

Functionality of Literacy and Numeracy in First Cycle Primary School: A Look in to the Curriculum and Instructional Process

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ARTICLE INFO

Article history

Received: May 16, 2022

Accepted: July 27, 2022

Published: July 31, 2022

Volume: 10 Issue: 3

Conflicts of interest: None

Funding: None

ABSTRACT

This article examines the functionality of literacy and numeracy in Addis Ababa city administration. Case study research design was employed and data were collected from 8 actual teachers via interview. Besides, classroom observation and content analysis were employed. The finding revealed that on average 65(59.88%) of mathematics students' textbook had at least one picture or symbol. Also, 182(44.86%) of activities, examples and question incorporated in the textbooks related with the life of the students. On the other hand, on average 60 (43.02%) of English textbook incorporated at least one picture or symbol. The finding also revealed that 272 (64.61%) of activities and examples, and 19 (63.0%) of stories, poems, songs, and passages included in the English textbooks related with the life of the students. The functionality of the textbooks was average but the instructional methods require improvement.

Key words: Functionality, Literacy, Numeracy, Curriculum, Instructional Process

BACKGROUND

Education, specific to this article, reading, writing and arithmetic or "3R" is the right for children and a basic obligation for the government (NIAO, 2013)¹. Literacy and Numeracy (L&N)² are the foundation for later education success and self-advancement in life (NIAO, 2013; AMET, 2009)³, enlighten citizens and reduce the cycle of poverty (Osekhebhen, 2017), and are vital to improve children ability to participate fully in education and the community (AMET, 2009).

UNESCO define literacy as "the ability to identify, understand, interpret, create, communicate and compute, using printed and written materials associated with varying contexts...enable an individual to achieve his or her goals, to develop his or her knowledge and potential, and to participate fully in the wider society" (UNESCO, 2003, p. 5 as cited in Ruzlan et al., 2016). Similarly, ADEETYA⁴, in Meiers et al. (2006) define literacy is "ability to read and use written information, to write appropriately, in a range of contexts, for many different purposes and to communicate with a variety of audiences" (p. 2006). The integration of reading and writing with speaking, listening, viewing and critical thinking would constitute the valued aspects of literacy in modern life. From the above definition we can infer that functional literacy enable to achieve individual goals, participating fully in the workplace and in the wider community.

On the other hand, SVDET⁵ (2017) define numeracy as "knowledge, skills, behaviors and dispositions that students need in order to use mathematics in a wide range of

situations" (p. 6). According to Johnston (2012) numeracy is the "skills students need to understand about the role of mathematics in the world and apply mathematical knowledge and skills in their personal, social and work circumstances that are constructive and meaningful" (p. 15). Also, ADEETYA (as cited in Meiers et al., 2006) notes numeracy as "development of students' mathematical knowledge, skills and understanding, and the fostering of students' learning..." (p. 2006). To NIAO (2013), numeracy is the "effective use of mathematics to meet the general demands of life at school, home, work, and participation in the community" (p. 23). Askew et al. (1997) view numeracy as an "ability to process, communicate and interpret numerical data in a variety of contexts" (p. 33). Therefore, functional numeracy means the application or utilization of mathematical skill in their personal, social and work environment to enhance their life. The intention of this study was to examine the functionality of literacy and numeracy in Ethiopia with particular emphasis to the curriculum and instructional process.

Statement of the Problem

There is a debate on the nature and significance of L&N (Chapman & Lee, 1990). Indeed in the rapid emergence of "knowledge societies", being literate adds value to an individual's life (Meiers et al., 2006). Effective L&N skills in early grade may contribute to stay in schooling, have positive effect on self-confidence, productivity, wage, ability and

help to lead healthy life (NIAO, 2013; Ruzlan et al., 2016; SVDET, 2017). In contrary, if any country is unable to achieve L&N skills. They may not “liberate their people from the cycle of poverty, crime, poor health, poor educational attainment, unemployment and consequently poorest families” (NIAO, 2013, p. 10).

Children’s acquisition of early academic competencies such as reading and mathematics is “critical in the long-term development of their academic and career success” (Jordan, Hanich, & Uberti; National Early Literacy Panel [NELP]; National Research Council [NRC]; Snow et al., as cited in David & Amy, 2015, p. 197). Yet, recent expansion of primary school enrolment in low and middle income countries appears to have been at the cost of performance of children in standard L&N tests and numeracy has “by-and-large not improved” (Craig & Guzmán, 2018, p. 1). This is because “weak or misdirected mathematics education that does not value nor understand the benefits of numeracy...” (Craig & Guzmán, 2018, p. 1). Besides, children who come from economically, socially and politically disadvantage communities are significantly experiences difficulties in L&N. The problem is associated with “poverty, poorer health and other factor “(Irish Department of Education and Skill [IDES]⁶, 2011, p. 9). Thus, it is important to investigate the prospect and challenges of numeracy (Craig & Guzmán, 2018) education in Ethiopia.

In Ethiopian, many children and young people are not achieving well in L&N in first cycle primary schools. In 2010, an EGRA⁷ study revealed that children were not developing the basic skills required to learn effectively in later years. For example, 34% of grade 2 students were unable to read a single word of a grade-level relevant story; 48% were unable to answer a single comprehension question on a reading test; and only 5% were able to reach 60 words per minute in reading fluency (the then expected standard)⁸ (ESDP V, 2015, p. 19). The problem is not confined to Ethiopia, many children in sub-Saharan Africa completed primary education without attaining the minimum proficiency in L&N (World Bank, 2004).

Literacy in general and the teaching of reading in particular are huge area of research (Wragg et al., 2005). It is critical to ask why a student in primary school does not achieve the required proficiency in L&N. Is it the problem of the curriculum or the instructional process? Besides, identifying the problem is one step for solution and makes easy the intervention process of policy makers and program implementers. In fact, there are several studies concerning primary education in Ethiopia but most of these studies mainly focused on schooling, enrollment, gender inequality, and teacher efficiency (Osekhebhen, 2017). None of them examined the functionality of L&N. Hence, the purpose of this case study was to examine the functionality of literacy and numeracy in Ethiopia with specific emphasis to the national curriculum practices in the real classroom setting.

Basic Research Questions

To achieve the intended purpose the following basic research questions were designed:

1. To what extent does student text book for grades 1-4 promote quality L & N?
2. To what extent the instructional process are appropriate to achieve L & N skills?
3. What are the major challenges that affect the functionality of L & N?

Limitation of the Study

This study was not free from limitations. The data were collected from limited respondents and scope (Addis Ababa city administrations), thus, it may not be appropriate to generalize based on the major finding. Besides, in this study the voice of the learners were not considered. Therefore, the researcher recommends the national and regional government of Ethiopia to conduct extensive research and intervention to reinvigorate the functionality of literacy and numeracy in primary schools.

Curriculum Functionality and Instructional Process

Literacy & Numeracy skills are essential to the whole curriculum and used in various text and context (Bayader et al., 2013). Functional L & N curriculum improves children’s accuracy, problem solving and critical thinking skills (Bayader et al., 2013). To achieve these, L&N curriculum would define the knowledge, skills and attitudes that expect from children to acquire. It may be difficult to include everything desirable in L&N curriculum. It would be realistic and include issues such as *social and life skills, environmental issues, art and music education, scientific understanding, and numeracy in text book* (IDES, 2011). The curriculum has to state clearly the “skills and competences expected of learners” (IDES, p. 44).

Functional mathematics is about connecting teaching and curriculum in to ‘real world’ applications (Tout et al., 2006). The curriculum are designed specifically to meet either the technical or problem solving needs of the contemporary workforce or the modern demands of active citizenship (Forman & Steen in Tout et al., 2006). Despite the functionality in many countries, there are recurring periods of national concern about the low standards of numeracy skills shown by children in primary (elementary) schools (Askew et al., 1992).

In sub-Saharan Africa, reasonable numbers of children graduate from primary schools without attaining literacy skills (Bayader, 2013). Insufficient L&N teaching practice is a common difficulty that seriously affects later education in developing countries (Alcock et al., 2000). The quality of teaching and teacher is widely determines student achievement. There is a need to continue to strengthen teachers’ knowledge and skills about how students acquire and develop proficiency in L&N (AMET, 2009; Ruzlan et al., 2016). Besides, scholars suggest various teaching strategies to enhance L&N in early grads. According to Morrow et al. (p. 22 as cited in Mussa & Vicent, 2016) there are ten evidence based practice for literacy instruction these are: *authentic reading* (meaning- making purpose); *appropriate scaffolding*; time for self-selected reading; collaborative learning;

balanced teacher and student led discussion; *using technology; using multiple text; create culture that foster literacy motivation; provide high-quality literature; and differentiated instruction*. The US National Reading Panel (2015) reported that effective literacy instruction strategies integrate awareness; systematic phonics instruction; teaching approaches that support pupil's fluency and finally teaching that enhances pupil's comprehension. In addition, Roskos et al. (2003, pp. 53-55) identified eight literacy teaching techniques such as: *rich teacher talk* (discussion using uncommon words); *storybook reading*; *alphabet activity* (engage children); *support for emergent reading* (familiarize children with new book); *support for emergent writing* (encourage children to use new form of writing); *shared book experience*; and *integrated content focused activities*. More importantly, teaching L&N skills requires positive attitude and motivation (IDES, 2011). Besides, Ollerton (2010) argued that "Mathematics is intrinsically a problem-solving discipline: it has been constructed in order to make sense of the social, physical and economic world" (p. 88).

Primary Education in Ethiopia

The Goals of Primary Education are: "provide basic education, which is appropriate to the physical and cognitive development of the learners; acquaint the learners with the production and service giving activities within their immediate environment; and prepares the learners for further education and training and for the world of work; by equipping them with basic knowledge, skills and abilities and attitudes" (IDES, 2011, p. 13). These goals are congruent with the goals of primary education in Ethiopia. To achieve these goals in Ethiopian public primary school curriculum six subject areas such as aesthetics, languages, mother tongue, mathematics, natural sciences and social sciences were selected (MoE, 2009). Despite the government has the authority to control the curriculum, more than six subjects has been giving in private primary schools. The subject offered at this level (grade1-4), stated in Table 1.

In Grades 1–4, the time allotted for languages, Mathematics and Environmental Science more than others. Students begin learning their mother tongue from birth and formally given beginning from Grade 1. They begin learning English in Grade 1. In Grade 3 and 5, they also begin to learn Amharic (only for non-Amharic speaker), variations exist

Table 1. Time allocated per week

Subject	1	2	3	4
• Amharic			3	3
• Arts & Physical Education	6	6	4	4
• English	6	6	5	5
• Environmental Science	7	7	7	7
• Mathematics	6	6	6	6
• Mother Tongue	5	5	5	5
Time allotted per week	30	30	30	30

There is variation of number of periods allocated to each subject per week across regions and even from school to school. There is a variation also in half day and full day schools

across regions and the teaching of all three languages continues through to Grade 8. For many political and historical reasons, Amharic serves as the Federal government working language and also serves as a lingua franca. Students learn Mathematics and obtain knowledge through thinking and reasoning and help to make sense of the world around them (MoE, 2009). The subject stated above reasonably similar with the Scottish curriculum. They divided their curriculum into five broad areas: "language, mathematics, environmental studies, expressive arts, and religious and moral education" (Hayes, 2006, p. 48). In fact since 1987 in Ethiopia religion and moral education subjected to church and mosque education. This may affect the moral development of the children and its contributions for formal educations.

Conceptual Framework of the study

Literacy and numeracy education is "core in quality learning across all phases of schooling and curriculum areas" (Claire & John, 2011, p. 1). One of the most influential theorists Le Vygotsky (1896-1934) claimed in his sociocultural perspectives of learning that language and participation in social interaction develop knowledge (Solberg, 2017). His work transformed our understanding of learning in "early childhood, language and literacy learning" (Larson & Jackie, 2005, p. 104). He argued that "children learn to read by reading and to write by writing, with the assistance of an expert" (Larson & Jackie, 2005). Literacy learning exists in a dynamic interaction and relation between thought and language. Literacy learning is not free from discourse. Scholars like Mills (as cited in Stephanie Wyatt-Smith, 2011, pp. 25-28) offered some clarity on three binary oppositions that exemplify the continuing major debates: (1) *the skills-based vs whole-language debate*; (2) *the exclusively print-based approach vs multi-literacies* & (3) *the opposition between the cultural-heritage model of English and the sociocultural models of language and literacy education*. These show how researchable literacy education.

The sociocultural perspective is view literacy as a social practice. Similarly, sociocultural theory of learning considered numeracy as social practice. Mathematics social theory (sociology of mathematics and critical perspective on mathematics education) is drawn from the philosophy of mathematics (Baker et al., 2005). The social turn in mathematics education shifted from psychological to sociological perspective (Coben et al. as cited in Baker et al., 2005). That is to say that mathematics, as with all forms of knowledge is itself socially constructed (Baker et al., 2005). According to Street, and Tomlin in Craig and Guzmán (2018) argued that social practice theories of numeracy expose the existence of four dimensions to numeracy: *content, context, values and beliefs*, and *social and institutional* relations. This article used the above theoretical perspectives to establish the conceptual framework for this study.

As numeracy is the ability to access, interpret and communicate mathematical information and ideas... understand, use and reflect on written texts..." the Government of South Australia [GSA], 2013)⁹. Currently, all stakeholders focused on the issue of relevance in curriculum and they frequently

raised crucial question such as “*what do children learn in school*”, and “*how valuable those skills when they leave schools?*” (Piper et al., 2018, p. 1). The concern also recognized in the SDG goal 4 which are “ensure inclusive and equitable quality education and promote lifelong learning” (UN, 2015, p. 21)¹⁰. The same document target 4.6 states that “by 2030, ensure that all youth achieve literacy and numeracy” (p. 21). With this understanding, conceptually, this study looks the functionality of instructional process, the content and the learning environment to achieve L&N.

Figure 1 shows the conceptual framework of the study. Functional L&N is a concept that relate to people’s ability to engage in certain life related activities and able them to participate in societal affairs (Moyles & Hargreaves, 2003). Besides, functional L&N highly associated with human capital formation. The major characteristics and purpose of primary curriculum is to achieve a minimal acceptable level of writing, reading and arithmetic (Moyles & Hargreaves, 2003) and to achieve this innovative teaching method may be required. Effective teaching demands opportunities for creative, sensitive and socially relevant teaching methods and it is the surface of quality teaching (Moyles & Hargreaves, 2003).

METHODS

This study used a qualitative case study design because it allows gathering in-depth, careful and complete observation of a social unit (Kothari, 2004). Specifically, the researcher used descriptive *case study* (Willig, 2008) and *evaluative case study* concurrently (Basse, 1999). This study also used purposive sampling to select sample participants intentionally (Creswell, 2007). For this study, 8 participants (4 Mathematics and 4 English Teachers) were selected from the same school. Each interview lasted about 30 to 40 minutes excluding the introduction part. According to Tulonga (2010), interviews should not exceed 90 minutes since any discussion longer than that may develop into a boring conversation and transcribing it may be difficult and time-consuming. Data were collected via semi-structured interviews, classroom observation and textbook review or content analysis because they are common in qualitative study (Wragg et al., 2005; Yvonne, 2015; Glenn, 2009). Data were collected until saturation was achieved and finally we make a chain of categorical evidence and linked the question asked and to the response (Yin, 2003).

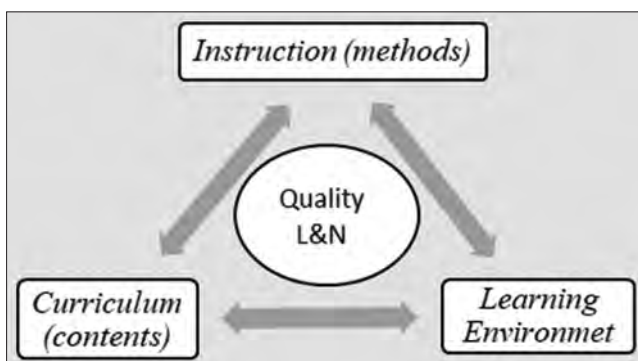


Figure 1. Conceptual framework of the study

This study used *explanation building* and *narrative analytic* technique (Yin, 2003) and *summative content analysis* (Hsieh et al., 2005). The report of this study focused on “fitness for purpose” Robson in Cohen et al. (2007). All the information provided was attentively noted and analyzed in line with research code of ethics.

RESULT AND DISCUSSION

Numeracy encompasses, among other things, “specific skills of interpreting and then incorporating mathematical ideas and representations into whole textual meaning” (Chapman & Lee, 1990, p. 288). Developing those skills without appropriate curriculum (student text book) or contents; and appropriate instructional process are almost impossible. Thus, underneath the researcher looked the curriculum (content) and the instructional process. The results were portrayed as follows. The biographical data revealed that majority of teachers who teaches in first cycle primary school is diploma holders. In terms of sex majority of teachers were female. The work experiences of teachers were varied from 2 to 30 years teaching experiences. The analysis thermalized by subject as follows.

Mathematics in Primary Education

Appendix A provides the list of the Mathematics textbook from Grades 1 to 4. The main contents of Mathematics textbook from Grades 1 to 4 are presented in Table 2.

The above qualitative data revealed that there is clear continuity of topics with an increased level of difficulty across grade levels in first cycle primary mathematics education. The content analysis revealed that mathematics textbooks in first cycle primary education comprised relevant contents for children. The texts allow children’s to learn number and number relations. In this regards, Askew (2010, p. 34) argued that effective teaching of numeracy should help children: first to “acquire knowledge of and facility with numbers, number relations and number operations based on an integrated network of understanding, techniques, strategies and application skills; and second “learn how to apply this knowledge of and facility with numbers, number relations and number operations in a variety of contexts” (p.34). Yet, concerning the design or instructionally the textbook lacks activities, exercises, and child friendly examples. This may affect teachers’ efforts to develop the problem solving capacity of children in authentic manner. Hence, examples could be constructed based on the day-to-day experience of the children or the community which may be meaningful for children’s learning.

Table 3 revealed that textbook prepared for first cycle primary education were colorful, pictorial, included relevant, meaningful content, and organized in appropriate manner. Yet, lack of stated objectives, notes and explanations; poor assessment techniques; low socio-economic status of the parents and lack of teaching aids affected student’s numeracy leaning and students achievement. Respondents also reported that they are practicing active learning, but, during classroom observation the researcher observed that

Table 2. Major contents of Mathematics textbook

Grade 1 Maths	
Contents	Counting natural number; addition and subtraction of natural number up to 9; counting number from “0” to “20”; addition and subtraction of whole number up to 20; measurement; fraction; multiplication and division; simple line and picture/ shape; whole number up to 100; Ethiopian money; time; and simple data management
Grade 2 Maths	
Contents	Addition and subtraction of whole number up to 100; multiplication and division of whole number up to 100; measurement; concept of fraction; whole number up to 1000; points, line segment and picture (figure); money; time; and data management system
Grade 3 Maths	
Contents	Sequence of whole numbers up to 10,000; measurement; fraction; addition and subtraction whole number up to 10,000; multiplication and division up to 10,000; lines and simple pictures; money; time; and data management
Grade 4 Maths	
Contents	Whole number up to 1,000,000; addition, division, subtraction, and multiplication up to 1,000,000; fraction; measurement; plain and solid figure; time; and data management

Source: MoE, 2012

Table 3. Teachers' response on functionality of mathematics textbook and the instructional process

Respondents	Summarized response
Grade one female teacher with 30 years' teaching experience.	I believe that the text was colorful, included relevant content, pictures to simplify message and well organized. Yet, the text didn't includes objectives and learning outcomes. Besides, notes and explanations are limited. Moreover, lack of access to pre-school education, low socio-economic status of the parents and lack of teaching aids affected student's numeracy leaning and achievement. The school management support system and the learning environment are encouraging.
Grade two female teachers with 2 years teaching experiences.	I believe that the textbook designed in relevant and meaningful manner. Yet, the level of difficulty was not considered the ability of the students. I tried to practice active-learning and continuous assessment. The school environment is attractive. I believe that lack of teaching aid and low socio-economic status of parents affected students learning and achievement.
Grade three Male teachers with 27 years' teaching experience.	I feel that the textbook was related with the life of the students. Yet, the stated MLC ¹¹ were challenging for slow learners. I tried to implement active learning and continuous assessment. The school environment and the leadership are encouraging. I believe that low parental socio-economic status and ineffective assessment techniques are the major bottleneck.
Grade four Male teacher 4 years' teaching experience.	I feel that the textbook was prepared in relevant, meaningful and appropriate manner. I tried various learning styles in the instructional process, apply active learning, but lack of auxiliary materials, low parental-teacher collaboration, poor student's assessment experiences or promotion without attaining the MLC and ineffectual management affected numeracy teaching.

Source: Interview conducted from May 27-29/2019

limited numbers of students were frequently participated in classroom discussion, majority of students were passive and the teachers were unable to engage all student in learning. Unlikely, the teacher had excellent interaction only with fast learners. The teacher tried to relate the content with the daily life of the students using authentic examples. During interview session grade four mathematics teachers told the researcher that he was chemistry graduate but assigned to teach mathematics. This may affect the effectiveness of numeracy teaching.

Table 3 also revealed that poor parental participation because of low socio-economic status and awareness affect primary education and student's achievement. Despite this fact, Scholars argued that Hayes, (2006) reported

that “parental attitudes towards the subject and the general absence of mathematics featuring in conversations at home influence the development of mathematics” (p.116). Equally, parents played significant role to improve students reading skills & help to realize their full potential (Wragg et al., 2005; Hayes, 2006). Similarly, the US national research council reported that “Children living in high poverty areas tend to fall further behind regardless of their initial reading skill’ (Gee; Snow et al., in Baker et al., 2005). Also, the IDES (2011, p. 9) affirmed that children who come from economically, socially and politically disadvantage communities are significantly experiences difficulties in L&N. Besides, pupils with parents who are involved in their education tend to have fewer behavioral problems, achieve

better academic performance and are more likely to complete secondary school than pupils whose parents are uninvolved” (Hayes, 2006, p. 124).

Table 3 also shows that assessment techniques problem and students promotion without acquiring the MLC were frequently reported by teachers in first cycle primary education. Assessment need to be checked continuously the progress of the student and it should be merit based or should not be abused because the assessment of children’s progress in learning is a key element of educational practice at all levels (Hayes, 2006). Basically, the purpose of assessment were three fold: first, *for support and guidance*, a process sometimes referred to as ‘formative’ assessment; second, *for diagnosis or to check understanding and misunderstanding of pupils*; and third, *for marking and evaluating pupils*, referred to as ‘summative’ assessment (Hayes, 2006. p. 13). It is believed that, “using and applying mathematics cannot be assessed in written test and therefore needs rather more open-ended tasks to allow the child to demonstrate her/his ability to think and work in a mathematical manner” (Hayes, p. 58). Besides, if the task is to assess the child’s ability to think mathematically, it is usual to give them a task based on some familiar or already known mathematical concepts (Hayes, 2006).

In addition, document review revealed that student’s assessment techniques are conducted monthly. For example, numeracy assessment designed monthly and valued that student calculation skill 20% (5% each month), classwork and homework 20% (5% each month), 5 in 1 group or cooperative work participation 20% (5% each month) and test 40% (10% each month). Literacy assessment also conducted in similar fashion, students reading and writing skill valued 20% (5% each month), classwork and homework 20% (5% each month), 5 in 1 group or cooperative work participation

20% (5% each month) and test 40% (10% each month). *Practically, teacher did not have freedom to use their own assessment techniques and these implicated on students achievement inflation and promotion without attaining the MLC.*

Regarding the functionality of instructional process observation result revealed that teaching methods in first cycle primary education class were still traditional and teacher-centered with limited engagement of students. Student emotional, physical and mental engagement in classroom was limited. In contrary scholars argued that “when children have opportunities to discuss ideas and offer alternative explanations, by working together, they enrich experience of learning than working individually” (Ollerton, 2010, p. 84); encourage children’s discussion is a key element of learning mathematics concept (Ashcroft & Palacio, 2003); simple problem solving method also help mathematics learning (Ollerton, 2010). In line with this, teaching mathematics requires opportunities for elucidation, discussion, practical work, and problem solving, application and skill development. In the following section content analysis was conducted to understand the frequency of suggested methods of teaching in the textbooks.

Table 4 revealed that the major teaching methods stipulated in first cycle primary education students’ textbook were group work, individual activities, group discussion and pair work with limited variation. The remaining was few such as discussion, word problem, question and answering, presentation, word problem, arranging and drawing etc. Hence, it needs to include additional innovative teaching methods during curriculum revision. The purpose of incorporating activity in primary classroom were; “first, to reinforce pupils’ knowledge, second, to extend pupils’ understanding, third, to allow pupils to explore through problem solving and investigation, and fourth, to promote social contact and

Table 4. Analysis of methods of teaching incorporated in mathematics textbook

Grade 1 suggested methods of teaching			Grade 3 suggested methods of teaching		
Methods	N	%	Methods	N	%
Group work	28	36.8	Individual activity	83	57.63
Indi. Activity	27	35.5	Group work	28	19.44
Writing	14	18.4	Pair work	22	15.27
Speaking/talking	4	5.2	Discussion	7	4.86
Word problem	3	3.9	Word problem	4	2.77
			Question & answer	1	0.69
Grade 2 suggested methods of teaching			Grade 4 suggested methods of teaching		
Methods	N	%	Methods	N	%
Indi. activity	48	70.5	Individual activity	53	51.45
Group disc.	11	16.1	Pair work	28	27.18
Word problem	6	8.8	Group work/discussion	7	6.79
Categorizing	3	4.4	Presentation	4	3.88
			Word problem	4	3.88
			Arranging	4	3.88
			Drawing	3	2.91

Grade 1, total N=76; Grade 2, total N=68; Grade 3 total N=144; Grade 4 total N=103

illuminate moral dilemmas” (Hayes, 2006, p. 6). Virtually, content analysis was made in mathematics textbook (grades 1-4). First criteria for analyzing the textbooks were formulated. The criteria focused and checked the proportion of pages with at least one picture or symbol, the volume of the textbook and the proportion of activities, examples or questions designed that reflect social and local contexts. Then mechanically I went through each textbook to check it against the fixed criteria. The finding of the analysis was presented as follow.

Table 5 revealed that all subjects except English were written in Amharic and the medium of instruction are Amharic in government first cycle primary school of Addis Ababa. This was because of the assumption that a child who grows in Addis Ababa can listen and speak Amharic even they have different ethnic background. Besides, Addis Ababa is multilingual city. It should be noted that, even though the education policy declared that mother tongue should be the medium of instruction in primary education most of private school used and parents preferred English as medium of instruction in Addis Ababa city administrations. Table 5 also shows that the textbooks page varied across grades. The proportion of pages with at least one picture or symbol varied. Example, grade one has 75%, grade two 77%, grade three 44.55% and grade four texts 41%. In fact, there may not be clear or acceptable minimum standard that a single text should include pictures and symbols. Even though, grade four student textbook had low picture and symbols that may affect

students understanding because picture and symbols simplify message. Besides, pictures improve the readability of the text and reduce student’s boredom of reading words and numbers. It also help students to associate words, associate pictures with what already know and also help to construct their own knowledge. As far as local example concerned, the situation was not satisfactory, except grade one 187 (63.38%), all texts are below 50%. For example, grade two 217 (44.83%), grade three 208 (42.53%) and grade four 116 (28.7%) of activities, examples and question related with the local life of the people or children environment. These affect the meaningfulness of the curriculum and the instructional process.

English for Ethiopia

Literacy learning can be understood as involving three dimensions; “first ‘operational’ *dimension* such as learning the syntax; the second ‘*cultural*’ *dimension* such as ‘cultural learning’, socialization; the third ‘*critical*’ *dimension* involves the learner’s awareness...” (Chapman & Alison, 1990, pp. 284-285). These are about appropriateness, relevance and meaningfulness of the curriculum and the instructional process.

Table 6 revealed that there is continuity of contents with increased level of complexity across grade level. The textbook exposed children to develop their reading, writing, speaking and listening skills. The text book prepared for grade one may be appropriate for those who did not attend

Table 5. Functionality Analysis of Mathematics textbooks used in Ethiopian

Textbook	Language of text	No. text pages	No. of pages with at least one picture or symbols	Total no. of activities, examples and questions	Total no. of activities, examples and question related with the local life of the people
Grade one	Amharic	116	87 (75%)	295	187 (63.38%)
Grade two	Amharic	100	77 (77%)	484	217 (44.83%)
Grade three	Amharic	116	54 (46.55%)	489	208 (42.53%)
Grade four	Amharic	100	41 (41.0%)	404	116 (28.7%)
Average		108	65 (59.88%)	418	182 (44.86%)

Local context in this case referred to wider Ethiopia rather than Addis Ababa

Table 6: Major contents of English textbook in first cycle primary school (grades 1-4)

Major Grade 1 English contents	Major Grade 2 English contents
Greeting; body parts; English; color; counting; object; my family; describing people, animals and objects; finding peoples, animals and objects; commands; abilities; and likes and dislikes	Greeting, and school property; number and words, count objects; nouns, & contraction; sense organ and body parts; lower and upper case letter; prepare weekly calendar; conversation, shopping list and food items/ food categories; drawing, household object, action & comparison words; alphabetical order; transportation, market and community etc.
Major Grade 3 English contents	Major Grade 4 English contents
Greeting, conversation, property, and map, flag; animals, objects, shapes, song together, shopping list and dialogue; must and mustn’t do, time management, sense organ, story, poem, family tree and do puzzle; doing activities; days of weeks, and months, calendar and holidays; farming activities, and daily routines; food items, writing letter, pictures and type of job etc.	Greeting, compare things, farming, days of the week, weather, seasons, farming and harvesting, body parts, fit and healthy eating, activities and house object, conversation, time management, fruits and vegetables, and market, public institutions, family, job of people’s, frequency of words, wild animals, verbs, tourist attraction, agricultural tools, time expression, position phrase, parent activities and identity card.

Source: (MoE, 2008 G.C/2001 E.C; Mary W. Spor, 2011G.C/2004 E.C)

kindergarten education. However, for those who come across with kindergarten education was not appropriate because they may experience the entire topic in their kindergarten classroom. In fact, according to the school vice principal 30% of grade one student especially those who come from poor family and those who come from rural area by family dislocation (change of location or migration from rural to urban) were not attended kindergarten education. The researcher also observed that in grade one (one observed classroom) 19 (34.5%) of children did not attend kindergarten education and they were struggling to cope with their classmate. This clearly affects the instructional process because those who had kindergarten experience dominate the classroom activity. The researcher recommends with strongest term that this requires immediate intervention, appropriate support or scaffolding to protect children from potential frustration, anxiety, dropout and sense of inferiority. The content analysis revealed that *the major weakness of grade one students textbook was there was no specific methods of teaching stipulated in the textbook that may make the teacher disorganized (make teaching haphazard) and creates difficulty on what students do and what the teachers do and or do not do.* On the other hand, most contents included in grade two were relevant for children to understand their environment. Yet, in grade two the major weakness the textbook was lack of activities for homework that may limit parents to support children at home. In addition, the scope of grade two textbook was too much and need reduction and modification during curriculum revision.

Table 7 revealed that contents included in first cycle English textbooks are appropriate, relevant and meaningful for children. Yet, automatic promotion, lack of supplementary materials, poor parental support affected literacy learning and students achievement. During classroom observation we realized that the teacher tried to encourage and engage students in teaching and learning processes, nearly half of students were actively participated in the classroom discussion and question and answering. The remaining was silent listeners. Grade two English textbook didn't include

objective and review exercise. Besides, grade three textbook lacks exercise and explanation. Yet, Hayes (2006) argued that "the establishment of learning objectives are a useful means of controlling lesson content, covering the curriculum and focusing pupils' thinking on an identified area of knowledge and understanding. The objectives facilitate closer monitoring of the curriculum because it is a means to checking what children have learned and what remains to be learned" (Hayes, 2006, p. 99). Besides, lessons have to be manageable if there is a clearly identified learning objective.

The researcher also observed that most of children attended education in government schools come from families who has low socio-economic status and some of the families were illiterate. These may affect students learning and achievement because it is believed that socio-economic status linked with students' achievement. Researchers argued that, student background variables such as socio-economic status and cultural capital, are factors affecting students teaching (Vieluf et al., 2012) and also parents' level of education cannot be overlooked in particular pedagogical aspect of literacy teaching (Mussa & Vicent, 2016). Also, Mortimore & MacBeath (as cited in Wragg et al. 2005) summarize twenty years research and conclude that good leadership, strong like with parents and conducive learning environment are the characteristics of effective school. Despite this fact, the learning environments in most primary school of Ethiopian were not pleasant. But, scholars argued that it relies on a purposeful learning climate to motivate children and make them feel that the effort is worthwhile (Hayes, 2006). Hence, appropriate attention need to be given to a learning environment that is well-organized, engaging that stimulate a student's mind and will help to think and learn better. During classroom observation the researcher detected that teacher lack skills of managing the classroom, encourage students to participate and communicate the objective of the lesson for the students. This may affect the instructional process and functionality of the subject. To understand the frequency of the suggested methods of teaching in the textbook content analysis was conducted and the result were presented as follows

Table 7. Teachers' response on functionality of the textbook and the instructional process

Respondents	Summarized response
Male grade 1 teacher with 4 years teaching experiences	I believe that the textbook is relevant and appropriate because it is related with the daily life of the children. I used diagnostic test to check the progress of my students. The school milieu is good but lack of teaching aid and low parental involvement affected literacy teaching.
Female grade 2 teacher with 2 year teaching experiences	I feel that the textbook is meaningful and relevant for the children. It helps to develop the child thinking skills and cooperative work. The school milieu is appropriate but lack of parental support and lack of teaching aid affected my instruction.
Female grade 3 teacher with 4 years' teaching experience	I believe that the textbook was prepared based on the curriculum framework. Yet, the text didn't included objective and review exercise. Besides, the text didn't considered slow learners. The textbook lacks exercises, explanation and project.
Female grade 4 teacher with 4 year teaching experience	I feel that the text is meaningful and relevant. Yet, the scope is bulky and the contents didn't considered the ability of the children, and also some passages are difficult for them to understand. The school setting is pleasant but poor parental support affect student success.

Source: Interview conducted from May 22-23/2019

The Table 8 revealed that in grade two textbook active listening and speaking/talking used as the major content deliberation mechanism. In contrary working with partner, discussion, question and answering, arranging, reviewing, touching and matching got little attention. The dominant methods of teaching stimulated in grade three are individual activity, writing and story. Unlikely, pair work, puzzle, discussion, play, song, reflection and question and answering are got less emphasis. There is general support among primary educationists for homework and activities as a method of enhancing learning (Hayes, 2006, p. 116). Besides, scholars argued that “high-quality instruction is often defined as the use of a variety of classroom teaching practices, allowing for both teacher-directed and student self-regulated learning” (Vieluf et al., 2012). The teacher should have to link his lessons to real world learning. Infusing real world experiences into instructions will make teaching moments fresh and enrich classroom learning. It will spark students’ interest and get the children excited and involved. The methods of teaching frequently mentioned in grade four textbook are individual activity, reading and writing. Unlikely, play, pair work, discussion, song, conversation and brainstorming are got less emphasis. However, during classroom observation noticed that most of literacy teachers are utilized group discussion and question and answering methods. Only few students tried to read passage and most of them did not pronounce words properly. In fact, some of words and names included in the text are not familiar with the students. To improve students

reading skills, there should be appropriate materials “big materials or books”. The use of enlarged books or “big books” is an excellent teaching aid for developing children’s knowledge about literacy” (Ashcroft & Palacio, 2003, p.35). Besides, English lesson should be relevant, meaningful and stimulating for children. With this assumptions content analysis was made to check proportion of pages with at least one picture or symbol, the volume of the textbook, the number of story, poem, song or passage related with the life of the students and the proportion of activities, examples or questions designed that reflect social and local contexts. The finding of the analysis was presented as follow.

Table 9 revealed that the textbooks pages varied across grade levels with increased numbers. The proportion of pages with at least one picture or symbol varied: grade one 69.8%, grade two 48.04%, grade three 25.5% and grade four texts 24.79%. Grade three and four student textbook had low picture and symbols that may affect students understanding and reduce the readability of the text. Hence, students may not have an opportunity to associate words and pictures with their environment. As far as local example concerned, grade one did not have a single example the related with local context. Examples and activities included in the textbooks are encouraging, 122 (55.70%) grade two, 275(75.75%) grade three and 418 (62.38%) grade four of activities, examples and question related with the local life of the people or children environment. Besides, the number of story, poem, song or passage related with the life of the students. In this

Table 8. Analysis of methods of teaching incorporated in English textbook for Ethiopia

Grade 2 English			Grade 3 English			Grade 4 English		
Methods	N	%	Methods	N	%	Methods	N	%
Active listening	49	18.4	Individual activity	130	26.1	Individual Activity	130	27.8
Speaking/talking	31	11.6	Writing	105	21.1	Reading	86	18.4
Coping	29	10.9	Story	37	7.4	Writing	81	17.3
Writing	29	10.9	Reading	36	7.2	Active listening	40	8.5
Pointing in the object	28	10.5	Speaking/talking	30	6.0	Group work	27	5.7
Story & poem	25	9.4	Group work	24	4.8	Speaking/talking	23	4.9
Reading	16	6.0	Dialogue & Conversation	19	3.8	Question & answering	16	3.4
Looking	13	4.8	Matching	18	3.6	Dialogue	15	3.2
Drawing	12	4.5	Active listening	18	3.6	Matching	14	3.0
Song	7	2.6	Song	14	2.8	Play	7	1.5
Play	5	1.8	Question & answering	14	2.8	Pair work	7	1.5
Tracing	4	1.5	Reflection	13	2.6	Word search	5	1.07
Counting	4	1.5	Play	13	2.6	Group discussion	4	0.8
Matching	3	1.1	Poem	11	2.2	Song	3	0.6
Touching	2	0.7	Discussion	5	1.0	Work with partner	3	0.6
Reviewing	2	0.7	Puzzle	5	1.0	Presentation/report	3	0.6
Arranging	2	0.7	Pair work	4	0.8	Conversation	1	0.2
Question & answer	2	0.7	Homework	1	0.2	Brainstorming	1	0.2
Discussion	2	0.7						
Work with partner	1	0.4						

Grade 2 total N=266. Grade 3 total N=497 Grade 4 total N=466

Table 9. Analysis of functionality of four English textbook used in Ethiopian

Text	No. of text page	No. of page at least one picture or symbol	No. of activities and examples in the text	No. of activities and examples related with the life of the students	No. of story, poem, song or passage in the text	No. of story, poem, song or passage linked with student life
Grade 1	90	28 (69.8%)	-	-	8	4 (50%)
Grade 2	179	86 (48.04%)	219	122 (55.70%)	31	20 (64.51%)
Grade 3	262	67 (25.5%)	363	275 (75.75%)	59	34 (57.62%)
Grade 4	242	60 (24.79%)	670	418 (62.38%)	25	20 (80%)
Average	193	60 (43.02%)	417	272 (64.61%)	31	19.5 (63.0%)

Local context in this case referred to wider Ethiopia rather than Addis Ababa

regard, the above table depicted that 4 (50%) of grade one text, 20(64.51%) of grade two, 34 (57.62%) grade three and 20 (80%) grade four text included story, poem, song or passage related with the life of the students. On average, first cycle primary education English textbook included 60 (43.02%) at least one picture or symbol, 272(64.61%) of activities and examples related with the life of the students, and 19.5 (63.0%) of story, poem, song or passage related with the life of the students. Hence, the meaningfulness of literacy curriculum is better than numeracy curriculum in first cycle primary school of Ethiopia.

Conclusion and Implications

Literacy and numeracy are the most important foundation skills for later learning and life. On the other hand poor L&N achievement is correlated with early school leaving, lower opportunity of further education, higher rates unemployment and earing (Lamb, 1997). There are also strong correlations between poor literacy and social problems such as crime, rates of imprisonment and substance abuse (Lamb, 1997; Osekhebhen, 2017; NIAO, 2013). In Ethiopia primary school, literacy textbook comprised various pictures and embraced relevant contents that associated with the day-to-day experience of the children. Yet, the instructional processes are not addressing the various types of students. The number of picture or symbol, activities and examples, story, poem, song or passage included in the literacy text are encouraging and related with the experience of the children. Hence, the meaningfulness of literacy curriculum is better than numeracy text. More than 60 %, literacy contents were the functional and help children to understand their environment. Unlikely, more than 50% of activities, examples and exercise included in numeracy text were not related with the local life of the community or the children. As a result, it can be tentatively conclude that the instructional process and contents were less meaningful and has implications on the quality of education. Therefore, the researcher suggested that schools need to introduce scaffolding based and problem-based instruction which are crucial to enhance children's learning and development.

Besides, based on the major finding tentatively it can be conclude that lack of supplementary materials, low socio-economic status of children's family, and low parental

support affected the implementation and functionality of L&N curriculum in first cycle primary schools. So, concerned stakeholders (GOs, NGOs, educators and higher education institutes or teacher training colleges) need to determine those fundamental problems to realize L&N curriculum in authentic manner, advance instructional process, and enrich the learning environment.

END NOTES

1. Northern Ireland Audit Office (NIAO)
2. Literacy & Numeracy (L&N)
3. Australian Ministry of Education & Training (AMET)
4. Australian Department of Employment, Education, Training & Youth Affairs (ADEETYA)
5. State of Victoria Department of Education & Training (SVDET)
6. Irish Department of Education and Skill (IDES)
7. Early Grade Reading Assessment (ERA)
8. Education Sector Development Program (ESDP)
9. Organization for Economic cooperation & development (OECD)
10. United Nation (UN)
11. Minimum learning competency (MLC)

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APPENDIX A

List of Mathematics Textbooks Designed by Ministry of Education

የትምህርት ሚኒስቴር (2004) ሒሳብ 1ኛ ክፍል፤ የተማሪ መጻሕፍት፤ የኢትዮጵያ ፌዴራላዊ ዲሞክራሲያዊ ሪፐብሊክ የትምህርት ሚኒስቴር፤ አል-ጉሬር አታሚና አሳታሚ ድርጅት፤ የተባበሩት አረብ ኢሜሬት፤ ከኩራዝ ኢንተርናሽናል አሳታሚ ኃ/የተ/የግ/ማህበር አዲስ አበባ፤ ኢትዮጵያ።

የትምህርት ሚኒስቴር (2004). ሒሳብ 2ኛ ክፍል፤ የተማሪ መጻሕፍት፤ የኢትዮጵያ ፌዴራላዊ ዲሞክራሲያዊ ሪፐብሊክ የትምህርት ሚኒስቴር፤ አል-ጉሬር አታሚና አሳታሚ ድርጅት፤ የተባበሩት አረብ ኢሜሬት፤ ከኩራዝ ኢንተርናሽናል አሳታሚ ኃ/የተ/የግ/ማህበር አዲስ አበባ፤ ኢትዮጵያ።

የትምህርት ሚኒስቴር. (2003). ሂሳብ የተማሪዎች መጻሕፍት 3ኛ ክፍል፤ የኢትዮጵያ ፌዴራላዊ ዲሞክራሲያዊ ሪፐብሊክ፤ ትምህርት ሚኒስቴር፤ ኤል-ጉሬር አታሚና አሳታሚ ድርጅት፤ የተባበሩት አረብ ኢሜሬት ከኩራዝ ኢንተርናሽናል አሳታሚ ኃ/የተ/የግ/ማህበር አዲስ አበባ ኢትዮጵያ።

የትምህርት ሚኒስቴር (2004) ሂሳብ የተማሪዎች መጻሕፍት 4ኛ ክፍል፤ የኢትዮጵያ ፌዴራላዊ ዲሞክራሲያዊ ሪፐብሊክ፤ ትምህርት ሚኒስቴር፤ ኤል-ጉሬር አታሚና አሳታሚ ድርጅት፤ የተባበሩት አረብ ኢሜሬት ከኩራዝ ኢንተርናሽናል አሳታሚ ኃ/የተ/የግ/ማህበር አዲስ አበባ ኢትዮጵያ።