL standards are in fact indicators that will assure a fair and appropriate provision of these inputs and processes. Since views about the specifics of or the use of standards differ from one educational system to another, it is impossible to state a universal definition of OTL standards. It can be defined as the criteria for, and the basis of assessing the sufficiency or quality of the resources, practices, and conditions necessary at each level of the education system to provide all students with the opportunity to learn the material in national curriculum (Ysseldyke, Thurlow, and Shin, 1995).

OTL standards differ from country to country and depend on nature of a nation's economy and educational policies. But within the same nation when OTL standards are defined differently, indices of OTL in different schools, districts, or regions cannot be compared. There is therefore a need for consensus on 'what should constitute opportunity to learn' for the primary school pupil in this country that will be comparable across districts and regions of the country. OTL standards are usually set around the following areas:

- **Resource Standards** to assure that all schools have sufficient resources to deliver high level of curriculum content and to achieve higher levels of outcomes for all students;

- **Curriculum Delivery Standards** to assure high levels of curriculum delivery to all students;
- **Outcome and Capacity Building Standards** to assure that all schools have the continued capacity to deliver quality education and are evaluated by their delivery of quality educational opportunities to all students.

In the present study however, some aspects of the resource and curriculum delivery standards were considered. Indicators of the aspects considered include

- Teachers' coverage of the curriculum content in English and mathematics;
- Teachers' emphasis in the national curriculum content in English and mathematics
- Availability of teaching/learning materials and technology;
- Teachers' content emphasis for individual students or groups of students (i.e. whether or not the content is differentiated to ensure each student achieves his/her highest potential);
- Teachers' preparedness to implement the content of the curriculum in English and mathematics - knowledge of subject matter content and pedagogy (e.g., subject credentials, certification, professional experiences).

Studies on Opportunity to learn and teachers' content coverage

Ysseldyke, Thurlow, and Shin (1995) recommend the use of the following indicators in measuring the extent to which OTL standards are met.

- i. The amount of time that students spend in school - Determining the school day and total time in the year that students spend in school. The amount of time allocated to instruction - This would be done as an index of OTL, since a considerable amount of time that students are in school may be spent in non-instructional activities. Minutes or hours of academic content that students are taking is another way to measure allocated time. These can be ascertained from the syllabus and timetable.
- ii. Counting the amount of money spent on providing instruction - This could be the overall school budget, per-pupil expenditure, teacher salaries, or other similar measures.

- iii. Information on teachers' coverage of the curriculum - Interviews and/or daily logs can be used to gather information on how well the curriculum is covered. For example, content coverage is indicated by topics covered in each class period and by the amount of emphasis placed on each topic. This information also will indicate the modes of instruction, the types of student activities, and the types of instructional materials that were used.

According to Porter et al. (1979), 'content coverage', can be distinguished into 'content covered' and 'content emphasised'. The first -content covered - refers to actual counts made of concepts introduced or the range of content (or skills) actually taught (McDonald, 1976). Measures of content emphasised identified in the literature includes such proxies for content coverage as time allocated to content, textbook length or number of pages in textbook devoted to concept or topic (Good et al. 1978; Barr, 1987; Freeman and Porter 1989).

Many investigators of content coverage have been concerned with "the influence of the curriculum on learners' opportunities to learn concepts measured by achievement tests" (Barr, 1987). Most of the studies in content coverage have treated coverage as a condition that acts upon learning autonomously. In these studies, the researchers were concerned with the influence of content coverage (which is analogous to 'opportunity to learn') on learners' achievement. Other researchers have considered coverage as a reflection of a complex set of instructional components that jointly affect learning. The empirical literature on content coverage can be separated into two main strands. One explored the influence of content coverage on learners' achievement and the other were studies which have been concerned with content coverage as part of a complex instructional component that influences the whole curriculum. In both strands similar methods have been used to estimate the extent of coverage.

Studies in curriculum delivery standards and pupils' achievement

In the first International Association for the Evaluation of Educational Achievement (IEA) study of mathematics achievement (Husen, 1967), teachers from 12 participating nations

were asked to judge whether they had promoted the learning of (that is, whether their students had had the opportunity to learn) the content exemplified by each test item. IEA studies have found a substantial relationship between teachers' reported content coverage (i.e. opportunity to learn) and students' mathematics achievement (TIMSS, 2004; Mullis, *et. al.*, 2000).

Studies have shown that strong correlations exist between student OTL scores and mean student achievement scores in mathematics (Husen, 1967; Schmidt). Baratz-Snowden (1993) asserts that if students are held accountable for their learning, schools must be held accountable simultaneously for providing students with the opportunity to learn to meet the standards. Winters, *et. al.*, (1994) stated further that opportunity to learn (OTL) often serves as part of the evidence for alternative interpretation of student performance.

International summaries of research on relationship between content coverage and achievement demonstrate that students learn the content of the curriculum they are taught; the more they are taught, the more they learn (Oxenham, 1992). Lockheed and Verspoor (1990) reported that most nations have closer to 40 per cent of their teaching time devoted to the national language and 20 per cent to mathematics. In this vein, Oakes (1989), and Porter (1991) recommended that school administrators, teachers, and policy makers should not judge test results without considering and analyzing students' opportunity to learn (OTL).

Studies in national curriculum in Ghana

No study in Ghana has looked fully at the curriculum delivery standards. Only two studies have examined aspects of the standards. One was a study commissioned by the Ghana Ministry of Education in 1993 to examine and analyze the primary school official curriculum materials – syllabuses, pupils' textbooks and teacher's guides. The study reported that mathematics teaching in basic schools focuses on computation skills, learning of formulas, rote practice and teaching as telling. The study also reported that the vast majority of Ghanaian children are growing up functionally illiterate in both their native language and in English. The principal investigator in this study, Kraft (1994), attributed

these unfortunate developments to the poor nature of curriculum, including syllabi, textbooks and teachers' handbooks, used in the nation's schools. He argued that

the current syllabi, textbooks and teachers' handbooks do not meet the highest international standards, nor the current best thinking on sequence, learning and pedagogy and will not prepare Ghanaian students for the needs of the next century (Kraft:2).

The second study was TIMSS-2003, which was the third in a series of studies undertaken once every four years by the International Association for the Evaluation of Educational Achievement (IEA). The performance of the junior secondary school form 2 (JSS2) students in the TIMSS was unsurprisingly very poor because of the nature of mathematics students are made to experience at school in this country (Anamuah-Mensah, et al, 2004). Analyses of the students' performance on the TIMSS mathematics test items show that the few (about 15%) items for which most students were able to make correct responses were those that were testing knowledge of facts and procedures. They performed poorly on items that tested their ability to use concepts, solve non-routine problems and reason mathematically.

Analysis of the TIMSS data on the context for learning mathematics in Ghanaian schools indicate students have little opportunity to engage in activities that will enable them to use concepts, solve non-routine problems and reason mathematically (Mullis, *et. al.*, 2004). Anamuah-Mensah, et al (2004) observed that only 42 percent of Ghanaian JSS mathematics teachers used the mathematics textbooks as the main basis for mathematics lessons while 54 percent used it as a supplementary resource. Thus, the textbooks were used mainly by Ghanaian teachers as a supplement to other materials that teachers may have in their possession. This was not the case in most of the high performing countries such as Singapore, Korea and Japan, where the textbooks were the primary materials used in teaching the subject. In Ghana, the textbooks were used mainly as a supplementary resource because they are obsolete and do not align with the current syllabuses in school.

Rationale for the study

An *Opportunity to Learn* study was included in the planning of the Ghana Basic Education Comprehensive Assessment System (BECAS) to provide essential information that will ensure the quality of the assessments and the ethics of testing what is actually taught.

Articulation between curriculum, instruction, and assessment is important. To ensure this, clear OTL standards should be set. The OTL study will guide the BECAS Senior Advisory Group (SAG) in framing its policy directives about OTL standards that will address the following

- Curricula, instructional materials, and technologies
- Teacher capability and continuous professional development
- Curriculum delivery process - instructional practices and
- Non-discriminatory policies - curricula, and instructional practices for special needs
- Other factors that help students receive a fair opportunity to achieve the knowledge and skills in the content standards

Finally information from the OTL study will guide the development of the new NEA to make it assess performances on what is actually taught, as well as document what aspects of the curriculum go unlearned and/or untaught.

Purpose of the study

In order to come out with a comprehensive assessment system that can ensure all primary school pupils do reasonably well or do not feel failures, it is necessary to consider the OTL provided in the primary schools. It is necessary to know whether or not the opportunities provided in primary schools for learning are good enough to promote learning for all of pupils and assure high levels of outcomes for all pupils.

The purpose of the study was to find out

- teachers' preparedness to implement the content of the national curriculum in English and mathematics
- the adequacy and availability of resources provided for the delivery of the national curriculum content in English and mathematics;
- how well the instructional times for teaching English and mathematics were managed;

- extent of teachers' coverage of the national curriculum content in English and mathematics
- extent of teachers' emphasis in the national curriculum content in English and mathematics
- teachers' content emphasis for individual students or groups of students (i.e. whether or not the content is differentiated to ensure each student achieves his/her highest potential);

The study did not cover all aspects of OTL for Ghanaian schools.

Methodology

Population and Sample

The population for the study consisted of all teachers teaching primary schools in the country. That is, all trained and untrained teachers teaching in classes in primary schools. The use of opportunity sample of schools instead of a random selection enabled information on teachers' delivery of the curriculum to be collected to provide contextual data that could be used to explain students' performance in the BECAS tests that will be conducted in July 2005. Opportunity sample comprised schools located in towns and villages where students from the University of Education, Winneba, who volunteered to undertake the study, had their long vacation holidays.

Instrument

A questionnaire was designed by a team of consultants who were teacher educators. The instrument was pre-tested to ensure suitability of language, flow and length. A copy of the questionnaire can be seen in Appendix A. The questionnaire was designed to provide information on teacher's school, classes taught, class size, gender, professional qualification, instructional resources for teaching English and mathematics, instructional time for teaching English and mathematics, and coverage of content of English and mathematics in teachers instruction over the year. The questionnaire included items

structured to elicit dichotomous responses along a two-point scale – taught or not taught - to indicate whether the teacher had done more than a week’s teaching or a week or less teaching on units in the English and mathematics syllabuses. These items were intended to provide information on teacher’s coverage of topic/units and emphasis on content domains in the official primary mathematics and English curricula. The questionnaire took the teachers about 30 minutes to complete.

Data collection and analyses

Prior to commencement of the data collection, all the students who volunteered to administer the instruments were briefed on the project requirements and were thoroughly trained to use the questionnaire. In all 110 students at the University of Education, Winneba, volunteered to administer the questionnaire. Each student visited 2 schools. That is, each student was able to interview 12 teachers and completed a questionnaire for each teacher interviewed. About 80% of the questionnaires were returned. The data obtained were keyed onto the computer and the SPSS application package was used to do the analysis.

Analysis of findings

Introduction

The study involved 1,063 teachers of which 44.1% were male and 55.9 were female. The teachers who participated in the study were taken from the six primary classes in schools in the ten regions across the country. Table 1 is the distribution of teachers by region and by gender. The table shows that the study covered the whole country and the sample was very fair with gender of teachers that participated. The representation of regions was also fair. The proportion of teachers taken in each region ranged between 4.5 and 12.1 percent.

Table 1 Distribution of teachers by region and by gender

Region	Male	Female	Total	Percent
Ashanti	42	86	129	12.1
Brong Ahafo	71	49	120	11.3
Central	47	63	110	10.3

Eastern	50	67	117	11.0
Greater Accra	26	106	132	12.4
Northern	82	26	108	10.2
Upper East	16	32	48	4.5
Upper West	43	41	84	7.9
Volta	45	76	122	11.5
Western	46	47	93	8.7
Total	468	593	1063	100.0

Table 2 is the distribution of teachers by region and by class they taught. There was fair representation of each primary class (Primary 1 to 6) that was involved in the study. The number of each primary school class in the study ranged between 161 and 190.

Table 2 Distribution of teachers by region and by classes they taught

Region	Number of teachers						Total*
	Primary 1	Primary 2	Primary 3	Primary 4	Primary 5	Primary 6	
Ashanti	23	22	22	18	21	21	127
Brong Ahafo	24	24	24	24	24	24	144
Central	29	17	11	21	12	12	102
Eastern	24	25	25	21	25	20	140
Greater Accra	28	28	28	16	28	25	153
Northern	17	17	17	17	16	17	101
Upper East	6	6	6	6	6	6	36
Upper West	14	14	14	14	13	13	82
Volta	25	23	23	24	23	24	142
Total	190	176	170	161	168	162	1027

*Note Classes of 36 teachers were not indicated

Teachers' preparedness to implement the content of the curriculum in English and mathematics

One of the indicators of OTL standards is teachers' preparedness to implement the curriculum content. This standard can be measured in terms of the teachers' knowledge of subject matter content and pedagogy, which often depends on the teachers subject, credentials, certification, and professional experiences. In this study, the teachers' preparedness to implement the curriculum content was measured in terms of their teaching qualifications.

The study involved teachers with four categories of teaching qualification – untrained; certificate A; diploma and B.Ed degree. Table 3 shows the number and proportion of teachers with each teaching qualifications

Table 3 Distribution of teachers by region and by gender

Qualification	Untrained	Certificate A	Diploma	B.Ed degree
Number of teachers	130	892	27	11
Percent	12.3	84.2	2.5	1.0

The majority of teachers trained to teach at the primary level in Ghana took pre-service education programmes that led ‘*Certificate A*’ qualifications. The initial training of primary school teachers in Ghana was done at two levels: the post-middle (or junior-secondary) level; and the post senior-secondary level. Even though programmes offered at both levels led to equivalent qualifications (i.e. Teacher's Certificate 'A'), the first was a four-year programme while the other was, and still is, a three-year programme. The four-year college programme was phased out in 1991 and all colleges are now running the 3-year post-secondary programme. Since the expectation of the designers of these Teachers’ Certificate 'A' programmes, was to educate teachers whose academic attainment would be equivalent to that of O-level General Certificate of Education (GCE), the programmes placed more emphasis on subject content at the expense of pedagogy. Thus the academic qualification of most Ghanaian primary school teachers is low.

The study had shown that 84 percent of the primary school teachers involved in the study had such low teaching qualifications and a substantial proportion (12.3%) was not at all trained. It can be argued in this regard that the preparedness of the majority of teachers to implement the content of the curriculum in English and mathematics is low and therefore there is an urgent need to increase school-based in-service education activities to support these teachers.

The study also examined teachers’ preparedness to implement the content of the curriculum by looking at difficulties they encountered in teaching the topics in English and Mathematics. In teaching English language, 21 percent of the teachers indicated that they

had difficulties in teaching certain topics or aspects of the syllabus. Below are some of the areas in which teachers had difficulties in teaching English.

Adjective	Library
All sections, due to lack of resource books	Library and drama
Anomalous finite (grammar)	Listening and speaking aspect
Argumentative essay	Listening and speaking, oral aspect
Comprehension, grammar (determines and modals)	Mechanical writing
Conversation because there are no recourses for the teaching of it	No teacher's hand book
Conversation, mechanical writing	Poem, song and drama
Directions/instructions	Reading. Attributed to lack of readers
Drama and poetry	Rhyme/verse. Due to lack of TLMs to portray the scenes
Drama, listening / speaking, poems	Song, story telling, drama
Grammar because pupils find it very difficult to grasp the concept	Songs
Grammar, not well explained in syllabus	Speech work (sounds of letters)
Grammar, story telling, library	Story telling
	The reading aspects, Textbooks not available

In teaching Mathematics, 34 percent of the teachers indicated that they had difficulties in teaching certain topics of the syllabus. That is, more teachers had difficulties in teaching mathematics than English. Below are some of the areas in which teachers had difficulties in teaching mathematics.

Areas and length	Investigation with numbers
Capacity and volume measurement of weight	Length, mass and capacity, area and volume
Chance	Long division and decimals
Collecting and handling data 1 and 2	Number plane, investigation with numbers
Collecting and handling data, chance	Numbers + numerals 0 - 10,000
Decimal, fractions, percentage, ratio and proportion	Operations on fraction, decimal fractions and percentages
Decimal, fractions, percentage	Ratio,
Division and fraction	Rational numbers (3)
Drawing geometric figures, measurement, length, capacity etc	Shapes, space. Measurement of weight time and money
Fractions and decimals	Story problem forms of questions are difficult for children. They cannot read and interpret
Geometric figures in space	Syllabus is different from textbook
Graphs,	What are the chances?
Integers, decimal fractions	Topics in the syllabus do not tally with textbooks hence difficulty
Integers, graphs ratio proportion, movement	
Integers, the number plane	

In spite of the fact that most teachers have little or no teaching qualifications and for that matter know little about the pedagogy for teaching many of the topics, units or aspects of

the syllabuses, it was obvious in their comments that their difficulties had been made worse by the lack textbooks that match the contents of the syllabuses. The full list of areas in which teachers had difficulties in teaching mathematics can be seen at Appendix C.

The adequacy and availability of resources for delivery

As observed above, the delivery of educational opportunities defined by the national curriculum includes a number of inputs and processes. The study also sought to determine the current resource standards, that is, whether or not schools have sufficient resources to deliver high level of curriculum content and to achieve higher levels of outcomes for all students.

To do this, the primary school teachers were made to indicate whether or not the following inputs, which affect the teaching and learning of mathematics and English, were available and adequate, available but inadequate or not available at all in the classes in which they taught in the academic year. Table 4 shows the proportion of teachers indicating the availability of the certain basic inputs.

Table 4 Availability of the certain basic inputs that affect the teaching and learning of mathematics and English

Resources to deliver curriculum content	Percentage of teachers indicating availability inputs		
	Not available	Available but inadequate	Available and adequate
Classroom space	4	20	75
Classroom furniture	4	31	65
Pupils exercise books	4	45	51
Teacher's stationery (chalk, notebook, cardboard, etc.)	2	41	57
Pupils' English textbook(s)	25	53	21
Pupils' Mathematics textbook(s)	14	41	43
Audio-Visual aids for teaching language (i.e. radio, TV/Video or computer)	94	4	2
Pieces of pupils' mathematical drawing instruments (ruler, compasses and protractor)	71	20	6
Resources for teaching measurement and geometry (metre-ruler, tape measure, litter containers, weighing scale, etc.)	68	27	4

It is interesting to note from Table 3 that 4 percent of the teachers were teaching pupils in structures that were not originally constructed as classrooms and their pupils were without classroom furniture. It can be observed from the table that 24 percent of pupils have no adequate classroom space and 35 per cent have no adequate classroom furniture. The assistant researchers (i.e. the questionnaire administrators) observed that some children sat on stools they have brought from home and some on boards resting on blocks. More than 40 percent of the pupils do not have enough exercise books to do their class exercises and about 50 percent of the teachers do not have enough stationery (chalk, notebook, manila card, cardboard, etc.) for teaching their daily lessons.

It was found that 80 percent of the teachers owned copies of the mathematics and English syllabuses. But interestingly, half of the 20 percent which did not own copies indicated that they had access to them only at weekends when preparing their lesson notes, and the other half had them whenever they wanted them in the week.

It was also observed that though the textbooks¹ currently in use in the nation's primary schools for teaching English and mathematics were published over a decade ago, there was inadequate or little supplies of these books in over half of the schools involved in the study. Only 21 percent of the teachers indicated that pupils' English textbooks were available and adequate while 43 percent indicated that pupils' mathematics textbooks were available and adequate.

Majority of the teachers (70%) indicated that measurement and mathematical drawing instruments such as tapes, litre-containers, weighing scales, rulers, compasses and protractors were not available in their schools for teaching topics in measurement and geometry. Audio-Visual aids for teaching language (i.e. radios, TV/Videos or computers) were found in the schools of only 2 percent of the teachers and 95 percent of them did not have these in their schools.

The schools do not have sufficient resources to deliver high level of curriculum content and also to achieve higher levels of outcomes for all students. It can be argued in this light that the environment for learning mathematics and English for many Ghanaian pupils is not

¹ Ghana Mathematics Series: Primary Schools Pupil's Books 1 – 6, published in 1987 by CRDD.
An English course for Ghana: Pupil's Books 1 – 6, published in 1988 by CRDD.

conducive for teachers to deliver their best and help pupils to achieve their highest potentials.

Management of instructional time

Primary schools in Ghana begin work at 08.00 hrs and finish at 13.30 hrs. The amount of time that pupils spend in school each school day is 5 hours since there are two breaks that last 30 minutes each. The total time expected to be spent in school for the 40 weeks in an academic year is 1,000 hours. But much of this time is not achieved by the pupils because lessons in many schools do not start early. Some of the reasons for not starting lessons on time are

- pupils stay far away from school and are always late
- administration work (head teacher) and also stays far from school
- due to the shift system because transition from morning to afternoon becomes difficult
- I travel a long way to school and transport is difficult to get in this area
- most pupils come from villages and on market days some pupils send food stuffs to the market before coming to school
- pupils come from surrounding villages hence come late
- pupils come to school late during the afternoon section
- some children come from far village
- some of the children come to school late
- teachers stays far away from town school is situated
- tidying up of the compound eats into the time for the first lesson
- transportation problems

The instructional time was also often interrupted with co-curricular (or planned non-instructional) activities like, school worship, cleaning compound and classrooms, gardening, practicing sports for athletics meetings, practicing marching and cultural activities, just to mention a few.

The amount of time allocated to teaching mathematics and English is stated in the teaching syllabuses as ten periods a week for each subject, each period lasting 30 minutes. The two subjects together take 40 percent of the instructional time each day. But many very often a considerable amount of this time that pupils are expected to be learning these subjects is spent on some of the non-instructional activities mentioned above.

To ascertain if pupils were fully engaged during the time allocated to teaching mathematics and English, the teachers were asked to indicate whether or not they followed the suggested timetable when teaching or taught all subjects on the time table each day. More than half of the teachers (53%) indicated they followed the timetable, but as many as 47 percent did not

rigidly follow it. Several reasons were given for not following the. Some interesting ones are as follows:

- we usually miss the first periods
- activities like sports, culture, and grounds works, disrupt the timetable
- as non-detached head teacher, I combine classroom work with administrative work
- children are slow learners and slow in writing
- class size too large to be able to teach all subjects
- contact hours not enough
- difficult to plan/teach all the subjects
- due to morning worship, and sometimes visits by educational heads etc.
- Ghanaian language for instance cannot be taught because I'm not good at that (i.e. Fante)
- lack of textbooks on subjects like music
- pupils can't finish exercise on time
- marking of pupils exercises and corrections take some of the teaching time.
- teaches multiple of classes, i.e. P4, P5 and P6
- the children are slow in understanding concept
- time table is loaded.
- Uses Physical Education periods in teaching other subject like mathematics

Teachers' coverage of the curriculum content of English and Mathematics

To determine the extent teachers' coverage of the curriculum content of English and Mathematics they were made to indicate the proportion of the syllabuses they were likely to complete by the end of the academic year. They were also made to provide information on their coverage of the curriculum by indicating whether or not they taught topics, units or sections in the syllabuses. They were asked to reflect on their prepared schemes of work and what they actually taught in the year to indicate the topics, units or sections in the syllabuses that were taught in the year. They also gave brief reasons why topics, units or sections in the syllabuses were not taught in the year.

Teachers' coverage of the curriculum content of English

Table 5 shows the proportions of curriculum content of the English syllabus covered by all the teachers.

Table 5 Proportion of English syllabus covered by teachers by class

	Number and percentage of teachers						Total	% Cumulative Total
	Primary 1	Primary 2	Primary 3	Primary 4	Primary 5	Primary 6		
Below 40%		1		1		1	3	0.3%

		.6%		.6%		.6%	.3%	
40% to 50%	55	47	47	44	58	47	298	29.4%
	28.9%	26.7%	27.8%	27.3%	34.7%	29.0%	29.1%	
51% to 60%	17	11	15	12	13	8	76	36.8%
	8.9%	6.3%	8.9%	7.5%	7.8%	4.9%	7.4%	
61% to 70%	33	25	21	23	21	21	144	50.8%
	17.4%	14.2%	12.4%	14.3%	12.6%	13.0%	14.0%	
71% to 80%	46	55	47	50	41	40	279	78.0%
	24.2%	31.3%	27.8%	31.1%	24.6%	24.7%	27.2%	
81% to 90%	7	5	4	6	6	6	34	81.4%
	3.7%	2.8%	2.4%	3.7%	3.6%	3.7%	3.3%	
91% to 100%	32	32	35	25	28	39	191	100.0%
	16.8%	18.2%	20.7%	15.5%	16.8%	24.1%	18.7%	
Total	190	176	169	161	167	162	1025	
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	

About 30 percent of the teachers indicated that they were able to cover half of the English syllabus content and 19 percent indicated that they were able to cover all the content. That is, only about 20 percent completed the syllabus, the majority were able to cover up to 80% of the content of the English syllabus. The information the teachers provided on topics in the English syllabus was further examined to expose content areas that were not taught by many teachers. Table 5 shows the proportion of teachers indicating topics that were not taught. Note that in the table proportions of topics not taught that were lower than 5 percent were ignored.

Table 6 Proportion of teachers indicating topic was not taught in English lessons

Sections/units of English	Percentage* of teachers indicating section/unit was not taught					
	Primary 1	Primary 2	Primary 3	Primary 4	Primary 5	Primary 6
<i>English Content Domain 1: Comprehension/Reading</i>						
Reading/Pre-reading						
Conversation						
Library	35.2	28.9	23.3	20.9	12.1	14.4
<i>English Content Domain 2: Writing/Composition</i>						
Mechanical writing				9.5	11.6	15.6
Composition						
Spelling						
Dictation					6	6
<i>English Content Domain 3: Oral Language (listening and speaking)</i>						
Story telling	4.8	5.8	7.7	8.3	6.1	6.4
Drama	16	26	20.5	29.4	22.1	23.1
Conversation						

Poem			11.4	14	8.8
Rhyme					
Verse, directions, instructions			7.1	13.3	12.7
Song		8.0	14.4	15.2	19.5
<i>English Content Domain 4: Language Item (grammar and structure)</i>					
Conversation			6.4	4.3	4.0
Grammar					

*Note Proportions of topics not taught that were lower than 5 percent were ignored.

The table shows the following topics were not taught by many of the teachers:

- library,
- story telling,
- drama,
- song,
- mechanical writing,
- poem
- verse, directions and instructions

Teachers' coverage of the curriculum content of Mathematics

Table 7 shows the proportions of curriculum content of the mathematics syllabus covered by all the teachers.

Table 7 Proportion of mathematics syllabus content covered by teachers by class

	Number and percentage of teachers						Total	% Cumulative Total
	Primary 1	Primary 2	Primary 3	Primary 4	Primary 5	Primary 6		
Below 40%				1		1	2	.2
				.6%		.6%	.2%	
40% to 50%	57	55	51	52	54	52	321	31.5
	30.2%	31.3%	30.0%	32.3%	32.3%	32.3%	31.3%	
51% to 60%	10	4	10	10	5	9	48	36.2
	5.3%	2.3%	5.9%	6.2%	3.0%	5.6%	4.7%	
61% to 70%	28	19	23	18	26	12	126	48.5
	14.8%	10.8%	13.5%	11.2%	15.6%	7.5%	12.3%	
71% to 80%	42	48	46	43	41	37	257	73.6
	22.2%	27.3%	27.1%	26.7%	24.6%	23.0%	25.1%	
81% to 90%	11	11	8	5	10	6	51	78.6
	5.8%	6.3%	4.7%	3.1%	6.0%	3.7%	5.0%	
91% to 100%	41	39	32	32	31	44	219	100
	21.7%	22.2%	18.8%	19.9%	18.6%	27.3%	21.4%	
Total	189	176	170	161	167	161	1024	
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	

In mathematics the coverage was very similar to that of English. About 31 percent of the teachers indicated that they were able to cover only half of the mathematics syllabus content and 21 percent indicated that they were able to cover all the content. That is, only about 20 percent completed the mathematics syllabus, the majority were able to cover up to nearly 80% of the content of the mathematics syllabus.

To find out which content areas that were least covered, the information the teachers provided on topics in the mathematics syllabus was further examined to expose content areas that were not taught by many teachers. Table 8 shows the proportion of teachers indicating topics that were not taught. Note that in the table proportions of topics not taught that were lower than 5 percent were ignored.

Table 8 Proportion of teachers indicating topic was not taught in mathematics lessons

Topics in Mathematics	Percentage of teachers indicating topic was not taught					
	Primary 1	Primary 2	Primary 3	Primary 4	Primary 5	Primary 6
<i>Mathematics Content Domain 1: Number and Numerals</i>						
Counting objects						
Groups of objects						
Ten and ones						
Sets of numbers						
Numbers and numerals						
Concept of fractions						
Decimals and percentages						
<i>Mathematics Content Domain 2: Number operations and algebra</i>						
Addition and subtraction						
Multiplication						
Division		20.6				
Decimals and percentage				11.1		
Operations on fractions			14.8		12.6	
Ratio and proportion					17.6	
Investigations with numbers				28.7	33.6	23.0
<i>Mathematics Content Domain 3: Measurement</i>						
Length, capacity and mass	24.2	19.6				
Time and money	17.4				30.4	
Capacity and mass			23.1			
Length and area				13.2		

Area and volume			34.5	12.6	35.8
Mass, time and money					
<i>Mathematics Content Domain 4: Shape and space (Geometry)</i>					
Shape and space		32.2	9.9	17.1	21.3
Number plane					18.2
<i>Mathematics Content Domain 5: Handling data</i>					
Collecting and handling data	38.6	33.5	14.9	26.5	
Chance					21.9

The table shows the following topics were not taught by many of the teachers:

- shape and space,
- length, capacity and mass,
- decimals and percentage,
- investigations with numbers,
- time and money,
- collecting and handling data,
- chance,
- area and volume.

Teachers' emphasis in the national curriculum content in English and mathematics

The amount of emphases placed on content domains in the two subjects was examined in terms of the number of teachers indicating they taught topics in these domains. For English the content domains comprised

- Comprehension/Reading
- Writing/Composition
- Oral Language (listening and speaking)
- Language Item (grammar and structure)

and for mathematics, the domains were:

- Number and Numerals
- Number operations and algebra
- Measurement
- Shape and space (Geometry)
- Handling data.

Only the results from the Primary 6 data on the amount of emphases placed on content domains are presented in this report since the trend was the same for all the other classes. Tables 9 and 10, and Figures 1 and 2, show the amount of emphases the teachers gave to topics in the various content domains of the two subjects.

Table 9 Teacher's coverage of the English content domains

Number and % of teachers covering domains

Content domain	Not adequately covered		Adequately covered	
	Number	Percent	Number	Percent
Comprehension/Reading	22	13%	146	87%
Writing/Composition	26	15%	142	85%
Oral Language (listening and speaking)	71	42%	97	58%
Language Item (Grammar)	20	12%	148	88%

It is clearer from Figure 1 that the teachers gave equal attention to comprehension/reading, writing/composition and language item (grammar and structure). But nearly half of them did not give adequate attention to units in oral language (listening and speaking).

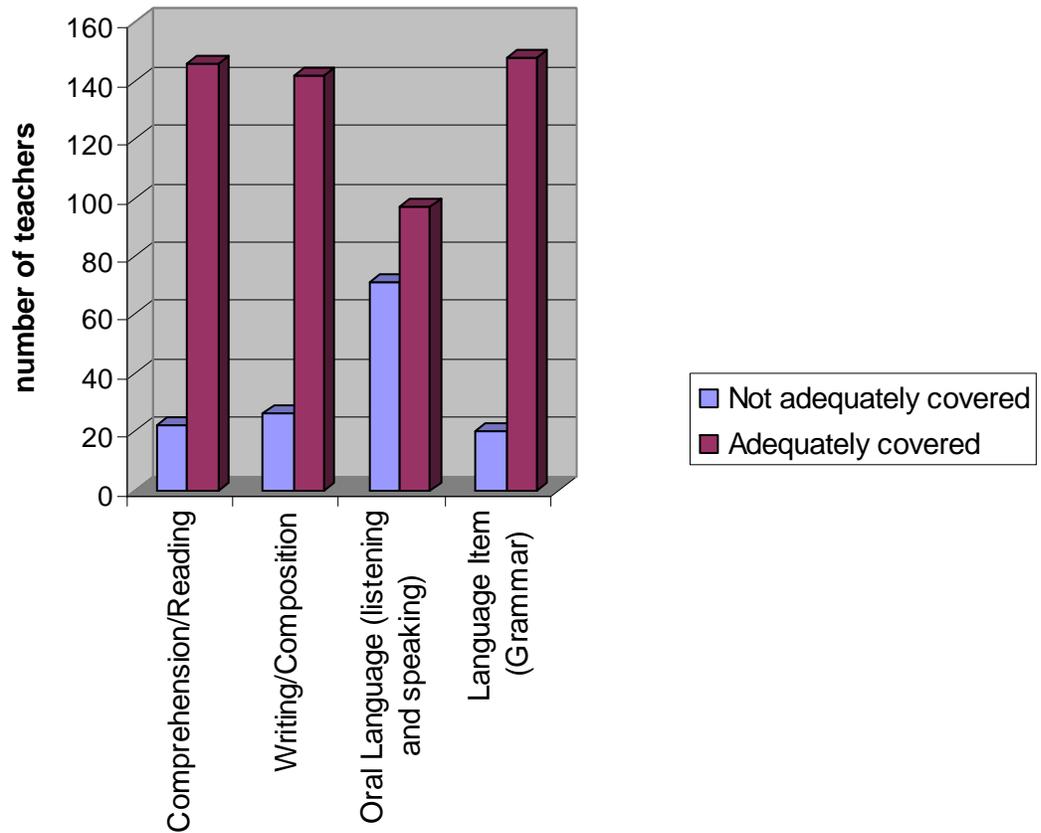


Figure 1 Teacher's coverage of the English content domains

Table 10 Teacher's coverage of the Mathematics content domains

Content domain	Number and % of teachers covering domains			
	Not	Percent	Adequately	Percent

	adequately covered		covered	
Number and Numerals	2	1%	161	99%
Number operations and algebra	69	42%	94	58%
Measurement	56	34%	107	66%
Shape and space (Geometry)	16	10%	146	90%
Handling data.	57	35%	106	65%

In mathematics, almost all teachers teach topics in number and numeral as well as shape and space. It is clearer from Figure 2 that a substantial proportion of teachers gave little attention to the other content domains – operations/algebra, measurement and handling data.

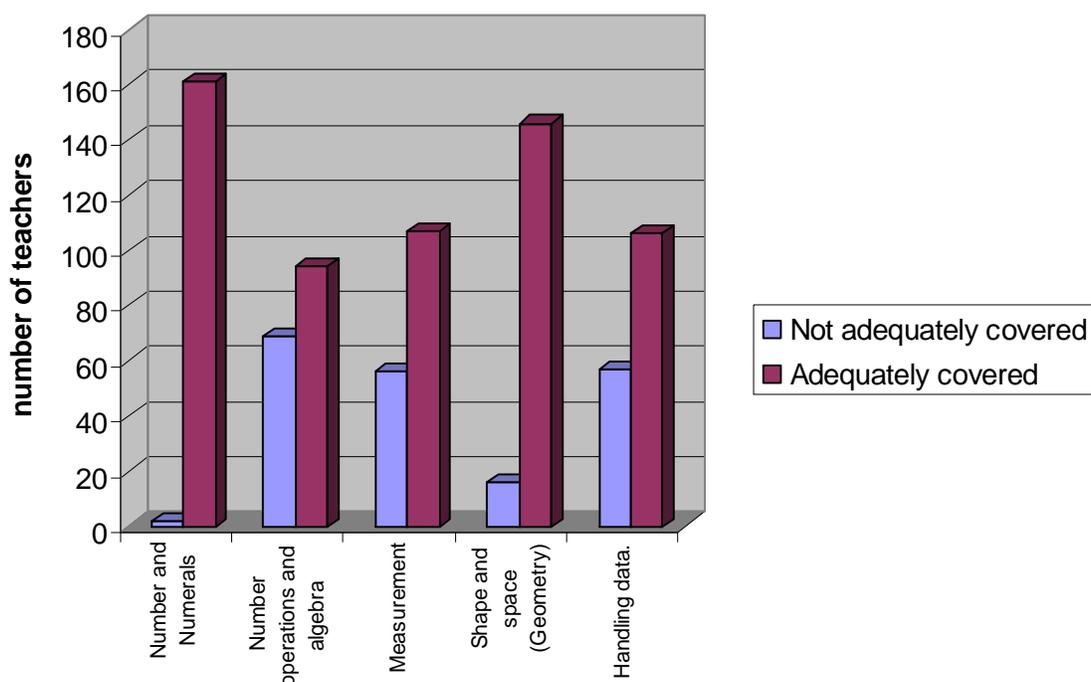


Figure 2 Teacher's coverage of the Mathematics content domains

Teachers' content emphasis for individual students or groups of students

As pointed out earlier, content emphasis for students or groups of students is one of the indicators of opportunity to learn. In this study, data was obtained on a number of factors that facilitate content emphasis for students or groups of students. These are factors that

help students receive a fair opportunity to achieve the knowledge and skills in the content standards set in English and mathematics. The factors considered in this study were teacher’s class size, availability of teaching inputs and frequency by which teachers put their pupils into ability groups while teaching.

As observed above, inputs for teaching the two subjects are not enough to go round most pupils. It was found that only 21 percent of the teachers indicated that pupils’ English textbooks were available and adequate while 43 percent indicated that pupils’ mathematics textbooks were available and adequate. This presupposes that teachers should plan to make their pupils to work often in groups in order to share the few resources that are available. Interestingly, as can be seen in Figure 3, many of the teachers indicated they often or sometimes grouped their pupils by ability during mathematics and English lessons.

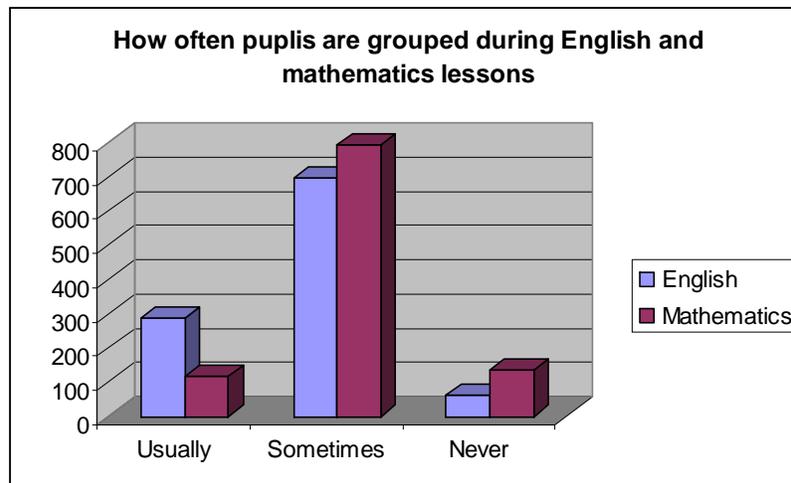


Figure 3 Frequency of grouping pupils by ability during lessons

The proportions of the teachers who indicated they grouped pupils by ability usually or sometimes during English lessons were 27% and 65 percent respectively, while those who did so in mathematics lessons were 11 and 74 percent respectively. These results were interesting because the classes were too large for organizing any effective group work. Table 11 shows the size of classes at the various grade levels in the primary school.

Table 11 Classes by Class sizes

<u>Class(es)</u>	<u>Class size categories</u>	Total
------------------	------------------------------	-------

	Less than 20 pupils	21 to 30 pupils	31 to 40 pupils	41 to 50 pupils	51 to 60 pupils	61 to 70 pupils	Over 71 pupils	
Primary 1	17 8.8%	36 18.7%	41 21.2%	54 28.0%	30 15.5%	4 2.1%	11 5.7%	193 100.0%
Primary 2	17 9.3%	30 16.5%	44 24.2%	52 28.6%	21 11.5%	7 3.8%	11 6.0%	182 100.0%
Primary 3	14 7.9%	35 19.8%	45 25.4%	44 24.9%	27 15.3%	8 4.5%	4 2.3%	177 100.0%
Primary 4	17 10.2%	24 14.5%	46 27.7%	35 21.1%	28 16.9%	9 5.4%	7 4.2%	166 100.0%
Primary 5	15 8.7%	35 20.3%	41 23.8%	51 29.7%	21 12.2%	5 2.9%	4 2.3%	172 100.0%
Primary 6	19 11.2%	38 22.4%	45 26.5%	40 23.5%	18 10.6%	8 4.7%	2 1.2%	170 100.0%
Total	99 9.3%	198 18.7%	262 24.7%	276 26.0%	145 13.7%	41 3.9%	39 3.7%	1060 100.0%

In about 25 percent of the classes the number of pupils in a class ranged from 31 to 40, and there were over 40 pupils in more than 40 percent of the classes.

Summary, Conclusions and Recommendations

Summary

The study was an attempt to find out whether or not the opportunities provided in primary schools for pupils to learn are good enough to promote learning for all of them and assure high levels of outcomes for all them. The study focused specifically on

- i. teachers' preparedness to implement the content of the national curriculum in English and mathematics
- ii. the adequacy and availability of resources provided for the delivery of the national curriculum content in English and mathematics
- iii. how well the instructional times for teaching English and mathematics were managed
- iv. extent of teachers' coverage of the national curriculum content in English and mathematics
- v. extent of teachers' emphasis in the national curriculum content in English and mathematics

- vi. teachers' content emphasis for individual students or groups of students (i.e. whether or not the content is differentiated to ensure each student achieves his/her highest potential).

The study involved 1,063 teachers teaching in primary schools in the country. There were both trained and untrained teachers of which 44.1% were male and 55.9 were female. A questionnaire was used to gather data on teachers' schools, classes taught, location of schools, class size, gender, professional qualifications, instructional resources for teaching English and mathematics, instructional time for teaching English and mathematics, and coverage of content of English and mathematics in teachers instruction over the year.

The main findings of the study were

- i. Majority (84) percent of the primary school teachers have low teaching qualifications and a substantial proportion (12.3%) is not at all trained. It can be argued in this regard that the preparedness of the majority of teachers to implement the content of the curriculum in English and mathematics is low.
- ii. Difficulties in teaching certain topics in the two subjects were expressed by 21 and 34 percent of the English and mathematics teachers respectively.
- iii. The schools do not have sufficient resources to deliver high level of curriculum content and also to achieve higher levels of outcomes for all students. Only 21 percent of the teachers indicated that pupils' English textbooks were available and adequate while 43 percent indicated that pupils' mathematics textbooks were available and adequate. The environment for learning mathematics and English for many Ghanaian pupils is not conducive for teachers to deliver their best and help pupils to achieve their highest potentials.
- iv. Lessons in many schools do not start early. The instructional time was often interrupted with co-curricular (or planned non-instructional) activities like, school worship, cleaning compound and classrooms, gardening, practicing sports for athletics meetings, practicing matching and cultural activities, just to mention a few.

- v. More than half of the teachers (53%) indicated they followed the timetable, but as many as 47 percent did not rigidly follow it.
- vi. About 30 percent of the teachers indicated that they were able to cover only half of the English syllabus. Only about 20 percent completed the syllabus but the majority was able to cover up to 80% of the content of the English syllabus.
- vii. About 31 percent of the teachers indicated that they were able to cover only half of the mathematics syllabus content and 21 percent indicated that they were able to cover all the content. The majority was able to cover up to nearly 80% of the content of the mathematics syllabus.
- viii. Certain topics/units were not taught by many of the teachers in the two subjects. Some of the unpopular topics in mathematics were shape and space, length, capacity and mass, decimals and percentage, investigations with numbers, time and money, collecting and handling data, chance, and area and volume. While some of the unpopular topics in English were library, story telling, drama, song, mechanical writing, poem and verse, and directions/instructions
- ix. In teaching English, the teachers gave equal attention to comprehension/reading, writing/composition and language item (grammar and structure). But nearly half of them did not give adequate attention to units in oral language (listening and speaking). In teaching of mathematics, almost all teachers taught topics in number and numeral as well as shape and space. A substantial proportion of teachers gave little attention to the other content domains – operations/algebra, measurement and handling data.
- x. Many of the teachers indicated they often or sometimes grouped their pupils by ability during mathematics and English lessons. However it was observed that classes were too large for organizing any effective group work. In about 25 percent of the classes the number of pupils in a class ranged from 31 to 40, and there were over 40 pupils in more than 40 percent of the classes.

Conclusion

It was found that the preparedness of the majority of teachers to implement the content of the curriculum in English and mathematics was low; and a substantial proportion experienced difficulties in teaching certain topics in the two subjects. The schools were also

found not to have sufficient resources to deliver high level of curriculum content and also to achieve higher levels of outcomes for all students. Textbooks, classroom furniture and teaching/learning materials were inadequate in supply. Notwithstanding, classes were too large for organizing any effective group work. There were over 40 pupils in more than 40 percent of the classes. Besides, lessons in many schools do not start early and the instructional time in the year was often interrupted with co-curricular (or planned non-instructional) activities.

As a result, that a substantial proportion of the primary school mathematics and English curricula go untaught. Some of the unpopular topics in mathematics were shape and space, length, capacity and mass, decimals and percentage, investigations with numbers, time and money, collecting and handling data, chance, and area and volume. While some of the unpopular topics in English were library, story telling, drama, song, mechanical writing, poem and verse, and directions/instructions. Another consequence of the insufficient textbooks and resources to deliver the curriculum is teachers giving little attention to units in oral language (i.e. listening and speaking) and little attention to operations/algebra, measurement and handling data in mathematics.

Though curriculum content standards are clearly defined by the syllabuses of the various subjects taught at the basic level, the study has shown that no OTL standards have been set guide the implementation of these content standards. Hence there are grave inequalities between schools in

- availability and adequacy of instructional materials,
- availability and adequacy of textbooks,
- teachers' instructional practices and management of instructional time, and
- teachers' preparedness to implement the content standards.

Recommendations

- i. The tests items for NEAs and SEAs developed for the BECAS should cover largely the critical objectives in the primary mathematics and English syllabuses which are usually taught by all teachers. This will also ensure there is match in content emphasis as well as coverage in the official curricula and what teachers actually teach.
- ii. The CRDD should be made to set opportunities to learn (OTL) standards that must be provided to promote high level of achievement for all pupils. It should indicate who should provide the resources that will be required to meet the OTL standards for teaching in basic schools. In doing so, they should make a list of resources that schools can be encouraged to acquire themselves in the implementation of the content standards and those that have to be supplied by the government.
- iii. The CRDD should also advise the MOES on issues relating policy on class sizes, INSET and continuing professional education of teachers, use of instructional time,
- iv. Textbooks that match the revised syllabuses for mathematics and science should be purchased for teachers.
- v. A quality assurance mechanism should be put in place to ensure schools meet these standards in the implementation of the content standards.

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GHANA EDUCATION SERVICE
CURRICULUM RESEARCH AND DEVELOPMENT DIVISION (CRDD)

**Survey of Basic School Contexts and Curriculum Implementation for the
Basic Education Comprehensive Assessment System (BECAS)**

PRIMARY 1 TEACHERS' QUESTIONNAIRE

Dear Teacher,

As you are aware, assessment is an integral part of teaching. The teacher must be supported to assess his or her pupils well. This questionnaire is surveying the contexts of basic schools and their curriculum implementation to inform the development of a new comprehensive assessment system for basic schools.

We will be pleased if you will complete this questionnaire to provide information for the process. Your responses will be treated with utmost confidentiality. Thank you for your cooperation.

.....

Mr. E. ACQUAYE
(DIRECTOR, CRDD)

INSTRUCTION

In each case, COMPLETE THE STATEMENT(S) and/or TICK (✓) THE APPROPRIATE OPTION.

1. SCHOOL:
2. TOWN:
3. DISTRICT:
4. REGION:
- 5a. SEX: MALE [] FEMALE []
- 5b. PROFESSIONAL'S QUALIFICATION: UNTRAINED []
CERTIFICATE 'A' [] DIPLOMA [] DEGREE (B.Ed) []
6. CLASS(ES) YOU TEACH PRESENTLY

7. NUMBER OF PUPILS IN YOUR CLASS

8. Do you usually start teaching on time? YES [] NO []

9. If NO, why do you usually start late?

.....

.....

.....

10. Tick (✓) to show whether the following inputs, which affect the teaching and learning of Mathematics and English, were **not available, available but inadequate, or available and adequate** in your class in the academic year.

CLASS INPUTS	SCALE		
	Not Available	Available But Inadequate	Available And Adequate
a) Pupils exercise books			
b) Teacher's stationery (chalk, notebook, cardboard, etc.)			
c) Pupils' Mathematics textbook(s)			
d) Pupils' English textbook(s)			
e) Pieces of pupils' mathematical drawing instruments (ruler, compasses and protractor)			
f) Classroom space			
g) Classroom furniture			
h) Resources for teaching measurement and models for work in number and shape (metre-ruler, tape measure, litter containers, weighing scale, etc.)			
i) Audio-Visual aids for teaching language (i.e. radio, TV/Video or computer)			

11. Do you have your own copy of the mathematics syllabus? YES [] NO []

12. If NO, how often do you have access to the mathematics syllabus?

- A. At the beginning of term when writing my scheme of work
- B. Only at weekends when preparing my lesson notes
- C. Any day during the week that I need it
- D. Other, Please specify.....

13. Do you have your own copy of the English syllabus? YES [] NO []

14. If NO, how often do you have access to the English syllabus?

- A. At the beginning of term when writing my scheme of work
- B. Only at weekends when preparing my lesson notes
- C. Any day during the week that I need it
- D. Other, Please specify.....

15. Do you usually follow the time table when you teach (or do you teach all subjects on the time table each day)? YES [] NO []

16. If NO, how many subjects are you able to teach each day?

17. What prevents you from teaching all subjects on the time table each day?

.....
.....
.....
.....

18. How many mathematics periods do you teach each week?

19. What proportion of the mathematics syllabus are you likely to complete by the end of the academic year? (*Please tick only one*)

- A. Below 40% []
- B. 40% to 50% []
- C. 51% to 60% []
- D. 61% to 70% []
- E. 71% to 80% []

- F. 81% to 90% []
- G. 91% to 100% []

20. How many English periods do you teach each week?

21. What proportion of the English syllabus are you likely to complete by the end of the academic year? (*Please tick only one*)

- A. Below 40% []
- B. 40% to 50% []
- C. 51% to 60% []
- D. 61% to 70% []
- E. 71% to 80% []
- F. 81% to 90% []
- G. 91% to 100% []

22. Do you have any difficulties in teaching any of the topics in Mathematics?

YES [] NO []

23. If yes, which topics in Mathematics?

.....

24. How often do you group your pupils by ability during your mathematics lessons?

USUALLY [] SOMETIMES [] NEVER []

25. Do you have any difficulties in teaching any of the Sections/Units in English?

YES [] NO []

26. If yes, which Sections/Units in English?

.....

.....

27. How often do you group your pupils by ability during your English lessons?
USUALLY [] SOMETIMES [] NEVER []

28. Below are the Sections/Units that are to be taught in Primary 1 according to the new English syllabus. Reflecting on your scheme of work and what you actually taught in the year

- i. TICK (✓) whether or not you taught the Sections/Units in the year; and
- ii. Give brief reasons why Section/Unit was not taught in the year.

SECTIONS/UNITS OF ENGLISH		TAUGHT	NOT TAUGHT	REASON WHY SECTION/UNIT WAS NOT TAUGHT
1.	Pre-reading/reading			
2.	Conversation			
3.	Grammar			
4.	Rhyme			
5.	Mechanical Writing			
6.	Story Telling			
7.	Drama			
8.	Library			

29. Below are the Units that are to be taught in Primary 1 according to the new mathematics syllabus. Reflecting on your scheme of work and what you actually taught in the year

- i. TICK (✓) whether or not you taught the Units in the year; and
- ii. Give brief reasons why the Unit was not taught in the year.

MATHEMATICS UNIT OR TOPIC		TAUGHT	NOT TAUGHT	REASON WHY TOPIC WAS NOT TAUGHT
1.	Pre-Number Work			
2.	Groups of Objects			
3.	Counting Objects			
4.	Numbers and Numerals I			
5.	Addition (Up to 5)			
6.	Solid Shapes			
7.	Number and Numerals II			
8.	Addition 6 - 9			
9.	Subtraction 0 - 9			
10.	Ten and Ones			
11.	Addition and Subtraction			
12.	Measurement of Length, Capacity and Mass			
13.	Measurement of Time and Money			
14.	Collecting and Handling Data			
15.	Addition and Subtraction of Number (0 - 99)			

THANK YOU

APPENDIX B **Some areas in which teachers had difficulties in teaching English**

Adjective	Library Mechanical writing Verse, direction and instructions
All sections, due to lack of resource books	Listening and speaking aspect
Anomalous finite (grammar)	Listening and speaking, oral aspect
Argumentative essay	Mechanical writing
Composition, reading comprehension	Mechanical writing, library
Composition	Mechanical writing, reading, library
Composition, e.g. Letter writing, poem etc	No teacher's hand book
Composition, grammar, essay and conversation	Oral, conversation
Comprehension, grammar and composition	Poem and drama
Comprehension, grammar (determines and modals)	Poem and drama because teachers feels special talent e.g. Needed for teaching
Conversation because there are no recourses for the teaching of it	Poem, song and drama
Conversation, mechanical writing	Poem, stories
Conversation, pupils are not able to form a sentence (punctuation marks)	Poem, verse directions and instructions drama
Directions/instructions	Poems, grammar, mechanical writing
Drama	Reading. Attributed to lack of readers
Drama and poetry	Rhyme, library, drama
Drama, direction and instruction	Rhyme/verse, drama
Drama, grammar, conversation	Rhyme/verse. Due to lack of TLMs to portray the scenes
Drama, library	Section 1, unit 3 and 4
Drama, listening / speaking, poems	Section 3 unit one
Drama, poems, story telling, grammar	Section 4 unit 6
Drama, song	Section 5. No library books available
Drama, writing	Song, mechanical writing,
English composition, unit 3 and unit 6	Song, poem, mechanical writing, story telling and drama
Grammar	Song, story telling, drama
Grammar and composition	Songs
Grammar because pupils find it very difficult to grasp the concept	Speech work (sounds of letters)
Grammar, composition writing	Story telling
Grammar, dictation and composition	Story telling, drama, poem conversation, verse directions and instruction
Grammar, not well explained in syllabus	Summary, advertisement
Grammar, story telling, library	Tenses
Grammar, writing and composition	The reading aspects, Textbooks not available, Unit 2
Grammar, composition and conversation	Unit 5 and 8 all under section 2
Grammar, pronunciation	Verse, directions and instructions, grammar, library
Library	Writing and composition
Library and drama	Writing, words/sounds
Library and drama	
Library, story telling	

APPENDIX C **Some areas in which teachers had difficulties in teaching Mathematics**

Areas and length	Investigation
Capacity and volume measurement of weight	Investigation with numbers
Chance	Investigation with numbers
Chance, investigation of numbers	Investigation with numbers, fractions, shapes, etc
Collecting and handling data 1 and 2	Investigation with numbers, measurement of capacity and volume
Collecting and handling data investigation with numbers	Investigation with numbers, measurement, data collection
Collecting and handling data, chance	Length
Collecting and handling data	Length and area
Data collection	Length and area, shapes measurement of capacity and mass
Data, measurement	Length, mass and capacity, area and vol.
Decimal, fractions, measurement,	Space and shape
Decimal, fractions, percentage, ratio and proportion	Long division
Decimal, fractions, percentage.	Long division and decimals
Multiplication and division	Mass capacity, time and measurement
Division and fraction	Mass under measurement
Division, fractions, and multiplication	Measurement - capacity, volume, mass, etc
Division, fractions, line segment	Measurement of capacity and mass
Division, measurement of capacity and volume	Measurement of capacity and mass
Drawing geometric figures, measurement, length, capacity etc	Measurement of capacity and volume, collecting and handling data
Fraction ii	Measurement of length
Fraction ii, geometry, graphs	Measurement of length and area
Fraction,	Measurement of length capacity mass
Fractions	Measurement of length capacity of mass
Fractions and decimals	Measurement of length, area, capacity, volume.
Fractions, collecting and handling data	Measurement of time and money.
Fractions, collecting and handling data, measurement	Measurements (weight/mass)
Fractions, division	Multiplication, fractions, measurement, graphs
Fractions, measurement place value	Number chart, large numbers mass and capacity
Geometric figures	Number plane
Geometric figures	Number plane, investigation with numbers
Geometric figures in space measurement of length to angles percentages	Number plane, shape/space
Geometric shapes	Number plane, shape/space
Geometry and estimating with numbers	Numbers + numerals 0 - 10,000
Geometry I and II and graphs	Operations
Geometry, fraction	Operations on fraction, decimal fractions and percentages
Geometry, fractions	Ratio, measurement, number plane, multiplication
Geometry, measurement and operations	Rational numbers (3)
Graphs, measurements, geometry	Shape and space 6
Integers, decimal fractions	Shape and space fractions
Integers , graphs ratio proportion, movement geometry, area, volume	Shape and space, number plane
Integers, the number plane	
Integers, the number plane	

Shapes, collecting data
 Shapes, measurement of capacity
 Shapes, space fraction, measurements
 Shapes, space. Measurement of weight time and money
 Shape and space
 Solid figures, decimals
Story problem form of questions are difficult for children. They cannot read and interpret
 Subtraction and addition, sentences involving compound expression, fractions

Subtraction and addition, sentences involving compound expression, fractions
Syllabus is different from textbook
 Tens and ones measurement of length mass capacity
 The number plane, graphs, what are the chances
Topics in the syllabus do not tally with textbooks hence difficulty
 Weight and mass

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REGION	Proportion of mathematics syllabus covered Mean	Proportion of English syllabus covered Mean
ASHANTI	3.98	3.76
BRONG AHAFO	4.67	4.13
CENTRAL	4.03	4.20
EASTERN	4.33	4.31
GREATER ACCRA	4.84	5.13
NORTHERN	4.05	4.08
UPPER EAST	3.48	3.21
UPPER WEST	4.08	3.96
VOLTA	4.29	4.26

REGION	CLASS SIZE Mean
ASHANTI	42.46
BRONG AHAFO	34.91
CENTRAL	43.24
EASTERN	35.97
GREATER ACCRA	42.67
NORTHERN	51.06
UPPER EAST	54.23
UPPER WEST	42.50
VOLTA	30.72

Report CLASS SIZE

REGION	Mean	N	Std. Deviation	Minimum	Maximum
ASHANTI	42.4574	129	12.6176	5.00	67.00
BRONG AHAFO	34.9097	144	10.1154	13.00	58.00
CENTRAL	43.2364	110	15.5167	10.00	102.00
EASTERN	35.9716	141	12.2853	12.00	75.00
GREATER ACCRA	42.6731	156	11.6984	10.00	68.00
NORTHERN	49.1869	107	18.7461	10.00	120.00
UPPER EAST	54.2292	48	17.4188	30.00	90.00
UPPER WEST	41.3095	84	22.5906	12.00	117.00
VOLTA	30.7234	141	10.9356	8.00	71.00
Total	40.2425	1060	15.4943	5.00	120.00

Report CLASS SIZE

CLASS(ES)	Mean	N	Std. Deviation	Minimum	Maximum
1.00	40.4789	190	15.6927	10.00	117.00
2.00	41.5000	176	17.6525	5.00	120.00
3.00	39.9647	170	13.7819	10.00	96.00

4.00	40.9125	160	15.6259	8.00	89.00
5.00	39.1437	167	13.9820	8.00	90.00
6.00	38.1925	161	14.0386	9.00	78.00
Total	40.0596	1024	15.2272	5.00	120.00

Class size categories

	Frequency	Percent	Valid Percent	Cumulative Percent
ValidLess than 20 pupils	99	9.3	9.3	9.3
21 to 30 pupils	198	18.6	18.7	28.0
31 to 40 pupils	262	24.6	24.7	52.7
41 to 50 pupils	276	26.0	26.0	78.8
51 to 60 pupils	145	13.6	13.7	92.5
61 to 70 pupils	41	3.9	3.9	96.3
Over 71 pupils	39	3.7	3.7	100.0
Total	1060	99.7	100.0	
MissingSystem	3	.3		
Total	1063	100.0		

Class size categories

Class(es)	Less than 20 pupils	21 to 30 pupils	31 to 40 pupils	41 to 50 pupils	51 to 60 pupils	61 to 70 pupils	Over 71 pupils	Total
Primary 1	17 8.8%	36 18.7%	41 21.2%	54 28.0%	30 15.5%	4 2.1%	11 5.7%	193 100.0%
Primary 2	17 9.3%	30 16.5%	44 24.2%	52 28.6%	21 11.5%	7 3.8%	11 6.0%	182 100.0%
Primary 3	14 7.9%	35 19.8%	45 25.4%	44 24.9%	27 15.3%	8 4.5%	4 2.3%	177 100.0%
Primary 4	17 10.2%	24 14.5%	46 27.7%	35 21.1%	28 16.9%	9 5.4%	7 4.2%	166 100.0%
Primary 5	15 8.7%	35 20.3%	41 23.8%	51 29.7%	21 12.2%	5 2.9%	4 2.3%	172 100.0%
Primary 6	19 11.2%	38 22.4%	45 26.5%	40 23.5%	18 10.6%	8 4.7%	2 1.2%	170 100.0%
Total	99 9.3%	198 18.7%	262 24.7%	276 26.0%	145 13.7%	41 3.9%	39 3.7%	1060 100.0%

	Class size (or Number of pupils in class)						
	Less than 20	21 to 30	31 to 40	41 to 50	51 to 60	61 to 70	Over 71 pupils
Primary 1	17	36	41	54	30	4	11
Primary 2	17	30	44	52	21	7	11
Primary 3	14	35	45	44	27	8	4
Primary 4	17	24	46	35	28	9	7
Primary 5	15	35	41	51	21	5	4
Primary 6	19	38	45	40	18	8	2
	99	198	262	276	145	41	39

