

## Effect of Material Quantity on the Learning Effectiveness of Children with Dyslexia in Inclusive Classrooms

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**Abstract:** This study examines the influence of the amount of instructional content delivered per day on the learning effectiveness of children with dyslexia in inclusive classrooms within Buea Sub- Division, Cameroon. The research employed a descriptive survey design involving 65 teachers from six primary schools selected through purposive sampling. A structured questionnaire, comprising both closed and open-ended items, was used to collect data. Findings reveal that a reduced quantity of material taught per day significantly enhances attention, comprehension, and retention among learners with dyslexia. 64.6% of respondents agreed that limiting daily tasks helped dyslexic learners focus better, and 87.7% reported teaching strictly on prescribed syllabi without adaptation. The results support the implementation of curriculum adaptation practices in inclusive settings, particularly in pacing instructional content to accommodate diverse learning needs. Recommendations include curriculum restructuring, professional development for teachers, and policy reinforcement to promote inclusive education practices.

**Keywords:** Dyslexia, material quantity, inclusive education, Cameroon, primary schools.

### Introduction

Inclusive education, as advocated by UNESCO (1994), emphasizes the right of all children, including those with dyslexia, to access quality education in regular classrooms. Dyslexia, a neurobiological disorder primarily affecting reading, writing, and phonological processing, despite adequate intelligence and instruction (Lyon, Shaywitz, & Shaywitz, 2003). Inclusive education aims to ensure that all learners, irrespective of their abilities, have access to quality education.

Dyslexia affects approximately 80% of learners with learning difficulties, characterized by challenges in phonological awareness and decoding (Fawcett & Nicolson, 2004). Excessive daily content delivery often leads to cognitive overload in dyslexic learners, impairing comprehension and retention (Sweller, 1988). Deshler et al. (1999) emphasize that instructional pacing should match learners' cognitive profiles. Eggen and Kauchak (2007) found that reducing content and incorporating repetition improves long-term retention for learners with reading difficulties. In inclusive classrooms, the standardized curriculum often poses significant barriers for dyslexic learners, particularly when large quantities of material are delivered daily without differentiation.

According to Kameenui and Simmons (1999), curriculum content must be tailored in terms of quantity and complexity to match learners' processing capacity. Scruggs and Mastropieri (2000) emphasize that shorter, focused tasks improve concentration and engagement in dyslexic students. Eggen and Kauchak (2007) further highlight the benefits of chunking content and integrating multisensory strategies to enhance comprehension. In Cameroon, the national curricula contents are standardized and rigid, creating barriers for learners who process information differently. Understanding how the amount of instructional material affects dyslexic learners is critical to improving their academic success and promoting inclusive teaching practices.

## Statement of the Problem.

In Cameroon's inclusive education system, learners with dyslexia continue to face challenges associated with standardized instructional delivery. One key issue is the quantity of instructional content presented daily in classrooms that often fail to consider the processing limitations of learners with dyslexia. Teachers frequently follow rigid syllabi without flexibility, resulting in cognitive overload, reduced engagement, and poor academic performance for these learners.

While inclusive education emphasizes the accommodation of diverse needs, the curriculum remains inflexible in practice. There is limited empirical data on how adjusting the volume of material taught each day affects learning outcomes for dyslexic children in regular classrooms. This study focuses on whether adjusting the quantity of daily content can enhance the academic performance and classroom participation of learners with dyslexia.

**This study was aimed at determining the effect of material quantity taught per day on the effectiveness of learners with dyslexia in regular class. This answered the question if adjustment in material quantity taught per day can affect the effectiveness of learners with dyslexia.**

### The null and all Hypotheses used were:

**H<sub>01</sub>:** There is no significant relationship between material quantity taught per day and the effectiveness of learners with dyslexia.

**H<sub>a1</sub>:** There is a significant relationship between material quantity taught per day and the effectiveness of learners with dyslexia

## Literature Review

### Dyslexia

Dyslexia is a language-based learning disability that affects reading and writing. It is referred to as a learning disability because dyslexia can make it very difficult for a student to succeed academically in the typical instructional environment. Dyslexia cannot be cured but managed. It is a neurobiological disorder that is present in all cultures, cuts across all socio-economic backgrounds and is present in children of low, average and superior intelligence (Bolhasan, 2009). The World Health Organization, ICD 10 defines dyslexia as a disorder manifested by difficulty learning to read despite conventional instruction, adequate intelligence and socio-cultural opportunity (WHO, 1993) whereas the American Psychiatry Association DSM IV-TR defines it as the reading achievement that is substantially below that expected given the person's chronological age, measured intelligence and age-appropriate education. The APA, DSM IV-TR categorizes reading disorder/dyslexia as a disorder first diagnosed in infancy, childhood or adolescence (American Psychiatric Association, 2000). The DSM 5 has dyslexia under the category of specific Learning Disorders (SLD) and defines SLD as "persistent difficulties in learning and using academic skills as indicated by either in accurate or slow and effortful word reading or by difficulties with spelling or both" (APA, 2013). "It is a disorder that is characterized by an expected difficulty in reading in children and adults.

There is a general consensus that children with dyslexia have difficulties at the phonological level (Fawcett & Nicolson, 2004; Scheepers, 2009) and thus have difficulties identifying letters sounds, mapping the letter names to their letter sounds and breaking a word into its constituent sound. Thus a child with dyslexia may substitute, replace, omit or add some letter sounds during a reading discourse or spelling task (Strydom & du Plessis, 2000). Some children will have difficulties blending sounds to make words, while some will have difficulties with word storage and retrieval. A dyslexic reader will stumble, guess or sound out words while reading, their reading speed or fluency is much slower than non-impaired readers of their age and thus their reading is always a laborious task (Muter & Likierman, 2008).

## Material Quantity

Learners spend a large portion of the school day interacting with materials. Most instructional materials give teachers few activities or directions for teaching a large class of children who learn at different rates and in various ways. This section provides material accommodations that enhance the learning of diverse learners. Frequently, paraprofessionals, volunteers, and learners can help develop and implement various accommodations. The task of gaining children's attention and engaging them for a period of time requires many teaching and managing skills. Teaching and interactions should provide successful learning experiences for each child. Adapting material quantity (content) is adjusting the number of items to be carried out at every given period. This is adapting what is taught as well as adapting how learners are given access to what they need to learn. Adapting what is taught may include a completely different curriculum (substituting curriculum) or an adaptation in curricular goals (alternative goals). Content changes may also involve the amount or difficulty level of the work to be achieved. One strategy for dealing with content accommodation is to select the core concepts each learner must master (Smith 2007 and Miller 2009).

Prater (2007) believes that text materials can be adapted by using voice-recorded materials; DVDs; simplified versions of the classroom text; changing the modality of text input, usually reading it aloud or on audio file; allowing a peer to read a text to a learner and decreasing the amount or density of content (such adaptations include selecting another text with similar content by using easier vocabulary, highlighting key concepts, omitting unnecessary or distracting parts of context, or writing abridged versions of text). Content could also be adapted by adding definitions of key terms; adding interest to important content and adding cues, signals and questions.

The following will serve as examples of content adaptations as mentioned by Prater (2007).

- Size: The amount of content the learner is expected to learn – number of vocabulary or spelling words to be learned at one time
- Difficulty: The difficulty level of a skill or activity – Allowing a learner to use a calculator. Simplifying directions
- Alternate goals: Adapting the outcomes expectations for learners while using the same materials.
- Substitute curriculum: Using different instruction and materials to meet the learners goal – providing lower-vocabulary reading materials

## Regular/Ordinary School

This is public school against which the program of a student who receives special education is evaluated. General Education is used interchangeably with regular or ordinary education. These schools have standard curricula operating under standard instructions and assessment in the Ministry of Basic Education.

## Inclusive Education

Education may be defined as the process of imparting knowledge, skills, values, norms and culture from one generation to another in a society. In line with this education is the influence exercised by adult generations on those that are not yet ready for social life (Lauder *et al.*, 2006). Mmbaga (2002) argues that, the main goal of education remains that of preparing the youth for the life of work in their communities, as stipulated in the 1961 Education for self-Reliance (ESR) policy, despite the fact that current changes, which are so unpredictable, call for knowledge that is flexible”.

The ESR intended at preparing students to play active role in the community after having integration in education and actual practice.

Inclusion in education according to UNESCO (1994) is associated with commitment to the term “Education for all” by identifying the requirement and urgency of providing education for all children, youth and adults with Special Needs Education. The Salamanca Statement (1994) stresses

that every child has an ultimate right to have education, and need to be given the chance to attain and maintain satisfactory level of learning. Every child has unique features, interests, learning needs and abilities. Education systems should be designed and programs need to be implemented in consideration of a wide diversity of these characteristics and needs. Those with special educational needs must have access to regular schools which should accommodate them within child centred pedagogy capable of meeting their needs. Regular schools with this inclusive orientation are the most effective means of fighting against discriminatory attitudes, creating good welcoming communities, building an inclusive culture and achieving education for all; moreover, they provide an effective education to the majority of children and improve the efficiency and ultimately the cost-effectiveness of the entire education system.

Furthermore, UNESCO (2009) defines inclusion as: *“a process of addressing and responding to the diversity of needs of all children, youth and adults through increasing participation in learning, cultures and communities, and reducing and eliminating exclusion within and from education. It involves changes and modifications in content, approaches, structures and strategies, with a common vision that covers all children of the appropriate age and a conviction that it is the responsibility of the regular system to educate all children”*.

Therefore, inclusive education has the foundation in education for all for an intention that all the children must attend school regardless of their disabilities.

Inclusive education describes a system in which diversity is valued and the learner’s individual needs are met within the education system rather than merely being assimilated into that system (Swart, Engelbrecht, Eloff, Pettipher & Oswald, 2004).

Apollinaire (2007) indicates that inclusive education means education that is non-discriminatory on the grounds of disability, culture, gender or other aspects of learners or staff that are assigned significance by a society. It involves all learners in the community, with no exceptions and irrespective of their intellectual, physical, sensory or other differences. Apollinaire (2007) further states that the Centre for Studies on Inclusive Education (CSIE) in the United States of America defines inclusive education as “children with and without disabilities or difficulties learning together in ordinary pre-school provision, schools, colleges and universities with appropriate networks of support”.

Swart (2004) in Apollinaire (2007) shares a similar conviction and describes inclusive education as a practice of promoting the participation and competence of every learner, regardless of age, gender, ethnicity, language, and class, disability, and HIV status.

This study was guided by constructivist learning theory (Piaget, 1952; Vygotsky, 1978), which suggests that learners construct meaning more effectively through manageable and contextually relevant instruction. Dual-route theory also supports adaptation by recognizing that dyslexic readers benefit from reduced reliance on phonological decoding when content is simplified (Coltheart et al., 2001).

## Methodology

A descriptive survey design was employed. The study used both quantitative and qualitative instruments. The instrument for data collection was a questionnaire where both closed ended and open-ended questions were used. The population of the study will be described below in table one.

The table below presents the population of the study.

**Table 1: Distribution of primary school teachers in Buea sub-division**

School type	Male	Female	Total
Government primary schools	23	243	266
Government nursery schools	00	90	90
Catholic primary schools	14	75	89
Catholic nursery school	01	15	16

Presbyterian primary school	03	28	31
Presbyterian nursery school	00	06	06
Baptist primary school	05	26	31
Baptist nursery school	00	08	08
Islamic primary school	03	03	06
Islamic nursery school	02	01	03
Private primary school	125	426	551
Private nursery school	08	225	233
Total:221 schools	184	1146	1330

Source: Inspectorate of Basic Education for Fako

### Description of the Sample Effectively Used for the Study

**Table 2: Distribution of the Sampled School**

Schools	Frequency	Percent	Valid Percent	Cumulative Percent
Potter's House Education Center Bokwai	24	36.9	36.9	36.9
Menanjomo Special Education Centre	12	18.5	18.5	55.4
Shallom Bilingual Nursery and Primary School	7	10.8	10.8	66.2
Jamandiale Nursery and Primary School	6	9.2	9.2	75.4
Government Primary School Ndongo	5	7.7	7.7	83.1
Government School Molyko	11	16.9	16.9	100.0
Total	65	100.0	100.0	

Teachers were sampled from 6 schools namely Potter's House Education Centre Bokwai 36.9% (24), Menanjomo Special Education Centre 18.5% (12), Shallom Bilingual Nursery and Primary School 10.8% (7), Jamandiale Nursery and Primary School 9.2% (6), Government Primary School Ndongo 7.7% (5) and Government School Molyko 16.9% (11).

### Gender

**Table 3: Distribution of Teachers by Gender**

Gender	Frequency	Percent
Male	16	24.6
Female	49	75.4
Total	65	100.0

The female dominated the sample with proportion of 75.4% (49) while the male were 24.6% (16).

### Class

**Table 4: Distribution of Teachers According to Class**

Classes	Frequency	Percent	Cumulative Percent
Nursery to class 2	30	46.2	46.2
Class 3 to 4	21	32.3	78.5
Class 5 to 6	14	21.5	100.0
Total	65	100.0	

Organized in ranges 46.2% (30) were from nursery to class 2, 32.3% (21) from class 3 to 4, 21.5% (14) from class 5 to 6.

## Reliability Analysis

**Table 5: Reliability analysis for the pre-testing of the instrument**

Conceptual components	Cronbach's Alpha	Ncases	Nitem
Material quantity taught per day	0.529	10	8
Classroom management and lesson delivery	0.489	10	8
Differentiated instruction	0.501	10	8
Differentiated assessment	0.621	10	8
IVM	0.595	10	24

The internal consistency assumption was not violated for any of the conceptual components with all Alpha values equal or greater than 0.5.

**Table 6: Reliability analysis for the final study**

Conceptual components	Cronbach's Alpha	Variance	Ncases	Nitem
Material quantity taught per day	0.589	0.042	65	8
Classroom management and lesson delivery	0.568	0.054	65	8
Differentiated instruction	0.481	0.033	65	8
Differentiated assessment	0.631	0.016	65	8
IVM	0.635	0.025	65	24

The internal consistency assumption was not violated for any of the conceptual components with all Alpha values greater than 0.5. It was realized an increase in Alpha from the pretesting of the research instrument to the final study. Though Alpha was 0.481 for component „Differentiated instruction“, this value becomes 0.5 when round up to a decimal place. Nana (2012) explained that reliability is satisfactory when Alpha is 0.5 or more. The slight increase in Alpha could be attributed to the sample effect because no change was affected to the instrument from the pre- testing stage to the final study.

## Results

**Does the adjustment in material quantity taught per day affect the effectiveness of learners with dyslexia?**

**Teacher's Characterization of the Quantity of Material Taught per Day on the Effectiveness of Learners with Dyslexia**

Statements	Agree	Disagree	N
I usually teach strictly following the prescribed scheme of work	87.7%(57)	12.3%(8)	65
I always cover my content for the day despite the differences in the reading abilities of my learners	32.3%(21)	67.7%(44)	65
Some children always go home without completing the work in class	78.5%(51)	21.5%(14)	65
I find it difficult to reduce some of the material content for some slow learners in class	58.5%(38)	41.5%(27)	65
Average pass in my class will drop if I teach few items	44.6%(29)	55.4%(36)	65
When I use pictures and other materials in teaching, children end up forgetting the lessons	3.1%(2)	96.9%(63)	65
Children are more careful when they have limited task under limited time	64.6%(42)	35.4%(23)	65
When I reduce the number of items the rate at which children ask or answer questions drops	41.5%(27)	58.5%(38)	65
Multiple response set (MRS)	51.3%(267)	48.7%(253)	520

In aggregate, roughly half of the teachers making a proportion of 51.3% (167) were comfortable with the quantity of material taught per day. They acknowledged that they usually teach strictly following the prescribed scheme of work 87.7%(57), that some children always go home without completing the work in class 78.5%(51), that children are more careful when they have limited task under limited time 64.6%(42), that they find it difficult to reduce some of the material content for some slow learners in class 58.5%(38), that when they reduce the number of items the rate at which children ask or answer questions drops 41.5%(27) and the least agreed that they always cover the content for the day despite the differences in the reading abilities of the learners 32.3%(21).

### Teacher's Characterization of the Quantity of Material Taught per Day on the Effectiveness of Learners with Dyslexia by Background Indicators

Indicators	Categories	Characterization of the Quantity of Material Taught per Day		Nresponses	Chi- square
		Agree	Disagree		
Gender	Male	53.9% (69)	46.1% (59)	128	$\chi^2=0.45$ $p=0.504$
	Female	50.5% (198)	49.5% (194)	392	
Class	Nursery to class two	55.4% (133)	44.6% (107)	240	$\chi^2=5.55$ $p=0.048$
	Class 3 to 4	51.8% (87)	48.2% (81)	168	
	Class 5 to 6	42.0% (47)	58.0% (65)	112	

Those teaching nursery to class two with a proportion of 55.4% (133) were the most comfortable, followed by class 3 and 4 teachers with proportion of 51.8% and then those teaching class 5 to 6 with proportion of 42.0% and the difference was statistically significant ( $P<0.05$ ) therefore implying that teachers ability to cope with quantity of material taught per day was significantly dependent on class taught.. The male and the female statistically had almost the same level of satisfaction with proportions of 53.9% and 50.5% respectively ( $P>0.05$ ).

### Testing of research Hypothesis One: There is no significant relationship between material quantity taught per day and the effectiveness of learners with dyslexia.

Spearman's Rho		Effectiveness of learners with dyslexia
Material quantity taught per day	R	0.360**
	P-value	0.003
	N	65

Correlation is significant at the 0.01 level (2-tailed).

There was statistically enough evidence that material quantity significantly and positively impact on the test performance by children with dyslexia. ( $r=0.360$ ;  $P=0.003$ ). The null hypothesis stated above is then rejected.

### Thematic analysis depicting the advantages and disadvantages of adjusting the curriculum to meet the needs of their learners as perceived by teachers

Code	Code description	Groundings	Quotations
Advantage			
Increase performance	Improvement in the performance increase	46	„The learners“ performance increased“ „Students improved because I went back to what students“ ought to have learnt“ „I gained the kids interest and their rate of understanding increased“ „This helps the slow learners to meet up

			with the fast learners to equally improve on their performance“
Common interest/meeting the need of all	To meet the need of all by making sure that all children learn	16	„To meet the need of all and proper follow up of lessons“ „To meet the need of all and proper follow up lessons“
Improve understanding	Help the kid to understand better	36	„It helps the kids to understand better“ „It makes understand more“ „This gives them more time to understand certain lesson taught“
Improve participation	Learners participate better in class	19	„easily follow up, e.g. from graphs to mapping in mathematics“
<b>Disadvantages</b>			
Adaptation constraints	Some learners have difficulties adapting to the new curriculum or take more time to adapt	28	„Some learners took time to adapts to the new curriculum“ „Time constrains and how to go about it“
Slow teaching	The teaching process is slowed	19	„It slowed down the pace at which one should had to move“ „It slows down the teaching and learning process“ „It slows down the teaching and learning process“
increased work load/time consuming	Work load is increased and this can lead to the inadequate coverage of curriculum	41	„This increased the number of lessons I had for some topics per week“ „It may cause some aspect to be left out“ „It takes much time, and it is stressful“ „The challenge is that if you are not careful you might not complete the curriculum since you want to create time for slow learners“ „You can easily forget a lesson“

Code	Code description	Groundings	Quotations
Detrimental to fast learners	Detrimental to fast learners	12	„The disadvantage is that some fast learners find it hard to cope since they had remedial classes at home following the curriculum“ „Fast learners do not benefits from the process, it does not help them to improve since it is standardized“

Qualitative responses highlighted that excessive content within limited time discouraged participation and led to frustration. Conversely, incremental delivery and focused tasks promoted engagement and comprehension.

## Discussions

### The Effect of Adjustment in Material Quantity Taught Per Day and the Effectiveness of Learners with Dyslexia

Despite the fact that teachers faced a lot of difficulties in teaching children with dyslexia in regular classrooms as revealed by the findings of this study Low participation/teacher-centred (*“Learners with dyslexia makes learning to be teacher-centred”*), Inadequate coverage of curriculum (*„It may cause some aspect to be left out”* *„I find it difficult to create extra time”*), there was enough statistical evidence that material quantity taught per day significantly and positively influenced the effectiveness of learners with dyslexia. Material quantity taught per day calls for content adaptation. Majority of the teachers as revealed also by the findings of this study have adjusted their curriculum with the intention in mind to improve on learners performance (*“I gained the kids interest and their rate of understanding increased”*, *„This helps the slow learners to meet up with the fast learners to equally improve on their performance”*) and also to meet their learning needs as depicted in some of their statements *“To meet the need of all and proper follow up of lessons”*.

This finding ties with that of Prater (2007) who found that decreasing the amount of material to be read by the learner can increase comprehension. Moreover, according to Ebeling, Deschenes and Sprague.(1994), material quantity taught per day which is simply adapting the number of items that the learner is expected to learn or number of activities the student will complete prior to assessment have found useful in teaching learners with dyslexia. Adjustments such as using simplified texts or visual aids support Vygotsky’s (1978) Zone of Proximal Development, enabling scaffolded learning. However, the challenge of covering the national curriculum highlights a systemic barrier in Cameroon’s education system, as noted by the researcher.

Although more than half the number of teachers faced difficulties in reducing the material content for some slow learners in class, at the same time, a majority of them believed that the use of pictures and other materials in teaching can help children understanding the lessons better.

According to Prater (2007) materials can be adapted by using voice- recorded materials; DVDs; simplified versions of the classroom text; changing the modality of text input, usually reading it aloud or on audio file; allowing a peer to read a text to a learner and decreasing the amount or density of content (such adaptations include selecting another text with similar content by using easier vocabulary, highlighting key concepts, omitting unnecessary or distracting parts of context, or writing abridged versions of text). Furthermore, Smith (2007) and Miller (2009) looks at content adaptation as adapting what is taught as well as adapting how learners are given access to what they need to learn. Adapting what is taught may include a completely different curriculum (substituting curriculum) or an adaptation in curricular goals (alternative goals). Content changes may also involve the amount or difficulty level of the work to be achieved. One strategy for dealing with content accommodation is to select the core concepts each learner must master.

To elucidate, Deshler, Schumacher, Harris and Graham (1999); Kame’enui and Simmons, (1999); Lenz, Deshler and Kissam (2003) and Scruggs and Mastropiere (2000) in Lee *et al.* (2006) mention that curriculum adaptations are fundamental in efforts to promote progress in general curricular for learners with other disabilities, particularly, with learning impairments. This notion of the above authors was further acknowledge from the statements of some teachers as concerning strategies for the improvement of learning for learners with dyslexia *“Special trained teachers of special education should be employed in order to help the learners with special needs”* *„It is better for the authority to look for a special teacher to handle”* *„„Need special attention such as one-on-one attention”* *„These children should be treated with care and love, they should be given additional time for lesson”* *„Constant practice and revision of the works already done”* *„teaching aids should be provided and use in class”* *„Remedial classes should be recommended”* *„Additional classes out of normal classes”* and so on.

Vaughn, Bos, and Schumm, (2007).further states that adjusting the workload by dividing it into smaller sections or tasks, a task can be made more manageable. Smith (2007) concurs with Vaughn *et al* (2007) by emphasizing that instructional material and activities could be adjusted by breaking down tasks into smaller pieces (chunks) to help many learners with different types of learning needs. Adapting the manner in which the learner demonstrates learning enables learners with learning impairments to be more successful. Smith (2007) also mentions that tasks need to be made

more interesting by developing attention and by making assignments interesting. One other way is to vary the format of instruction and activities of teachers in this study recommended that „Intensive sound and word building programme for at least a month“.

### **Implications for Practice**

Curriculum planners should allow flexibility in pacing for core subjects like literacy.

Teachers should be trained to modify lesson plans for dyslexic learners.

Classroom routines should include scheduled breaks and focused content delivery.

### **Recommendations**

Policy Review (The Ministry of Basic Education) should incorporate curriculum pacing flexibility guidelines in inclusive education policy.

There should be mandatory in-service training for teachers on pacing and content chunking for dyslexic accommodation.

Teachers should collaborate with special educators to adjust daily content delivery based on learner profiles.

### **Conclusions**

This study demonstrates that reducing the quantity of daily instructional material significantly enhances the effectiveness of learners with dyslexia in inclusive classrooms. Curriculum flexibility and teacher autonomy in content delivery are crucial for effective inclusive education in Cameroon.

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