



Examining the impact of teacher characteristics on first-grade learners' reading performance in Zambian primary schools: A case study in Lusaka District

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Article Info

ISSN (online): 2582-7138

Volume: 05

Issue: 02

March-April 2024

Received: 08-01-2024

Accepted: 12-02-2024

Page No: 499-505

Abstract

The objective of this study was to evaluate the influence of teacher attributes on the reading proficiency of first-grade learners in public primary schools in Lusaka district. A total of 120 first-grade learners were assessed using the Early Grade Reading Assessment (EGRA) tool, which measures their foundational reading skills, including letter sound knowledge, oral reading fluency, reading comprehension, listening comprehension, and non-word reading. Furthermore, a group of 20 first-grade reading teachers were surveyed regarding their educational background, native language, and years of experience in teaching reading. The results showed that the majority of first-grade learners faced challenges in basic reading skills across most of the assessed components, except for listening comprehension and orientation to print. Additionally, the study indicated that teacher attributes, such as native language, qualifications, and experience, had only a minimal impact on reading performance. Based on these findings, it is recommended that the Ministry of Education consider assigning reading teachers to classrooms where they are conversant with the medium of instruction and/or the language is their mother tongue. Moreover, continuous monitoring of teacher qualifications and observation of their instructional practices in the classroom are essential.

DOI: <https://doi.org/10.54660/IJMRGE.2024.5.2.499-505>

Keywords: Teacher experience, mother-tongue knowledge, qualifications, Teacher characteristics, Zambia

Introduction

The ability to read and write, unlike the development of speech, is not innate and needs deliberate and explicit instruction to gain proficiency (Kaani *et al.*, 2016; Lyon 1998) ^[23]. In order to become proficient in comprehending texts, learners should be provided with explicit and systematic instruction in decoding, word recognition, and strategies to enhance comprehension. To enhance the reading proficiency of novice readers, active involvement from learners, parents, educators, and the wider community is crucial (Epstein, 2018; Kaani, 2014; Kaani & Joshi, 2013) ^[11, 21]. Reading holds significant importance in individuals' daily lives (Niklas *et al.*, 2016) ^[35], particularly within educational environments (Bernhardt, 2000) ^[5]. It enables individuals to actively engage in social, economic, cultural, and political contexts (Mutale, 2016) ^[31]. Therefore, teachers must effectively engage with the psychological processes involved in developing skilled and well-rounded readers (Joshi & Wijekumar, 2019; Silungwe & Kaani, 2023) ^[21, 18] by demonstrating pedagogical expertise and subject matter knowledge (Oliveira *et al.*, 2019; Shulman, 1986). While teachers can acquire pedagogical content knowledge through formal training, effective literacy instruction also requires years of relevant classroom experience and proficiency in the language of instruction (Kaani *et al.*, 2016) ^[23]. Consequently, teacher characteristics, such as academic qualifications, teaching experience, and language proficiency, have a significant impact on teacher effectiveness and students' reading performance (Silungwe & Kaani, 2023; Shulman, 1986; Moats, 2009) ^[48, 29]. In Zambia, similar to many developing countries, limited knowledge exists regarding the influence of teacher-related characteristics on student reading instruction and achievement.

Does teacher qualifications affect their teaching ability?

The qualifications of a teacher greatly determine their ability to teach effectively. The Peter effect-a theoretical framework based on Applegate and Applegate's (2004) ^[4] work-explains the role of pedagogical content knowledge in the teaching-learning process. It posits that teachers cannot be expected to teach what they do not know (Cantrell *et al.*, 2012) ^[7]. Effective teacher training is a crucial factor in improving classroom discourse and student achievement (Akiba *et al.*, 2007) ^[1]. Furthermore, Phillips (2010) ^[40] found a positive correlation between graduate degrees in elementary or early childhood education, specifically in the subject area being taught, and gains in learners' reading achievement.

Advanced teacher qualifications are significantly associated with higher quality language structure and reasoning skills in learners (Manning *et al.*, 2019). In low-income schools, improvements in teacher qualifications have led to improved student achievement, as explored by Boyd *et al.* (2008) ^[6]. These researchers concluded that observable teacher qualifications result in overall improved academic performance. However, there are cases where teachers may be qualified and well-trained, but still are still ineffective in the classroom (Ngware *et al.*, 2010) ^[34].

The influence of teacher experience on literacy instruction

Teaching experience is an essential determinant of teacher effectiveness and students' academic performance (Boyd *et al.*, 2008; Cantrell *et al.*, 2012) ^[6, 7]. According to Apata (2013) ^[3], experience allows trained teachers to translate academic knowledge into effective teaching techniques and problem-solving strategies. Experienced teachers tend to utilize superior classroom management approaches that promote student autonomy and reduce teacher control (Ewetan, 2015; Muthoki, 2015) ^[12]. Thus, time and experience play a crucial role in the development of pedagogical expertise. Kraft and Papay (2014) ^[27] corroborate the widespread belief that teachers' knowledge improves over time. Their research reveals notable disparities in individual teacher knowledge based on demographic characteristics. Consequently, teachers with more years of experience, particularly at the same grade level, possess a more profound understanding of pedagogical content knowledge in the classroom.

However, it is crucial to exercise caution when considering experience, as many teachers may have taught for years without adequate opportunities for knowledge development. These teachers may encounter difficulties in adapting to new educational trends, such as modifications in subject curricula. On a different note, Al-hazza, Fleener, and Hagar (2008) ^[2] found no significant differences between new and experienced teachers regarding their knowledge of phonics, phonological awareness, and syllabication. Instead the depth of subject content knowledge is what truly matters. These divergent findings underscore the need for further research and scholarly discourse.

The role of teacher's knowledge of the language of instruction

Numerous African governments have recognized the significance of language in promoting social interaction, national unity, and cultural preservation (Kaani & Joshi, 2013; Kaani *et al.*, 2016; Sampa, 2005; Tambulukani *et al.*, 1999) ^[44, 51]. This policy highlights the importance of learning

in students' first language (FL), home language, native language, or the vernacular spoken at home (Sumbalan *et al.*, 2017). By integrating indigenous languages as a medium of instruction alongside English in all subjects and at all educational levels, this approach challenges the long-standing disregard for Zambian languages and significantly elevates the status of indigenous languages. It yields positive outcomes in learners' academic performance. This approach enables children to exercise their right to learn in their first language, promotes additive bilingualism, addresses social equity objectives, and ensures equal access to education and language rights for all citizens in a democratic country.

Seah (2018) ^[46] asserts that learners who are native speakers perform better on tests when taught by native-speaking teachers compared to non-native-speaking teachers. Galina, Giedre, and Viktorija (2010) ^[15] also observed that all learners benefit from support in their mother tongue, but the extent to which native language support is required depends on their oral proficiency. The resurgence of using the native language in English classrooms is driven by learners' need to enhance language accuracy and clarity. For example, Kocakulah, Unstunluoglu, and Kocakular (2005) found that Turkish learners who were taught science in English (a foreign language) had more errors compared to those taught in their native language.

However, some researchers argue that while the native language plays an essential role in foreign language learning, excessive use of it may lead to difficulties and hinder learners from gaining sufficient exposure to other languages, thereby impeding the language learning process (Forman, 2012; Spada *et al.*, 2005; White & Ranta, 2002) ^[50]. When learners utilize and master their first language, which is spoken in their immediate environment, they develop critical thinking and problem-solving skills that can be applied to lifelong learning (Nolasco, 2012) ^[36]. Therefore, it is important to encourage teachers to incorporate the native language into lessons to shape classroom dynamics, provide a sense of security, validate learners' experiences, explain complex concepts, introduce new material, and define new vocabulary.

Cantrell and colleagues (2012) used the Peter Effect to explain the low reading proficiency among learners. Hence, reading teachers must possess not only pedagogical content knowledge but also proficiency in the language of instruction to effectively support struggling learners. Evidence suggests that teachers' poor language proficiency contributes to poor reading performance (Chapman *et al.*, 2017; Cheesman *et al.*, 2009; Cunningham *et al.*, 2004; Cunningham *et al.*, 2009; Joshi *et al.*, 2009; Kaani, 2019; Lin & Jiar, 2018; Moats & Foorman, 2003; Silungwe & Kaani, 2023; Washburn *et al.*, 2016) ^[8, 9, 10, 28, 49].

The Current Study

The aim of this study was to examine the impact of teachers' language of instruction, academic qualifications, and teaching experience on the reading performance of grade 1 learners in public primary schools in Lusaka district. The study sought to evaluate how the proficiency of Grade 1 learners in various reading skills, including letter sound knowledge, oral reading fluency, reading comprehension, listening comprehension, and non-word reading, is influenced by teachers' proficiency in the language of instruction, academic qualifications, and years of teaching experience.

By investigating how teacher characteristics impact the reading performance of grade 1 learners, this study will shed light on how other factors, such as letter sound knowledge, oral reading fluency, reading comprehension, listening comprehension, and non-word reading, affect reading proficiency. Moreover, it can provide insights into the differences in reading performance among learners taught by teachers with different qualifications, experience, and mother tongue languages. The ultimate objective of this study is to contribute to the existing knowledge and literature on the literacy levels of Zambian learners and teacher effectiveness. It is hoped that this research will help identify gaps and inspire further studies to provide more information and potential solutions.

Method

Participants: A purposive sampling method was utilized to select a cohort of 20 grade 1 reading teachers. These educators were asked to furnish details regarding their qualifications, experience, and native language. From the pool of sampled teachers' classes, a random selection of 120 grade 1 learners (consisting of 60 boys and 60 girls) was made to participate in the study. Both the teachers and learners willingly and voluntarily participated in the study and provided informed consent.

Data Collection Procedure and Measures: The Early Grade Reading Assessment (EGRA), a well-established assessment tool that gauges reading and comprehension abilities in children, particularly in the local Zambian language under review (Cinyanja), was employed to evaluate the learners' foundational reading skills (RTI International, 2009). Each learner underwent a one-on-one, oral assessment using the EGRA, which took approximately 15 minutes per child. The assessment encompassed various facets of reading, including letter sound knowledge, oral reading fluency, reading comprehension, listening comprehension, and invented (non-word) reading.

Orientation to Print: Prior to engaging in other reading tasks, the learners were evaluated on their grasp of basic reading concepts. As part of this assessment, the learners were presented with a segment of a paragraph from their stimuli packet and were queried on where to commence reading, the direction of reading, and what follows at the end of each line. This test had a maximum score of 3 points. The orientation to print assessment was administered at the outset to familiarize the learners with reading and to ensure their relaxation before embarking on reading other texts.

Letter Sound Knowledge: The assessment required the learners to identify and vocalize the sounds of 100 letters displayed in rows from left to right. The learners were instructed to provide the phonetic sound of the letters rather than their names, with any occurrence of letter names resulting in a score of zero. Both uppercase and lowercase letters were included in the test, although an equal distribution of uppercase and lowercase letters in each row was not maintained.

Practice items were administered prior to the test, and the assessment was concluded if a learner correctly identified all letters in the first row or when the time limit elapsed. Participants were given 180 seconds to identify as many letter sounds as possible in their familiar language. If an examinee

paused or halted on a particular letter for 3 seconds, they were prompted to move on to the subsequent letter, and the bypassed letter was marked as incorrect.

Non-Word Reading: The test comprises 50 orthographically correct non-word items that learners are instructed to read carefully within a minimum of 180 seconds. Each row contains a mixture of words. For instance, in the Cinyanja EGRA version, the first line includes the following words: nipe, atapi, gelu, kelo, and mdzimu. A child receives 1 point for each non-word read. The test is terminated if a learner fails to read any item in the first row. Prior to the actual test, a set of practice items (Ola, koki, cota) is provided.

Oral Passage Reading: This assessment evaluates a learner's reading fluency by having them read a connected text aloud. The child is instructed to read a short passage within a time frame of 180 seconds. The passage consists of 6 sentences in Cinyanja. The learners are assessed based on the number of words they read correctly out of a total of 40 words. If a child fails to read a single correct word in the first sentence, the test is discontinued.

Reading comprehension: This assessment measures a learner's ability to comprehend written text by answering questions relating to the previously read oral passage. Following the oral passage reading, the child is required to answer five oral questions that encompass various aspects such as where, what, why, who, and how. The purpose is to evaluate the learners' fundamental understanding of the story. Each question is allocated no more than 60 seconds for a response. Five questions carry a weightage of 1 mark each, resulting in a maximum total of 5 points. If a learner fails to read the first sentence correctly and runs out of time or does not have sufficient time to read all the sentences, not all 5 questions are asked.

Listening comprehension: This assessment gauges a learner's ability to comprehend an orally-delivered story consisting of 44 words and 7 sentences. The test also requires the learners to concentrate and focus in order to understand and remember enough details about the story. The child is then expected to answer both literal and inferential questions without requesting the story to be repeated. Five questions are posed to the child based on the short text. In this assessment, no more than 60 seconds are allocated to answer each question. Each question carries a weightage of 1 point, resulting in a total of 5 points.

Results

Quantitative data analysis was conducted using SPSS version 20. An evaluation of internal consistency reliability using Cronbach's alpha (α) indicated that all estimates exceeded the minimum acceptable threshold of 0.70 (Nunnally & Bernstein, 1994) [37]. The results were analysed to generate descriptive statistics, including mean and standard deviations, for the various tests being considered. Additionally, multiple regression analyses were performed to determine how each teacher characteristic as defined by teachers' academic qualifications, length of teaching experience and language of instruction competence influences the reading outcomes of grade 1 learners in Zambian primary schools.

Descriptive Statistics: Mean and Standard Deviation

Table 1 below presents the results of the descriptive statistics. The findings reveal that the participants had a good understanding of orientation print ($M = 2.71$, $SD = 0.79$), but their performance on the letter sound identification test was below average ($M = 32.41$; $SD = 25.47$). Grade 1 learners were only able to correctly identify one-third of the letter sounds from the 100 items presented. Similarly, on the non-word reading test, the mean score for the 50 items was 10.21 ($SD = 11.78$), which translates to an average of one-fifth of the total score. The performance on the oral reading test was slightly higher than their non-word performance ($M = 12.31$; $SD = 14.07$), accounting for only 30% of the 40-word test read correctly.

Table 1: Mean Scores and Standard Deviations for Grade 1 Learners

Sub-Tasks	M(# of items)	SD
Orientation To Print	2.71 (3)	0.79
Letter Sound Identification	32.41(100)	25.47
Non Word Reading	10.21 (50)	11.78
Oral Reading Passage	12.31 (40)	14.07
Reading Comprehension	1.45 (5)	1.70
Listening Comprehension	3.57 (5)	0.99

Learners' achievement in listening comprehension was good ($M = 3.57$, $SD = 0.99$), with participants correctly answering almost four out of the five questions. However, the reading comprehension task proved to be more challenging ($M = 1.45$, $SD = 1.70$), as learners only managed to answer an average of one and a half questions correctly out of the

comprehension questions posed. It is clear from the results that participants excelled in low-order orientation to print and listening comprehension tasks, but struggled more with higher-level reading tasks.

Influence of teacher characteristics on the reading process

Multiple linear regression model analysis was conducted to investigate the predictive relationship between teacher characteristics; namely qualification, language of instruction, and teaching experience, and various components of the reading process. These components include orientation to print, letter sound identification, non-word reading, oral reading, listening comprehension, and reading comprehension. The r^2 values for each component of the reading process are displayed in Table 2. The findings from the model revealed that, with the exception of oral reading and reading comprehension ($p < 0.05$), the effect of the aforementioned teacher characteristics was statistically significant ($p < 0.05$).

In general, the combined coefficient of determination (r^2) regarding teachers' academic qualifications, competence in the language of instruction, and teaching experience was discovered to be lower than initially expected. It was observed that the three predictor variables had the least influence on letter sound identification (1.0%), followed by print orientation (2.2%). These coefficients of determination were not considered statistically significant ($p > 0.05$). Nevertheless, a statistically significant shared variance of 4.0% was observed in decoding non-words and oral passage reading tasks, indicating the highest level of shared variance.

Table 2: Multiple regression coefficients results summary

Predictor Variables	r (r^2)	p	Tr. Lang1 β	Tr. Qualif β	Tr Exper B
Orientation To Print	0.15(2.2%)	0.01	0.13	0.07	0.02
Letter Sound Identification	0.10(1.0%)	0.01	0.01	0.03	0.09
Non-Word Reading	0.20(4.0%)	0.03	0.12	0.09	0.13
Oral Reading Passage	0.20(4.0%)	0.08	0.03	0.12	0.16
Listening Comprehension	0.18(3.3%)	0.01	0.14	0.07	0.11
Reading Comprehension	0.16(2.6%)	0.14	0.02	0.12	0.11

Note: Tr. Lang1 = mother tongue of teacher

Tr. Qualif = teacher academic qualification

Tr. Exper = teacher experience in years

The effects of the three teacher characteristics varied in terms of the β -weights. The results showed that teaching experience qualification had statistically significant effects on grade 1 learners' oral passage reading ($\beta = 0.16$; $p < 0.05$), non-word reading ($\beta = 0.13$; $p < 0.05$), listening ($\beta = 0.11$; $p < 0.05$), and reading comprehension ($\beta = 0.11$; $p < 0.05$). The teacher's language proficiency only had a significant influence on orientation to print ($\beta = 0.13$; $p < 0.05$), listening comprehension ($\beta = 0.14$; $p < 0.05$), and non-word reading ($\beta = 0.12$; $p < 0.05$). On the other hand, only oral passage reading ($\beta = 0.12$; $p < 0.05$) and reading comprehension ($\beta = 0.12$; $p < 0.05$) had significant effects. These findings suggest that the three predictor variables - native language, teacher qualification, and experience - varied in terms of their individual contributions, as shown by the differences in standardized beta.

In conclusion, the findings suggest a notable disparity in the academic performance of Grade 1 students in Zambian schools. While they demonstrate relative ease in tasks such

as listening comprehension and print orientation, they encounter considerable difficulties in non-word reading, reading comprehension, and oral passage reading. Notably, the number of years of teaching experience emerges as the most influential factor in shaping the initial reading proficiency of children. Unfortunately, academic qualifications do not seem to exert a significant influence on the cultivation of proficient reading skills among Grade 1 learners.

Discussion and Conclusions

The study had two specific objectives. The first objective was to evaluate the performance of grade 1 learners in different areas of reading, such as orientation to print, letter sound knowledge, oral reading fluency, reading comprehension, listening comprehension, and non-word reading. The second objective was to investigate how teacher characteristics influenced these essential reading skills. Specifically, the study examined the impact of teachers' native language,

qualifications, and teaching experience.

The findings suggest that the participants exhibited a generally low level of performance, albeit with relatively fewer difficulties encountered in tasks related to listening comprehension and print orientation. These findings are consistent with previous research and have persisted over a significant period of time (Kaani & Joshi, 2013; Mwanza, 2020; RTI International, 2012; 2015; USAID Read to Succeed Project, 2015; USAID Mukhalidwe Athu Project, 2016). Zambia has been grappling with low reading proficiency, and the country has implemented various policy changes in an attempt to address this issue, although most have proven ineffective (Sampa, 2005; Tambulukani *et al.*, 1999)^[44, 51]. Primarily, Zambia has attributed the low reading proficiency to the mismatch between language of instruction and, learners' and teachers' mother tongue (Kapenda, 2020)^[20], and many studies and policy changes have focused on assessing the impact of language on reading outcomes.

These findings were not unexpected. In a study carried out by Sampa (2016)^[45], it was discovered that a significant proportion of learners obtained a score of zero in areas such as letter-sound knowledge, non-word decoding, oral passage reading, and reading comprehension. This suggests that many children are struggling to acquire crucial reading skills. However, it is worth noting that their performance in listening comprehension was superior to reading comprehension. This can be attributed to the fact that when reading, it is easier to review the text and provide accurate answers to comprehension questions, whereas this is not feasible during listening comprehension tasks (Fisher & Frey, 2014). This counter-intuitive finding could potentially be explained by the fact that children enter the classroom without a solid grasp of the fundamental aspects of the reading process. Therefore, listening comprehension may feel more familiar, especially considering that the assessments were conducted in the participants' native language (Joshi *et al.*, 2023; Kaani & Joshi, 2013), in contrast to reading comprehension.

Furthermore, teacher characteristics have an impact on all aspects of the reading process, despite the relatively low shared variances (r^2). Particularly, our findings indicate that the number of years taught has greater influence on students' reading performance compared to their language proficiency and academic qualifications. This outcome is to be expected, because teachers become more skilled at enhancing their students' academic success the longer they teach the same subject matter. This is supported by previous studies (Apatha, 2013; Ewetan, 2015; Muthoki, 2015)^[3, 12] and is particularly evident when teachers consistently teach the same grade and/or the same group of students over an extended period of time (Kraft & Papay, 2014). However, it is worth noting that this finding contradicts the results of a study conducted by Al-hazza and colleagues (2008)^[2].

Research conducted in Zambia has revealed that learners' familiarity with the language of instruction has a significant impact on their reading acquisition (Kaani, 2014; Kaani & Joshi, 2013; Seymour *et al.*, 2003) and writing skills (Kaani, 2021). However, this study found that the influence of teachers' knowledge of the language of instruction was observed only in the areas of print orientation, non-word reading, and listening comprehension. This finding is supported by a study conducted by Parrila and colleagues (2023) and forms the basis of the simple view of reading (Hoover, 2023; Hoover & Tunmer, 2018)^[17]. Since the

assessments in this study were conducted in the Cinyanja language, which is both a mother tongue and a lingua franca in Lusaka, it is undeniable that the language of instruction played a crucial role in the children's performance.

Contrary to the expectation that teacher qualifications are a crucial component of teaching (Cantrell *et al.*, 2012)^[7], their influence in this study was found to be lower compared to the impact of teaching experience and language proficiency in instruction at the grade 1 level. This finding contradicts the results reported by Phillips (2010), Boyd *et al.* (2008)^[6], and Manning *et al.* (2019), who found strong positive relationships between higher teacher qualifications and learners' reading achievement. These findings have significant implications for the relationship between teacher education, experience in schools, and theoretical frameworks such as the Peter Effect (Kaani, 2019). However, the limited influence of qualifications may be attributed to inherent deficiencies in teacher training programmes (Ngware *et al.*, 2010)^[34]. Therefore, it is important to empirically examine the interaction effects of teaching experience and qualifications in order to gain valuable insights into their overall impact on reading outcomes.

In conclusion, grade 1 learners demonstrated inadequate reading skills across all subtasks. Furthermore, teacher qualifications, experience, and language proficiency in instruction made modest, but distinct contributions to children's reading performance. Based on these findings, it is recommended that the government, through the Ministry of Education, should consider implementing more continuous professional development programmes led by experienced teachers and establish school-based mentorship initiatives. Additionally, it is crucial to continuously monitor teacher qualification programmes and regularly assess the effectiveness of classroom discourse.

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