

NUMERACY FROM THE GHANAIAN PERSPECTIVE FOCUSING ON TEXTBOOKS

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FOREWORD

In Ghana, many workshops and in-service training have been organised for teachers on how to teach Mathematics efficiently and effectively. Unfortunately teaching and learning of mathematics continue to pose challenges to most basic school teachers. In all workshops, numeracy is considered as the backbone of Mathematics. Meanwhile numeracy is a recent concept that has different meanings for different people in different societies with different cultures.

The foregoing has necessitated the need to write about Numeracy in the viewpoint of the Ghanaian Mathematics Education.

The Ghanaian Mathematics textbooks have gone through series of reforms such as; the education Act of 1916, Act 87, the accelerated development plan for education of 1951, the education Act of 1991 (Act 87), the Kwapong report of 1967, the Dzobo committee report of 1973, The new structure and content of education of 1974, PNDC Law 42 of 1983, PNDC Law 207 of 1988, the education commission reports on basic and secondary education of 1987 and 88, University rationalization committee (URC) report of 1988, Government white paper on URC report, 1991, The 1992 constitution of Ghana, The education reforms reviews committee report of 1994, the Ghana education service Act of 1995 (Act 506) and the Free Compulsory Universal Basic Education of 1998 (FCUBE) policy document and the program of operation Ghana vision 2020. In this study the recent old textbooks and the new textbooks for lower primary (primary 1 – 3) have been compared with respect to numeracy.

In conclusion some suggestions have been made in order to make the teaching and learning of numeracy more effective and efficient. Also old textbooks and its effects on new textbooks have been considered.

EDUCATION IN GHANA

History of Education in Ghana

Formal Education in Ghana dates back to the mercantile era preceding colonization. According to historians, European merchants and missionaries set up the first schools. A formal state education structure, modelled on the British system, was set up during the colonial period. This structure has been through series of reforms since Ghana gained independence in 1957. Wide-ranging reforms in the late 1980s have brought the structure of education system closer to an American model, aiming to make education more responsive to the nation's manpower needs rather than purely academic

Post Independence Era

Since Ghana's independence, successive governments have demonstrated their recognition of the importance of education to national development by pursuing policies aimed at making education accessible to all and relevant to the social, industrial and technological development of the country. Independent Ghana's first President, Osagyefo Dr. Kwame Nkrumah, initiated the Education Act 1916, Act 87, which aimed at achieving Free Universal Primary Education. The Act endorsed the two-system of education as instituted by the British in colonial times, namely Primary and middle education, and Secondary education.

Three things of significant things are worth highlighting.

First, the Act established Local Education Authorities within communities. Thus the establishment of public basic schools therefore became the responsibility of the local authorities only.

The second important feature of the 1961 Act was the fact that it made education compulsory. Section 2(1) states that: "Every child who has attained the school-going age as determined by the Minister shall attend a course of instruction as laid down by the Minister in a school recognised for the purpose by the Minister."

A third equally important aspect of this Act was its provision for free education. Section 20(2) stipulated: "No fee, other than the payment for the provision of essential books or stationery or materials required by pupils for use in practical work, shall be charged in respect of tuition at a public primary, middle or special school.

By the end of the 1960s, the structure and content of education in Ghana largely remained a heritage of the pre-independence era, long and academic.

Public desire for change reached a high point during 1972-74, which necessitated the development in 1974 of an elaborated programme for education from kindergarten through primary and junior secondary to senior secondary schools. In 1974. However it was not implemented throughout the country but in selected communities on experimental levels. In 1983 the education system was in such a crisis that it became necessary for a serious attempt to be made to salvage it. Among the many problems of the system were: lack of educational materials, deterioration of school structures, low enrollment levels, high drop-out rates, poor educational administration and management, drastic reductions in Government's educational financing and the lack of data and statistics which can form basis for planning.

Levels of Education

The education Reform Programme launched in 1987 changed the structure of the education system from the former statutory 17 years of pre-university schooling to 12 years. This reform programme by the Ministry of Education introduced a restructured educational system that gradually replaced the British-based O-level and A-level system. The transition was completed in June 1996, when the last class took A-level exams. Educational reform affected all Ghanaian schools, public and private. The current levels of education reflect the changes brought about by the reforms.

Basic Education is the barest minimum of education that is legally mandated right of every Ghanaian child. The Basic Education Programme is designed to cover the first nine years schooling for each child. Due to present and future national requirements, it is necessary for every Ghanaian to attend primary school and have some secondary education as well. This basic education is not to train children for specific vocations or jobs. It is to give them exposure to a wide variety of ideas and skills and instill attitudes that will help them both to cope creatively with their own environment and to be assets to their country.

The age at which formal education begins is 6 years. Currently there is a 6-3-3-4 structure of education representing a 6-year Primary, 3-year Junior Secondary, 3-year senior secondary and 4-year university course. The first 9 years, namely Primary and Junior Secondary school, form Basic Education which is free and compulsory. This structure is based on policy of providing 9 years of basic education for every Ghanaian child. Under the 1987 reforms, the syllabuses for basic schools were also revised. The curriculum for primary schools comprised 9 subjects, while that of Junior secondary school comprised 12 or 13 subjects areas depending on whether the school offered French. A further review of the curriculum in 1997 reduced the number of subject to be studied at primary school to 5 and 6 at the lower and upper primary levels respectively, while the number of subjects offered at the JSS level was reduced to 9 or 10.

Primary Level

Ghanaian children enter class one (first grade) during the calendar year in which they reach their sixth birthday. For the first three years, teaching is integrated English and local languages. The majority of teachers are certified, having graduated from three-year Teacher Training Colleges (TTC). Children are taught to read in English, and all textbooks except the Ghanaian Languages textbooks are written in English (Keteku, 1999). Subjects taught in the primary schools are English language, Ghanaian languages and culture, Mathematics, Environmental studies, Religious and Moral Education and Integrated Science. Physical Education and Music and Dance are taught as physical activities. The academic year is made up three terms with each term having 40 weeks.

Junior Secondary School (JSS) Level

Junior Secondary School (JSS) comprises forms I through III (grades seven through nine). Admission is open to any student who has completed primary class six; there are no entrance examinations nationally, and JSS is part of the country's nine years Basic Education Scheme to which all Ghanaian children are entitled. The average age of students ranges from thirteen to fifteen years. Each academic year is made up of three terms. Each term consists of 14 weeks and the pupils are taught six hours a day. The majority of teachers are certified; in urban private schools, university graduates are found on teaching staffs (Keteku, 1999).

General subjects taught at this level of education include; Mathematics, General Science, English language, Agricultural Science, Environmental Studies, Religious and Moral Education, Pre-Technical Skills, Pre-Vocational Skills, Ghanaian language and Culture and French which is optional. The other subjects are taught but they are examined internally only ; are Life Skills, Music and dance and Physical Education. At the end of JSS form III (grade nine, fifteen years of age) students take the Basic Education Certificate Examination (BECE).

The BECE is administered and graded by West African Examination Council (WAEC); grading is on a descending 1-9 scale and consists of continuous Assessment grades submitted by the students' school (30%) to WAEC to be added to the BECE national examination (70%). Admission to the Senior Secondary is based exclusively on the BECE results from WEAC.

Senior Secondary School (SSS) Level

Senior Secondary School (SSS) consists of forms 1 through 3, equivalent to the American grades ten through twelve. The Ministry of Education states, "The new SSS reform has been developed in response to criticism that, in the past, this level of education has been overly academic and removed from the country's development and manpower trends. The reform includes a core curriculum to be followed by all senior secondary students along with five specialised programmes, two or more of which will be offered in each school. Students select one specialised programme within which they follow one option consisting of a package of three subjects (Keteku, 1999). The SSS curriculum comprises core and elective subjects. Every student offers the four core subjects which are English Language, Mathematics, Integrated Science (including Science and Agriculture and Environmental Studies) and Social Studies (formerly Life Skills and embracing, Economics, Geography, History and Government). In addition to the core subjects, students are required to offer at least three electives from the five specialised programmes. These programmes include Agriculture programme, General programme (Arts or Science options), Business programme, Vocational programme and Technical programme.

At the end of SSS form 3 (twelfth grade), all students take the Senior Secondary School Certificate Examinations (SSSCE). The scale of A through F with A-E as passing grades.

Tertiary Level

Higher education in Ghana is provided by Universities, University Colleges, Polytechnics and Pre-service Training Institutes. All institutions of higher education fall under the jurisdiction of National Council for Tertiary Education, which is administered by the Ministry of Education. Entrance requirements for Bachelor degree programs were five credits at "O" level, plus two or three "A" levels under the old system. For the current SSS system, the requirements are five credits (three core plus two electives) at the SSSCE.

For entrance to Ghana's five public Universities, priority consideration is given to students who have completed general Arts and Science programmes. The Universities hold a separate University entrance exams emphasising on verbal and quantitative reasoning skills. The trend of Universities education is Science 60% and Humanities 40%. The same trend is observed in Polytechnics, that is, Science 60% and Management/Business 4

NUMERACY

Numeracy is being incorporated into the Ghana's Educational Curriculum in order to develop individuals who can cope with everyday life, which demands the use of mathematical concepts like how to compute, measure, estimate and interpret mathematical data. Numeracy strengthens students' learning in all school subjects through providing them with grounded understanding of the quantitative aspects of each subject.

Definition

Numeracy is a recent concept that has different meanings for different people (Stephens, 2005). According to Crowther Report (1959), as quoted by Stephens in a handout presented at the Second International Education Cooperation Symposium, Tokyo (2005), the term numeracy first occurred in England. Steptens went on to quoted the Cockcroft Report (1982), as redefining numeracy as the skills and dispositions needed by ordinary people in work and daily life.

Bishop, A. J. (2005), states that numeracy is being defined in different ways:

- as part of mathematics, often simple or basic arithmetic
- as far more than just arithmetic
- as linked to literacy rather mathematics
- as mathematical literacy
- as quantitative numeracy

According to Lim-Teo, S. K. (2005), numeracy is

- the ability to use "mathematical facts, skills, processes and applications essential to daily living and work.
- Mathematical proficiency – competence in knowledge of mathematics and in thinking mathematically.

Numeracy can be described as the knowledge, skills and appreciation needed for students to understand and utilise mathematical ideas, techniques and applications. Numeracy involves students in integrating such skills as interpreting quantitative information, performing straightforward calculations mentally, estimating values that are known and unknown, and developing an intuitive knowledge of measurement units.

Rationale

Numeracy in Ghana's curriculum is justified by the demands of modern life (i.e. both within and outside the educational institutions). Mathematics at the primary level in Ghana emphasizes knowledge and skills that will help the pupil to develop the foundation for numeracy. The pupils are expected to be able to read and use numbers competently, reason logically, solve problems and communicate mathematical ideas effectively to other people. Everyday activities like counting objects and money, reading clock and comparing prices of market products before buying exhibit the use of numeracy. People tend to select techniques according to number criteria; such as the purpose of calculation, the degree of precision and accuracy needed, the size and types of numbers, and helpful contextual cues in the environment.

In Ghana, the curriculum includes not only the topics or contents and activities, which are taught but also the whole educational experience of pupils inside and outside the classroom and the school environment. The primary school syllabus is designed to put a great deal of emphasis on the development and use of basic mathematical knowledge and skills. The major areas of content covered in all the six classes of primary school are as follows:

- Number
- Shape and Space
- Measurement
- Collecting and Handling Data
- Problem Solving
- Investigation with numbers (number patterns)

The basic mathematics syllabus spells out three main profile dimensions. These are Knowledge, Understanding and Application. Knowledge constitutes the lowest level of teaching, learning and assessment whilst Application constitutes the highest level. The specified dimensions for teaching, learning and assessment are arranged into two as follows:

	Primary 1-3	Primary 4-6
Knowledge and understanding	40%	30%
Application of knowledge	60%	70%

A table of specification is used to set test items. This is also known as tests plan or test blue print.

To make the teaching of mathematics effective, in Ghana, various good practices of a mathematics teacher have been taught in workshops. These are:

- Development of generic skills
- Group work
- Preparation and use of Teaching Learning Materials (TLMs)
- Preparation of scheme of work
- Lesson planning
- Good communication skills
- Teacher should serve as a guide and facilitator
- Teaching from concrete through semi-concrete to abstract
- Word story problems should be related to pupil's environment
- The use of the principle of multiple embodiment
- The use of correct mathematical languages/terms
- The use of mathematical puzzles and games
- Considering gender issues when teaching
- Assignments for evaluation
- Preparation of marking schemes
- Consulting colleagues for information when and where necessary
- Marking of pupils exercises promptly
- Guiding pupils to make corrections and marking them.

In evaluating mathematics it is recommended that most of the evaluations must be applications related to pupil's environment. Example, in evaluating a lesson on addition, a question like "how much does Abu pays for 2 pens and 3 pencils if a pen cost ₵200 and a pencil cost ₵100?" may be asked. The teacher is supposed to test and analyse the raw score based on the class average mark into the following categories:

- below class average
- class average
- above class average

This kind of raw score is needed for the teacher to be able to know the level of his/her pupils by their performance and the kind of special attention they require if necessary. Since there are individual differences, children may not be performing at the same rate, so questions should be set to give room for all the levels pupils belong in the class.

Mathematics teachers will continue to be primarily responsible for developing an understanding of mathematical concepts, rules, principles, relationships and procedures, but Numeracy must also be supported in other subject areas. Almost all subjects can include some meaningful opportunities for students to apply mathematical knowledge. Most students in the basic schools learn best if they are involved in meaningful activities that require the use of manipulative materials. Second cycle students also benefit from hands-on experiences with instruments and tools. A great deal of discussion and work with concrete materials should precede any introduction of symbolic abstractions.

The general aims of mathematics in Ghana are:

1. Children should be introduced to mathematics instead of arithmetic.
2. Mathematics is a medium of communication.
3. At the early stages, mathematics should be related to the child's own environment through appropriate experiences in the development of the relevant concepts.
4. Different procedures in solving mathematical problems are necessary and should be encouraged.
5. Individual children will achieve mastery of fundamental mathematical concepts and facts at different rates.

There are also two main objectives of the primary mathematics syllabus:

1. To develop the basic idea of sets, relations and objectives.
2. To develop the basic physical and geometrical ideas and relationships about shapes.

Language Issues in Relation to Numeracy

Mathematical knowledge is transmitted, explored and advanced through language: face-to-face, in printed text, and in other media. Children and their teachers write, read, talk and listen to mathematics. In the diverse contexts of mathematical communication and instruction, language can help the pupil gain insight, yet can serve also to obscure and impede the learning process. Language in mathematical education presents current perspective and reviews the key issues that are attracting the attention worldwide of researchers and educators involved in mathematical development and teaching. It brings together in one volume important work from an international array of specialists in this growing field.

Mathematics education begins and proceeds in language, it advances or stumbles because of language, and its outcomes are often assessed in language. From the outset, children's first experiences of mathematical task of any level are mediated by language. However it is important to bear in mind that language itself is something which children are learning, and which presents enormous challenges in its own right. Children in many cultures, which Ghana is no exception are exposed to number words and are encouraged to learn them from the early age through language. One principal function of language is to transmit meaning. One of the principal problems of language in mathematics is that the meanings to be conveyed are often complex, and the words we use to convey them are often endowed with other meanings, meanings which may be more familiar to children in everyday language.

A large number of new words are introduced to pupils in maths lessons and texts and there is evidence that many children experience difficulties with them. Many maths teachers are familiar with the fact that the vocabulary of mathematics includes a lot of words, which have multiple meanings and there is evidence that pupils often fail to interpret the words as the teachers intend them. Many mathematical tasks related to numeracy are presented to children as word problems. In a typical example, two or more related pieces of information are presented and the child's task is to supply a missing number by performing the appropriate mathematical operations.

Language always pose problems for pupils and their teachers in the mathematics classroom to develop the idea of numeracy. It is even worse in countries where a second language is used in teaching rather than the first or native language. Ghana for example uses English language (the official language) in teaching rather than the numerous Ghanaian languages. This makes it clear that in the Ghanaian mathematics classroom pupils are learning two things at a time; one the mathematical concepts and two the language involved. Some mathematics educators in the country are of the view that mathematics, especially, numeracy in the lower primary should be

taught in the local language (L1) since numeracy is treated as the foundation of one's ability to exhibit mathematical skill. Others also argue that using L1 at the lower primary for teaching mathematics will create a problem for both teachers and pupils at the 4th grade, that is changing from L1 to L2 (English language). In view of this most educators are of the opinion that using both L1 and L2 at the lower primary will be more appropriate. This means using both local and English languages to teach mathematics. Although the medium of instruction is English, it is advisable for teachers to use the local language to explain difficult terms for pupils to comprehend at the lower primary. This makes it difficult for the Ghanaian child in the learning of mathematics and hence affects performance.

The writer is always of the view that using both languages in teaching mathematics to develop the concept of numeracy is the best but most vocabularies should be explained well in the local language for pupils to understand before using the English language to teach the concepts involved. The fact is that the language of mathematics often is demanding and ambiguous – pupils have ultimately to come to terms with this reality rather than to avoid it. Language is critical to many of the processes of learning and instruction, and it confers many benefits in terms of enabling us to articulate, objectify and discuss the problems, which the field of mathematics presents. Yet language brings its own rules and demands, which are not always in perfect correspondence with the rules and demands of mathematics; it presents ambiguities and inconsistencies, it can mislead and confuse. Children are developing their linguistic abilities and mathematical competencies, and the relationships between them are not constants but are subject to intra- and inter- individual differences.

Gender Issues in Relation to Numeracy

Gender issues are considered as the discrimination against either the female or the male. In most cases people discriminate against the female in technically inclined subjects such as science, mathematics and technology. This is a very sensitive area in Ghana where the female is regarded as the weaker vessel in the field of mathematics. This makes the female dislike the subject and hence low participation and poor performance.

Wertheim (1995), as quoted by Wayne Hoffman in an article "Females and Mathematics" claims that throughout history, men would isolate themselves in places where women could not go thus increasing the knowledge gap between the sexes. There is a continued belief by some that the anatomy of a man's brain is more naturally in sync with mathematical and scientific skills. And that women's' right hemisphere of the brain makes them unable to visualize spatial relationships (Fox-Keller, 1985). If all of this were true (which it is not), there would indeed be merit in the myth. The problem is that there is a long history of this type of thinking and a short history of support for female mathematical prowess.

The following are some causes for gender issues in relation to numeracy:

- Lack of role models: - Mathematics instructors are mostly males, who do not serve as role models for the female gender.
- Peer Influence: - Some girls have the notion that mathematics is not something girls do so they do not have the desire to pursue the study of mathematics. These girls adversely have influence on others.
- Family and Social background: - Most Ghanaians believe that women are not as good at mathematics as men are and therefore think that to support women in numeracy is just waste of resources so they feel reluctant to support girls in numeracy.
- Lack of girl friendly learning environment: - The textbooks, for example, portray boys' involvement in mathematical activities than girls.
- Some people also argue that numeracy belong to the psychic realm, which is a masculine element, and that studying them requires leaving the body, which is the female element, behind. Women who do well in mathematics are, therefore, given names such as "iron lady", "Yaa Asantewaa" or "a witch".
- Low level of awareness concerning appropriate and supportive gender sensitive teaching methods by mathematics teachers.
- Girls are mostly ridiculed by their male counterpart whenever they (girls) make mistake in class. This results in low participation rate of girls in mathematical activities.
- Lack of motivation from teachers, parents and the society in general.

Teaching/Learning Materials:

Marbles, pebbles, empty containers, bottle tops, sticks, Cuisenaire rods, square papers, addition and multiplication charts, abacus, Dennis multi-based block, bundling sticks and loose ones are considered as teaching/learning materials.

THE RECENT OLD TEXTBOOK AND NEW TEXTBOOK FOR GHANA LOWER PRIMARY (GRADES 1-3)

The tables 1 and 2 below show the lists of topics in the old and new textbook for first grade Mathematics in Ghana.

OLD GHANA MATHEMATICS SERIES PUPIL'S BOOK 1 CONTENT

UNIT	TOPICS
1	Sets
2	Matching Sets
3	Ordering Sets
4	Ordering Sets
5	Sets which Match Exactly
6	Counting Things
7	The Empty Set
8	Numbers and Numerals
9	Writing Numerals
10	Putting Sets Together
11	Addition
12	Number Sentences
13	Numbers: 6 to 10
14	Addition
15	Subtraction
16	Tens and Ones
17	Money
18	Shapes
19	The Number Line
20	Length
21	Order
22	The Hundred Chart
23	Large Numbers
24	Fractions
25	Mass
26	Capacity
27	Time
28	Shopping
29	Counting On
30	More Addition and Subtraction

Table 1: - List of topics in the old Ghanaian Textbook

NEW PRIMARY MATHEMATICS PUPILS BOOK 1 CONTENT

UNIT	TOPICS
1	Pre -Number Work
2	Groups of Objects
3	Counting Objects
4	Numbers and Numerals up to 5
5	Addition Sums up to 5
6	Solid Shapes
7	Numbers and Numerals up to 9
8	Addition Sums up to 9
9	Subtraction, Numbers less than 10
10	Tens and Ones
11	Addition and Subtraction
12	Length, Capacity and Mass
13	Time and Money
14	Data
15	Addition and Subtraction 0 to 99

Table 2: - List of topics in the new Ghanaian Textbook

The tables 5 and 6 above reveal some difference and similarities in the topics for Ghanaian old and new textbooks. It could be deduced that sets, matching of sets and ordering of sets, which were used to prepare children's mind towards the actual number work in the old textbook, has been changed to pre- number work, groups of objects in the new textbook. After these activities, counting of objects or things follow in both books before the actual number work.

A more detailed difference in the topics as appeared in the Ghanaian old and new textbooks are listed in table 3 below.

Differences

OLD	NEW
Sets Matching Sets Ordering Sets Sets which Match Exactly The Empty Set Writing Numerals Putting Sets Together Number Sentences Numbers 6 to 10 The Number Line The Hundred Chart Large Numbers Fractions Shopping Counting On	Pre-Number Work Groups of Objects Numbers and Numerals up to 5 Data

Table 3: - Differences in the topics found in the Ghanaian old and new 1st grade Mathematics Textbooks

The topics, which are found in the Ghanaian old textbook but not in the new textbook, are listed in the left column of the table. On the other hand, the topics in the new textbooks, which are not in the old textbook, are given in the right column. The old textbook emphasis on sets while the new textbook related the teaching to real life situation as introduction.

In spite of the numerous differences in the topics, there are some similarities. This can be seen in table 4 below.

Similarities

OLD	NEW
Counting Things Numbers and Numerals Addition Addition Subtraction Tens and Ones Money Shapes Length Mass Capacity Time More Addition and Subtraction	Counting Objects Numbers and Numerals up to 5 Addition Sums up to 5 Addition Sums up to 9 Subtraction, Numbers less than 10 Tens and Ones Time and Money Solid Shapes Length, Capacity and Mass Data Addition and Subtraction 0 to 99

Table 4: - Similarities in the topics found in both the old and new Ghanaian first grade textbooks

Table 4 above displays some clear cutout. As these topics are used to introduce most mathematics concepts to pupils at this early age, they involve a lot of activities, which make pupils more interested in the lessons. For example counting of either things or objects as they appear in both textbooks does not matter but what is important is what they put across. That is, it is preparing pupils' mind towards the actual number work.

The tables 5 and 6 below show the lists of topics in the old and new textbook for second grade Mathematics in Ghana.

**OLD
GHANA MATHEMATICS
SERIES BOOK 2
CONTENT**

UNIT	TOPIC
1	Numbers 0 to 100
2	Addition
3	Subtraction
4	Geometry I
5	Addition / Subtraction I
6	Fractions I
7	Mass, Capacity, Time
8	Money
9	Geometry II
10	Numbers 0 to 1000
11	Addition / Subtraction II
12	Multiplication
13	Fractions II
14	Division
15	Measurement

Table 5: - List of topics in the old Ghanaian Textbook

**NEW
PRIMARY MATHEMATICS
PUPIL'S BOOK 2
CONTENT**

UNIT	TOPIC
1	Numbers and Numerals 0 to 100
2	Addition, sums up to 18
3	Subtraction, numbers less than 19
4	Numbers and Numerals, 0 to 1000 Length, Capacity and Weight
5	Addition, sums 0 to 99
6	Subtraction, Numbers less than 100
7	Fractions Time and Money
8	Addition, sums 0 to 999
9	Subtraction, Numbers less than 1000
10	Multiplication
11	Division Collecting and Handling Data
12	Plane Shapes
13	
14	
15	

Table 6: - List of topics in the new Ghanaian Textbooks

The tables 5 and 6 above reveal some difference and similarities in the topics for Ghanaian old and new textbooks. It could be deduced that topics such as geometry and fractions have subdivisions I and II in the old textbook but not in the new textbook. The new textbook has it as fractions and plane shapes.

A more detailed difference in the topics as appeared in the Ghanaian old and new textbooks are listed in table 7 below.

Differences

OLD	NEW
Geometry I Fractions I Mass, Capacity, Time Money Geometry II Fractions II Measurement	Length, Capacity, and Weight Fractions Time and Money Collecting and Handling Data Plane Shapes

Table 7: - Differences in the topics found in the Ghanaian old and new 2nd grade Mathematics Textbooks

The topics, which are found in the Ghanaian old textbook but not in the new textbook, are listed in the left column of the table. On the other hand, the topics in the new textbooks, which are not in the old textbook, are given in the right column. Measurement abroad topic as it is the old textbook named it measurement but just treated length but the new textbook grouped them into subtopics as time, money, capacity, length and weight. In spite of the differences in the topics, there are some similarities. This can be seen in table 8 below.

Similarities

OLD	NEW
Numbers 0 to 100	Numbers and Numerals 0 to 100
Addition	Addition, Sums up to 18
Subtraction	Subtraction, Numbers less than 19
Addition / Subtraction I	Numbers and Numerals 0 to 1000
Numbers 0 to 1000	Addition, Sums 0 to 999
Addition / Subtraction II	Subtraction, Numbers less than 1000
Multiplication	Multiplication
Division	Division

Table 8: - Similarities in the topics found in both the old and new Ghanaian second grade textbooks

These similarities in both textbooks may be having different names but the contents involved are almost the same. The new textbook has some specifications on addition and subtraction while the old textbook is silent on that, for example in the new textbook it says addition, sums up to 18 and the old textbook says addition.

The tables 9 and 10 below show the lists of topics in the old and new textbook for third grade Mathematics in Ghana.

OLD GHANA MATHEMATICS SERIES PUPIL'S BOOK 3 CONTENT

UNIT	TOPIC
1	Sets and Numbers
2	Operations on Sets
3	Multiplication/ Division I
4	Fractions I
5	Measurement
6	Geometry I
7	Operations
8	Addition / Subtraction
9	Multiplication/ Division II
10	Fractions II
11	Geometry II
12	Multiplication/ Division III
13	Fractions III
14	Graphs

Table 9: - List of topics in the old Ghanaian Textbook

NEW PRIMARY MATHEMATICS PUPIL'S BOOK 3 CONTENT

UNIT	TOPIC
1	Numbers and Numerals
2	Addition and Subtraction
3	Length and Area
4	Fractions I
5	Collecting and Handling Data
6	Capacity, and Weight
7	Multiplication
8	Division
9	Shapes
10	Time and Money
11	Fractions II
12	Revision Pages

Table 10: - List of topics in the new Ghanaian Textbooks

The tables 9 and 10 above reveal some difference and similarities in the topics for Ghanaian old and new textbooks. It could be deduced that there are a lot of similarities in the third grade textbooks than the differences. The old textbook concentrate more on sets but this is lacking in the new textbook. Some of the topics have different names but the content is the same that they talk about the same thing. These differences can be seen in table 11 and the similarities in table 12 below respectively.

Differences

OLD	NEW
Sets and Numbers	Numbers and Numerals
Operations on Sets	Revision Pages
Operations	

Table 11: - Differences in the topics found in the Ghanaian old and new 2nd grade Mathematics Textbooks

The topics, which are found in the Ghanaian old textbook but not in the new textbook, are listed in the left column of the table. On the other hand, the topics in the new textbooks, which are not in the old textbook, are given in the right column. The new textbook emphasised on revision while the old textbook is silent about it.

This does not mean there are no revision exercises for pupils in the old textbook but rather it did not summarise all the exercises in pages.

Although there are few differences in the topics, there are numerous similarities. This can be seen in table 12 below.

Similarities

OLD	NEW
Fractions I	Fractions I
Addition / Subtraction	Addition/ Subtraction
Measurement	Length and Area
Multiplication/ Division I	Capacity, and Weight
Geometry I	Multiplication
Multiplication/ Division II	Division
Fractions II	Shapes
Geometry II	Time and Money
Multiplication/ Division III	Fractions II
Fractions III	Collecting and Handling Data
Graphs	

Table 12: - Similarities in the topics found in both the old and new Ghanaian third grades textbooks

Table 12 above shows a lot of similarities that exist between the old and the new textbooks for grade 3. Although some topics have subdivisions I and II or I, II and III they talk about the same thing in both textbooks. Measurement as it appears in the old textbook is broken down into length, area, capacity, weight, time and money in the new textbook. Also geometry in the old is termed shapes in the new.

CONCLUSION

In this article, the numeracy in the viewpoint of the Ghanaian Mathematics Education focusing on the recent old textbooks and the new textbooks for lower primary (primary 1 – 3) has been discussed. The new and old textbooks have been analysed and some similarities as well as differences have been presented. From the study it could be deduced that some topics have similar content while others are different in content. Some topics have different names as well as content while others have different names but the same content in both textbooks. For example sets, matching of sets and ordering of sets, which were used to prepare children's mind towards the actual number work in the old textbook, has been changed to pre- number work, groups of objects in the new textbook. Also the new textbook has some specifications on addition and subtraction while the old textbook is silent on that, such as, the new textbook says addition, sums up to 18 and the old textbook says addition. Although some topics have subdivisions I and II or I, II and III they talk about the same things in both textbooks Measurement as it appears in the old textbook is broken down into length, area, capacity, weight, time and money in the new textbook.

Furthermore, a brief history of education and the current education system in Ghana has been discussed. Along with these, two other important issues: language issues and gender issues in relation to numeracy have been presented in this study.

From this study, the following suggestions should be considered in order to make the teaching and learning of numeracy more effective and efficient:

- workshops and symposia should be organised for basic school mathematics teachers on strategies and practices for promoting numeracy in Ghana;
- gender issues should be well addressed to encourage more girls to develop interest in numeracy;
- learning in the content areas should promote the ability of students to function effectively in quantitative situations;
- students require opportunities to encounter, solve and discuss real-life experiences utilising quantitative information in all of the required areas of study and other school subjects;
- it is important to develop students' intuitive knowledge of mathematical concepts and techniques through practical experiences involving a variety of concrete materials.
- consideration should be given to the old textbook whenever there is a change in textbooks
- the old and new textbooks should have some topics with same content and in context too.
- new textbooks should not portray the idea that the old textbook was bad, but rather need to reform to meet the developmental needs of the country.

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