



READING COMPREHENSION ABILITY LEVELS OF FOURTH GRADE LEARNERS WITH DYSLEXIA IN NAIROBI AND KIAMBU COUNTIES, KENYA

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Abstract:

This study aimed to investigate the reading comprehension abilities of fourth-grade learners with dyslexia in Nairobi and Kiambu Counties. Guided by Chall's model of reading development, the research targeted 1,040 fourth-grade students with dyslexia from public primary schools. Purposive sampling was used to select 32 special needs teachers, while simple random sampling identified 166 learners with dyslexia, yielding a total of 198 respondents. Data was collected using the Dyslexia Screen Test Junior (DST-J), document reviews, a classroom observation schedule, an interview schedule for teachers, and two comprehension tests. A pilot study was conducted in two special units, one in each county, to establish the reliability of the instruments, resulting in a Cronbach Alpha Coefficient of 0.82. Data was collected from special needs teachers of English and fourth-grade learners with dyslexia, along with a review of relevant academic documents. The collected data was categorized, coded, and analyzed using the Statistical Package for the Social Sciences (SPSS) version 21.0, employing both qualitative and quantitative techniques. Quantitative data was analyzed through frequencies and percentages, presented in tables, while qualitative responses were thematically organized according to the research questions and objectives. The findings revealed substantial

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challenges in reading comprehension among the learners. A majority (68.1%) exhibited only a literal comprehension level and struggled with basic decoding, while only a small percentage achieved interpretive (24.8%), critical (5.7%), and creative (1.4%) levels. The study also noted that many learners read slowly and repetitively to grasp the text. It was concluded that the difficulties experienced by learners with dyslexia in reading fluency, memory, and comprehension significantly hindered their ability to achieve proficient levels of reading comprehension. The study recommended tailored interventions to enhance both decoding skills and comprehension strategies, aiming to improve reading performance for dyslexic learners. These results may guide stakeholders in the Ministry of Education in implementing targeted interventions and offer a foundation for future research on effective strategies for teaching reading comprehension to students with reading impairments.

Keywords: reading comprehension, dyslexia, reading impairments, comprehension ability levels, reading comprehension interventions, reading performance, special needs teachers, special units

1. Introduction

The fourth Sustainable Development Goal (SDG 4) aims to ensure inclusive and high-quality education for all, with a focus on achieving literacy and numeracy skills across all genders and age groups by 2030 (UNESCO, 2019). Despite increased school enrollment in many developing countries, fundamental literacy skills such as reading and writing remain elusive for millions of children (World Bank, 2020).

Reading comprehension, a critical component of literacy, involves not only understanding written material but also integrating decoding skills, vocabulary knowledge, and background information (Sahin, 2013; National Institute of Child Health and Human Development, 2020). Proficient reading, which includes understanding phonological principles and spelling conventions, is essential for academic success (Silverman, Speece, & Harring, 2013). Failure to achieve reading proficiency by upper elementary grades can severely impact academic performance and future success (Teale, 2013; Koch & Sporer, 2017).

By the end of third grade, students are expected to demonstrate adequate reading skills for their academic progression. Students who do not reach this proficiency risk developing reading disabilities, characterized by difficulties in accuracy, speed, and comprehension, which can interfere with both academic and daily life activities (Mbatha, 2018).

Global studies indicate persistent issues with low reading performance. For instance, the National Assessment of Educational Progress (NAEP, 2019) found that over 63% of fourth-grade students in the United States scored below proficient reading levels. In Canada, 22% of students in grades 1-3 struggle with textual materials (Human Resources and Social Development Canada, 2017). Similarly, African countries face

significant challenges: South African Grade 3 learners averaged only 25% in English reading tests (Cilliers *et al.*, 2020), while Nigerian and Ugandan studies highlight severe difficulties with basic reading skills and ineffective instructional strategies (Yusuf, 2017; Kabay, 2021; Okello, Angol, & Mwesigwa, 2020).

In Kenya, recent data underscore similar challenges, with only 40% of third-grade learners demonstrating adequate reading comprehension (KNBS, 2021). Studies also reveal that more than 50% of Grade 3 students struggle with comprehension (Ooko & Aloka, 2021), and approximately 43% in Nairobi County are at risk of learning disabilities (Mwangasha, 2021). These findings emphasize the urgent need for targeted instructional strategies and interventions to improve reading proficiency among learners by the fourth grade (Koch & Sporer, 2017).

1.1 Purpose of the Study

The study focused on assessing the correlation between reading comprehension intervention strategies and the reading performance of grade four learners with dyslexia in Nairobi and Kiambu counties, Kenya.

1.2 Specific Objective of the Study

Specifically, the study sought to establish the reading comprehension ability levels of fourth grade learners with Dyslexia in Nairobi and Kiambu counties, Kenya.

2. Literature Review

2.1 Theoretical Review

Chall's model of reading development (1983/1996) provided a crucial theoretical framework for this study, focusing on Stage 3, "reading to learn," which is pertinent to fourth-grade learners with dyslexia.

This stage, occurring from grades 4 to 8, marks a shift from "learning to read" to engaging with increasingly complex texts, posing significant challenges for learners with dyslexia. These learners often face difficulties with reading fluency, word recognition, and vocabulary expansion, which impede their comprehension of intricate materials. By applying Chall's model, the study aimed to identify the specific stage of reading development that these students were struggling with, thereby offering insights into their reading abilities and guiding the selection of targeted intervention strategies. The model could be utilized to identify whether these learners were still in earlier stages, such as decoding, or had progressed to stages requiring fluency and confirmation. This approach ensures that the interventions address their unique needs, ultimately improving their reading performance.

2.2 Empirical Studies and Knowledge Gaps

Reading comprehension ability can be categorized into four distinct levels: Literal, Interpretive, Critical, and Creative. Literal comprehension refers to understanding the

explicit meaning of text, Interpretive comprehension involves analyzing and synthesizing information, Critical comprehension evaluates the author's message, and Creative comprehension uses the text to generate new ideas. These levels are particularly relevant for learners with dyslexia, who often face challenges in these areas. Assessing these abilities and developing targeted interventions is crucial for improving reading performance.

Spencer and Wagner (2018) conducted a meta-analysis of 86 studies, highlighting the persistent reading comprehension difficulties faced by dyslexic learners across various languages and writing systems. Inspired by this, the present study focused on fourth-grade learners with dyslexia in Nairobi and Kiambu counties, Kenya, using primary data to determine their reading comprehension levels.

Georgiou *et al.* (2022) explored the relationship between decoding and reading comprehension in dyslexic learners, finding a weaker association compared to typical readers. This study informed the current research, which aimed to correlate intervention strategies with reading performance in dyslexic learners.

Sari and Prasetyo (2021) investigated reading comprehension in Indonesian high school students, emphasizing the need for improving these abilities. While their study involved older students, it shared a common goal with the present research: delineating comprehension levels and measuring them through tests.

Ooko and Aloka (2021) examined comprehension skills and behavior modification techniques in Kenyan primary school students with dyslexia. They found lower comprehension levels in these learners and highlighted the need for customized interventions.

The reviewed literature reveals a significant gap in understanding the comprehension ability levels of dyslexic learners and how these should inform intervention strategies. While various comprehension levels have been identified, few studies have specifically examined these in dyslexic learners. This study addresses this gap by focusing on the reading comprehension ability levels of fourth-grade learners with dyslexia in Nairobi and Kiambu counties, aiming to inform effective intervention strategies.

3. Methodology

3.1 Study Locale

The research took place within the geographical regions of Nairobi and Kiambu counties in Kenya. The population of Nairobi and Kiambu counties is diverse, representing various ethnic and racial backgrounds. In addition, Nairobi and Kiambu Counties presented a good mixture of urban, peri-urban, and rural schools. The sites, therefore, had a heterogeneous background, which made it feasible to determine whether the findings would be stable over these variations, and, therefore, presented a rationale for replication of the study to other counties. The choice of the two counties was also largely

influenced by the availability of many public primary schools with functional special units.

3.2 Research Design and Target Population

This study utilized a descriptive-correlational research design, incorporating a mixed-methods approach to collect both qualitative and quantitative data. The design was chosen to identify and describe the relationships between reading comprehension intervention strategies and reading performance in the English language without establishing causal links, as suggested by Creswell and Clark (2017). The research focused on a target population of 1,040 Grade 4 learners diagnosed with dyslexia in Nairobi and Kiambu counties. These learners had been assessed by Education Assessment Resource Centre (EARC) officers and subsequently integrated into mainstream primary schools that had specialized units providing tailored special education support. The study also targeted 148 English teachers working in 148 special units within government-sponsored primary schools in these counties. These teachers had undergone specialized training to support students with special educational needs and disabilities.

3.3 Sampling Techniques and Sample Size

Nairobi and Kiambu counties were purposively selected for the study due to their diverse population, which includes urban, peri-urban, and rural areas. Three sub-counties were chosen from each county, making a total of six sub-counties. The selection of sub-counties was based on factors such as economic potential, population density, and the availability of support services for learners with learning disabilities. From these sub-counties, at least five special units were randomly selected, resulting in 32 special units, representing approximately 22% of the total 148 special units in the two counties. This sampling approach ensured a diverse and representative sample. Purposive sampling was then used to select English teachers from these special units, focusing on those with relevant experience and expertise. For the learners, simple random sampling was employed within the selected units, using data from reviewed documents and confirming the diagnosis with the adapted Dyslexia Screening Tool-Junior. The final sample included 32 special needs English teachers (22% of the total) and 166 learners with dyslexia (16% of the total 1,040). These learners had been placed in regular primary schools with special units by the EARCs to receive specialized support and instruction.

Table 1: Sample Size

Participants	Target	Sample size
Special Needs English Teachers	148	32
Learners with Dyslexia	1040	166
Total	1188	198

3.4 Research Instruments

Quantitative data was collected through document review, Dyslexia Screen Test Junior (DST-J), and comprehension tests, while classroom observation schedules and interview schedules were used for qualitative data.

3.5 Pilot Study

The piloting was carried out in two special units, one located in Nairobi County and the other in Kiambu County. These schools, which were involved in the pilot study, were not part of the final research. This preliminary testing phase helped fine-tune the research methodology and instruments to ensure the effectiveness and accuracy of data collection in the main study, ultimately contributing to the overall quality and validity of the research findings.

3.5 Data Collection Procedures

The researcher visited all thirty-two schools, where two lessons at each institution were observed. During the first visit, learners with low reading performance, as determined by the reviewed document, were screened for dyslexia using the Dyslexia Screening Test-Junior (DST-J). The purpose of this test was to evaluate the reading performance levels of grade four learners in special units to detect any impairments in reading comprehension. To establish the correlation between reading comprehension strategies and reading performance in the English language among grade four learners with dyslexia, data was collected through the administration of two comprehension tests. During the initial observation, the researcher administered the first comprehension test to assess the baseline reading performance of the students. The test consisted of two paragraphs and a short story with accompanying questions that required students to demonstrate their understanding of the text. The results of this test provided a starting point to evaluate the student's initial reading comprehension abilities.

Following the administration of the first comprehension test, the researcher conducted a face-to-face interview with the special needs English teachers to ascertain the reading comprehension strategies they employed to enhance the reading abilities of students with dyslexia. Further, teachers were encouraged to explore and implement different reading comprehension strategies tailored to the needs of dyslexia learners. These strategies included explicit phonics instruction, vocabulary instruction, material accommodation, peer teaching strategies, technology-based interventions, repetition strategies, graphic organizers, questioning techniques, summarization exercises, or any other evidence-based strategies known to support reading comprehension.

Over two weeks, teachers integrated these strategies into their regular English lessons and provided targeted instruction to the students. After two weeks, the second comprehension test was administered to re-evaluate the reading levels of the grade four learners with dyslexia. Similar to the initial test, this assessment included two paragraphs and a short story followed by two questions designed to assess reading comprehension

skills. A comparison was made between the students' reading performance in both tests. Overall, the researcher observed sixty-four lessons in thirty-two schools.

3.6 Data Analysis

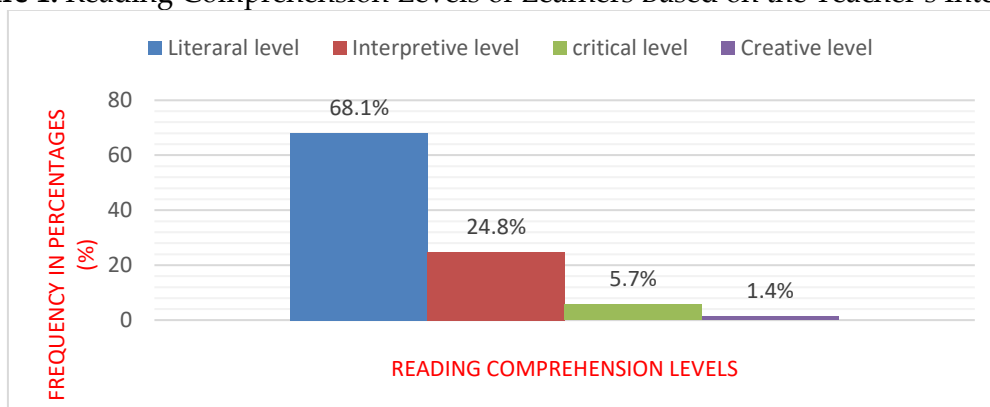
Quantitative data collected from Dyslexia Screen Test Junior (DST-J) and comprehension tests were coded and analyzed using SPSS version 26.0. The central tendency and dispersion measures were then used to summarize descriptive statistics for continuous data. Persons' correlation and ANOVA statistics were used in testing significant relationships between variables. The testing was carried out on the hypotheses listed below:

4. Results and Discussions

4.1 Reading Comprehension Ability Levels of Grade Four Learners with Dyslexia in Nairobi and Kiambu Counties, Based on the Teacher's Interview

Special needs English teachers in Nairobi and Kiambu Counties shared insights on Grade Four learners' comprehension abilities, offering qualitative data on student challenges and effective teaching strategies. Figure 1 presents the results.

Figure 1: Reading Comprehension Levels of Learners Based on the Teacher's Interview



According to Figure 1, 68.1% of learners, as reported by special needs English teachers, achieved only a literal level of comprehension, indicating they struggled with decoding words and recognizing patterns, leading to a basic understanding of text meaning. The next largest group, comprising 24.8% of learners, reached the interpretive level, which involves analyzing and synthesizing information—skills many learners found challenging due to difficulties in processing and organizing information. Only 5.7% attained a critical level of comprehension, and a mere 1.4% reached the creative level.

These findings are consistent with those of Li, Wong, and Chiu (2023), who found that learners with dyslexia face significant challenges in developing reading proficiency, particularly in phonetic decoding and word recognition. Decoding difficulties significantly impact reading fluency and overall comprehension, especially when

learners encounter unfamiliar words or complex texts. Several factors contribute to the low comprehension levels among learners with dyslexia, including the strategies used during reading, coherence in linking ideas, learner motivation, interest in the topic, and reading acuity.

These results underscore the need for tailored interventions and support systems that address both decoding skills and comprehension strategies to improve reading outcomes for learners with dyslexia.

4.2 Reading Comprehension Ability Levels of Grade Four Learners with Dyslexia in Nairobi and Kiambu Counties, Based on the Observation Checklist

This section provides an overview of the checklist used to assess learners' reading comprehension during lesson observations and tests. Table 2 shows the corresponding results.

Table 2: Observation Checklist for evaluating reading comprehension ability levels

Statement (N=141)	Response		
	Yes	Sometimes	No
Reads slowly and repeatedly	79(56.0%)	40(29.9%)	22(16.6%)
Has difficulty understanding comprehension questions	76(53.9%)	42(29.7%)	23(16.3%)
Finding reading and writing more tiring	74(52.5%)	52(36.8%)	15(10.6%)
Difficulties in planning ideas in the right order	76(53.9%)	40(28.4%)	25(17.7%)
Has difficulty identifying the main points	80(56.7%)	40(28.4%)	21(14.8%)
Untidy handwriting.	91(64.5%)	35(24.8%)	15(10.6%)
Repeating reading the text several times before it makes sense	88(62.4%)	39(27.6%)	14(9.9%)
Poor memory	86(60.9%)	51(36.2%)	4(2.8%)

Table 2 reveals that 56% of learners (79 individuals) experienced slow and repetitive reading, a significant challenge in reading fluency, which is crucial for comprehension. Additionally, 29.9% (40 individuals) faced occasional fluency issues, while 16.6% (22 individuals) did not struggle with these difficulties. Furthermore, 52.5% of learners found reading and writing more tiring than their peers, with 36.8% occasionally facing this issue, leaving 10.6% unaffected.

In terms of organizing ideas, 53.9% of learners had difficulty putting ideas in the correct order, with 28.4% occasionally experiencing this challenge, while 17.7% did not. Approximately 56.7% of learners struggled to identify key points in sentences, with 28.4% occasionally facing this problem and 14.8% having no difficulty.

The study also found that 64.5% of learners had untidy handwriting, 24.8% experienced this occasionally, and 10.6% did not face this issue. Additionally, 62.4% of learners needed to reread texts multiple times before understanding them, while 27.6% sometimes faced this challenge, and 9.9% did not. Moreover, 60.9% of learners struggled with poor memory, 36.2% occasionally faced memory issues, and only 2.8% did not experience memory problems.

These findings highlight the widespread challenges in reading comprehension and memory among the learners. The high percentage of learners needing to reread texts points to difficulties in processing information, while the significant number of learners with poor memory underscores the need for targeted interventions.

These results align with a study by Smith, Johnson, and Williams (2020), which found that learners with dyslexia exhibit lower reading fluency levels compared to their non-dyslexic peers, including slower reading rates and lower accuracy. Similarly, a study by Rello *et al.* (2020) noted that learners with dyslexia produced lower-quality written work, both in conceptual ideas and handwriting, mirroring the findings of the current research.

5. Conclusions

The study revealed a notable relationship between dyslexia and reading comprehension levels among fourth-grade learners in Nairobi and Kiambu Counties. The majority of these learners exhibited only literal-level comprehension, indicating a direct impact of dyslexia on their reading abilities. The findings suggest that learners with dyslexia tend to struggle more with reading comprehension, as those with higher dyslexia risk demonstrate lower reading comprehension levels. This underscores the significant link between dyslexia and reduced reading comprehension, highlighting the need for targeted interventions to address these challenges effectively.

6. Recommendations

- 1) The Ministry of Education should offer comprehensive training for teachers on dyslexia, including structured literacy, multisensory methods, and specific accommodations for learners with dyslexia.
- 2) Quality assurance officers should enhance school assessments to ensure early detection and effective intervention for reading impairments.
- 3) Teachers should create and apply individualized education plans for learners with dyslexia, detailing interventions, accommodations, and goals to support their reading progress.

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Conflict of Interest Statement

The authors declare no conflicts of interest.

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