

Causes of Phonological Deficits in Grade One Learners

Josefino A. Gonzales

Institute of Graduate and Professional Studies, Lyceum-Northwestern University, Dagupan City

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Email of Corresponding Author: josefino.gonzales001@deped.gov.ph

Abstract

This study investigated the causes, manifestations, and instructional challenges associated with phonological deficits among Grade One learners in a multilingual public-school setting. Anchored on the Phonological Deficit Theory, the research sought to explain how early language experiences, classroom behaviors, and instructional contexts interact to influence early reading development. A qualitative, multi-perspective exploratory case study design was employed. Data were gathered through semi-structured interviews with Grade One teachers and parents of learners identified with phonological deficits, as well as systematic classroom observations during phonological awareness activities. Purposive sampling was used to select information-rich participants from Tibaguin Integrated School. Findings revealed that phonological deficits stem from cumulative early environmental gaps, particularly insufficient oral language stimulation, excessive screen exposure, delayed or inconsistent shared reading, and limited exposure to nursery rhymes and sound-based activities. These early experiences were associated with auditory memory failure, poor phoneme discrimination, difficulty in blending and segmenting sounds, and delayed phonological awareness. Classroom observations showed that learners with phonological deficits exhibited low verbal participation, avoidance behaviors, and reduced peer interaction, indicating both cognitive and affective consequences. The study also identified significant instructional challenges in multilingual classrooms, including phoneme transfer interference from learners' mother tongues, limited time for individualized intervention, lack of linguistically responsive instructional materials, and assessment bias between phonological deficits and second-language acquisition difficulties. The study concludes that phonological deficits among Grade One learners are multi-layered and reinforced by home, classroom, and institutional factors, requiring early, targeted, and linguistically responsive interventions. The findings support recommendations for strengthened parent-school collaboration, early phonological screening, teacher training, and the development of cross-linguistic instructional resources. The study aligns with Sustainable Development Goal 4 (Quality Education) and Sustainable Development Goal 10 (Reduced Inequalities) by promoting inclusive early literacy practices. Its sustainability impact lies in strengthening educational and institutional capacity to address early reading difficulties, thereby supporting equitable learning outcomes and long-term academic resilience.

Keywords: Early literacy; Grade One learners; Multilingual classroom; Phonological awareness; Phonological deficits; Qualitative case study; Reading difficulties; Teacher perceptions

1. Introduction

Phonological deficits constitute a major barrier to early literacy acquisition and are widely recognized as a core cause of reading difficulties and developmental dyslexia. Extensive research has demonstrated that weaknesses in phonological processing disrupt the ability of young learners to perceive, discriminate, segment, and manipulate speech sounds, thereby impairing decoding and word recognition during the initial stages of formal schooling. These deficits reflect complex interactions among neurobiological, cognitive, linguistic, and environmental factors, and they may be intensified in multilingual classrooms where consistent delivery of early literacy supports is harder to sustain (Jacoba et al., 2025; Gamit, 2023a). At the school level, teacher capacity and professional conditions can influence the quality of early identification and support provided to learners who struggle with foundational language skills (Hipolito & Santos, 2025; Santos, 2020). The availability of structured remediation and the practical tools teachers can use to address learning gaps also shape how early difficulties are managed in day-to-day instruction (Cara et al., 2025; Gamit, 2023b). Beyond classroom instruction, school-community linkages and outreach mechanisms may affect how learning needs are supported, especially in resource-limited settings (Constantino & Santos, 2025; Santos, Galano, Claudio, & Obligado, 2025). Recent social disruptions and health-related concerns have likewise influenced learning continuity and household routines, which can indirectly affect early learning opportunities (Santiago & Santos, 2022; Santiago, Santos, Morales, & Savellano, 2023). In many communities, household livelihood conditions and local production realities shape time, stability, and access to learning resources that children experience at home (Cacal et al., 2023; Santos & Constantino, 2021). Patterns of household decision-making and sustainability challenges within local economies further contextualize the material conditions that may constrain early language exposure and literacy support (Banzon & Santos, 2025; Santos et al., 2025). Access to financial services and workforce development opportunities also forms part of the broader environment that influences

family resilience and daily learning conditions (Binaluyo et al., 2025; Agustin et al., 2025). Everyday service experiences and workplace ethics within the community add another layer of context that can shape families' mobility, trust, and engagement with local institutions, including schools (Santos, L. G., 2024). Finally, evidence on learners' broader cognitive skill demands in basic education underscores how foundational processing skills can interact with early academic learning demands more generally (Gamit, 2022). This study therefore examines the causes of phonological deficits among Grade One learners, with particular attention to early language experiences, classroom manifestations, and instructional challenges within a multilingual public-school setting.

1.1 Phonological Deficits as a Foundation of Early Reading Difficulties in Grade One Learners

Phonological deficits have been consistently linked to atypical neural activation patterns in brain regions responsible for speech perception and production, including the inferior frontal gyrus, dorsolateral prefrontal cortex, middle temporal gyrus, premotor cortex, and supplementary motor area (Fu et al., 2024). These neurobiological differences indicate delayed or inefficient phonological processing rather than general cognitive impairment. A central debate in the literature concerns whether these deficits arise from degraded phonological representations or impaired access to intact representations. Evidence suggests that individuals with dyslexia often retain phonological representations but experience difficulty retrieving and automatizing them efficiently (Maionchi-Pino et al., 2024; Szenkovits et al., 2016). Phonological awareness has been identified as the strongest predictor of early reading success across languages and orthographies. Weaknesses in phonemic segmentation, blending, and discrimination significantly hinder the development of decoding skills and reading fluency, particularly during the first year of formal schooling (Lefèvre et al., 2023). These deficits, when left unaddressed, persist and compound reading difficulties throughout later academic stages.

1.2 Empirical Evidence on Phonological Processing, Early Literacy, and Multilingual Learning

Empirical studies consistently demonstrate that phonological processing deficits are a universal constraint on reading development, transcending linguistic and orthographic differences. Research involving multilingual and second-language learners shows that phonological awareness remains a dominant predictor of literacy outcomes even among non-native speakers (Lee, 2021; Cao et al., 2021). Neurocognitive evidence further supports the biological basis of phonological deficits, revealing atypical speech-processing mechanisms among learners with reading difficulties (Fu et al., 2024). Intervention studies indicate that phonological skills are malleable when targeted through explicit instruction. Metalinguistic training has been shown to improve phonological representations more effectively than working memory training alone (Wang et al., 2021), while early auditory enrichment through music exposure enhances neural speech processing in children at risk for dyslexia (Virtala et al., 2023). However, phonological deficits frequently co-occur with other cognitive challenges such as rapid automatized naming and visual attention limitations, supporting multiple-deficit models of reading difficulty (Saksida et al., 2016; Ring & Black, 2018; Moura et al., 2020).

1.3 Phonological Deficits in Multilingual Grade One Classrooms: Global Evidence and Local Educational Context

Globally, phonological deficits are recognized as a primary cause of early reading failure across diverse linguistic contexts (Cao et al., 2021; Lefèvre et al., 2023). Nationally, early literacy challenges remain a concern within public education systems serving linguistically diverse populations. Locally, Grade One classrooms within the Schools Division Office of Bulacan are characterized by multilingual learners whose mother tongues differ phonologically from Filipino and English. This linguistic diversity introduces phoneme transfer interference and complicates early literacy instruction, assessment, and intervention, increasing the risk of delayed identification of phonological deficits.

1.4 Phonological Deficit Theory as the Conceptual Lens for Understanding Early Reading Failure

This study is grounded in the Phonological Deficit Theory proposed by Stanovich (1988), which posits that phonological processing impairment is the primary causal mechanism underlying reading difficulties. The theory emphasizes deficits in phonological awareness, verbal short-term memory, and rapid automatized naming as barriers to grapheme-phoneme correspondence and fluent reading. It also highlights the "Matthew effect," wherein early phonological weaknesses lead to reduced reading practice and widening achievement gaps over time. The theory provides a robust explanatory framework for the present study by linking neurobiological evidence, behavioral manifestations, and instructional implications. Empirical findings demonstrating atypical brain activation patterns (Fu et al., 2024) and persistent phonological challenges across languages (Lee, 2021; Cao et al., 2021) reinforce the relevance of this theoretical lens in examining phonological deficits among Grade One learners.

1.5 Unaddressed Gaps in Identifying and Addressing Phonological Deficits Among Multilingual Grade One Learners

Despite extensive international research, significant gaps remain in understanding how phonological deficits manifest within multilingual Grade One classrooms in low-resource public school settings. Few studies have examined the interaction between phonological deficits and everyday instructional practices, particularly within Philippine public schools. Moreover, while evidence-based interventions show promise (Wang et al., 2021; Virtala et al., 2023), their contextual applicability and scalability in multilingual classrooms remain underexplored. There is also limited integration

of teacher perceptions, parental narratives, and classroom observations in explaining early phonological difficulties, underscoring the need for a holistic, context-sensitive investigation.

1.6 Contribution of the Study to Sustainable Development Goals in Early Literacy and Inclusive Education

This research aligns with Sustainable Development Goal 4 (Quality Education) by supporting inclusive, equitable, and effective early literacy instruction through early identification and intervention for phonological deficits. It also contributes to Sustainable Development Goal 10 (Reduced Inequalities) by addressing learning barriers faced by linguistically diverse and at-risk learners in public school contexts, thereby promoting equitable access to foundational literacy skills.

1.7 Relevance of Phonological Deficit Research to Educational, Social, and Institutional Sustainability

The study contributes to educational sustainability by strengthening early literacy foundations essential for long-term academic success. It supports social and community sustainability by emphasizing parental awareness and home-school collaboration in early language development. Additionally, the findings inform institutional sustainability by guiding teacher training, instructional planning, and policy development for multilingual and inclusive classrooms. Addressing phonological deficits at the Grade One level helps prevent long-term academic failure, reduces remediation costs, and promotes resilient, literate learning communities.

2. Material and methods

2.1 Research Design

The study employed a qualitative research design using a multi-perspective exploratory case study approach. This design was selected to allow an in-depth examination of phonological deficits as experienced and perceived by key stakeholders directly involved in early literacy development. The qualitative approach enabled rich descriptions of teachers' perceptions, parental narratives, and observable classroom behaviors without relying on quantitative measures. The design facilitated an integrated understanding of the phenomenon by capturing instructional, environmental, and behavioral dimensions within a real classroom context, particularly in a multilingual setting.

2.2 Locale of the Study

The research was conducted at Tibaguin Integrated School, a public school serving learners from diverse linguistic backgrounds. The school was selected because of its multilingual student population, which provided a relevant context for examining phonological deficits in early literacy instruction. As an integrated school offering elementary education, it provided a stable and appropriate environment for investigating foundational reading skills among Grade One learners. The cooperation of the school administration and teaching staff further supported its suitability as the research site.

2.3 Respondents of the Study

The respondents consisted of Grade One teachers and parents of learners identified with phonological deficits. Teachers served as key informants due to their direct experience in observing early indicators of phonological difficulties and implementing literacy instruction. Parents contributed narrative accounts of their children's early language and literacy experiences at home. In addition, Grade One learners were indirectly involved through classroom observations focusing on participation and interaction during phonological awareness activities.

2.4 Sample and Sampling Procedure

Purposive sampling was employed to select participants who could provide information-rich insights into the phenomenon under investigation. Grade One learners exhibiting persistent phonological difficulties were identified through teacher observations and classroom assessments. The parents of these learners were invited to participate in interviews. A small comparison group of typically developing learners was also identified to support observational contrast. All Grade One teachers at the research site were included to provide a comprehensive view of instructional practices and challenges. The sample size was intentionally limited to allow for in-depth qualitative analysis rather than statistical generalization.

2.5 Research Instrument

Three qualitative instruments were used to gather data. Semi-structured interview guides were developed separately for Grade One teachers and parents. The teacher interview guide elicited perceptions regarding early indicators, perceived causes of phonological deficits, and challenges encountered in multilingual classrooms. The parent interview guide focused on early language exposure, shared reading practices, nursery rhymes, songs, and parental awareness of early difficulties. A classroom observation protocol was also utilized to document learner behaviors during phonological awareness activities, focusing on verbal participation, non-verbal engagement, and peer interaction. These instruments were designed to generate rich, descriptive data aligned with the study objectives.

2.6 Data Gathering Procedure

Data collection began after securing permission from school authorities and obtaining informed consent from all participants. Grade One teachers were interviewed individually using the semi-structured guide, and interviews were audio-recorded with consent to ensure accuracy. Parents of learners with identified phonological deficits participated in narrative interviews conducted in a respectful and non-judgmental manner. Classroom observations were conducted over several weeks during scheduled phonological awareness activities. The researcher served as a non-participant observer and recorded detailed field notes to capture observable behaviors without disrupting instruction. All data collection procedures were conducted systematically to ensure consistency and depth.

2.7 Data Analysis Techniques

The data were analyzed using comparative thematic analysis. Interview recordings were transcribed verbatim, and data were first analyzed within groups, with teacher and parent narratives examined separately to identify emerging themes. Open coding was used to capture recurring concepts and patterns related to causes, early indicators, and instructional challenges. Classroom observation notes were analyzed concurrently to identify behavioral patterns and contrasts between learners with and without phonological deficits. The final stage involved triangulating findings from interviews and observations to develop a coherent explanation of the interrelated factors contributing to phonological deficits.

2.8 Ethical Considerations

Ethical safeguards were strictly observed throughout the study. Institutional approval was obtained prior to data collection, and informed consent was secured from teachers and parents. Child assent was treated as an ongoing process during classroom observations. Confidentiality and anonymity were maintained through the use of pseudonyms and secure data storage. Care was taken to avoid stigmatization of learners, and all interactions with participants were conducted with sensitivity, respect, and professionalism.

3. Results and Discussion

3.1 Teachers' Perceptions of the Causes and Early Indicators of Phonological Deficits

3.1.1 Home and Environmental Factors

The results indicate that Grade 1 teachers overwhelmingly perceived home and environmental factors as primary contributors to phonological deficits. Insufficient early oral stimulation and excessive screen time were consistently identified as dominant causes. Teachers reported that many learners lacked meaningful conversational exposure at home, with digital devices often replacing person-to-person interaction. Correspondingly, learners exhibited early behavioral indicators such as difficulty following multi-step verbal instructions and inability to accurately repeat simple rhyming couplets, reflecting weak auditory memory skills. These findings suggest that limited quantity and quality of spoken language exposure at home hinder the development of foundational auditory processing abilities. Without sustained reciprocal dialogue, learners struggle to retain and manipulate sound sequences, which are essential precursors to phonological awareness. The perceived impact of excessive screen exposure further reinforces concerns that passive auditory input cannot substitute for interactive language experiences necessary for early phonological development.

3.1.2 Preschool Experience

The results show that teachers identified lack of quality preschool experience as another major contributing factor. Many learners either did not attend preschool or were enrolled in programs emphasizing letter naming and visual recognition rather than sound-based instruction. A prominent indicator observed was the presence of learners who could name letters and recite the alphabet but were unable to blend individual phonemes into complete words, commonly described as "word callers" without blending ability. This pattern reflects a curricular mismatch where instruction prioritizes visual symbols over auditory phonemic awareness. The inability to blend sounds indicates an underdeveloped phonological system, wherein learners recognize letters as static visual labels rather than representations of manipulable sounds. Such early instructional gaps may contribute directly to later reading difficulties as learners lack the auditory foundation required for decoding.

3.1.3 Core Phonological Skill Deficits

The findings further reveal that teachers directly attributed phonological difficulties to poor fine-grained auditory discrimination. Learners were reported to struggle particularly with distinguishing similar vowel sounds, such as perceiving "bit" and "bet" as identical. Observable indicators included consistent failure in rhyming tasks and confusion when segmenting or clapping syllables in familiar words. These results indicate a fundamental breakdown in metalinguistic awareness, where learners are unable to consciously analyze and manipulate the sound structure of spoken language. The deficits observed extend beyond reading mechanics and highlight intrinsic difficulties in auditory perception and phonological processing, confirming that the challenges originate at the sound level rather than the visual-symbol level.

3.2 Parents' Narratives of Early Language and Literacy Experiences

The results from parental narratives reveal consistent patterns of limited early language stimulation. Parents reported low frequency and lack of focus on nursery rhymes and songs, with emphasis often placed on movement rather than words or sounds. Shared book reading was described as inconsistent or initiated only close to school age, with books tending to be visually rich but lacking repetitive and simple text. Additionally, parents reported frequent code-switching between the mother tongue and Filipino or English, as well as delayed recognition of speech or literacy difficulties. These findings suggest that learners missed critical exposure to prosodic patterns, rhyme structures, and repetitive acoustic input necessary for phonological awareness. Inconsistent shared reading reduced opportunities to map spoken language onto print, while unstructured code-switching may have contributed to unstable phoneme representations in the language of instruction. Delayed parental awareness further limited early intervention during the most malleable period of phonological development, allowing deficits to persist into formal schooling.

3.3 Observable Classroom Differences Between Learners With and Without Phonological Deficits

3.3.1 Verbal Participation

The results show that learners with phonological deficits participated verbally at significantly lower rates during phonological awareness activities. Their responses were often delayed, hesitant, and dependent on extensive teacher scaffolding. In contrast, learners without phonological deficits volunteered frequently, responded quickly, and often expanded on peers' answers. This disparity suggests that auditory processing tasks impose a heavier cognitive load on learners with deficits, increasing risk aversion and reducing fluency in sound manipulation. To avoid public errors, these learners withdraw from verbal participation, reinforcing avoidance patterns that further limit practice opportunities and skill development.

3.3.2 Non-Verbal Engagement

The results indicate that learners with phonological deficits frequently disengaged non-verbally during phonological tasks, exhibiting behaviors such as gazing away, fidgeting, slumped posture, and visible frustration. Conversely, learners without deficits maintained eye contact, actively tracked instruction, and physically engaged through actions such as clapping syllables. These behaviors reflect passive versus active processing differences. The disengagement observed among learners with deficits suggests cognitive overload and emotional withdrawal from demanding auditory tasks, while active physical engagement among peers supports sustained attention and deeper auditory encoding.

3.3.3 Peer Interaction

The results further reveal that learners with phonological deficits avoided initiating peer interactions during literacy activities and provided minimal responses when engaged. They appeared withdrawn during partner work. In contrast, learners without deficits actively initiated collaborative discussions, sought affirmation, and appeared energized by group success. This pattern suggests that fear of exposing auditory difficulties contributes to social withdrawal among learners with phonological deficits. Reduced peer interaction limits opportunities for low-risk practice and auditory feedback, reinforcing both academic and social isolation during early literacy instruction.

3.4 Challenges in Providing Targeted Phonological Intervention in Multilingual Classrooms

The results identify several challenges faced by teachers in multilingual classrooms. Phoneme transfer and interference were frequently reported, as certain sounds essential in Filipino or English were absent or variable in learners' mother tongues, such as Kapampangan. Teachers also described time management constraints that forced reliance on generalized whole-class instruction, limiting individualized phonemic practice. Additional challenges included scarcity of culturally and linguistically appropriate instructional resources, lack of specialized training, and assessment bias when distinguishing language unfamiliarity from genuine phonological deficits. These challenges significantly impede effective intervention. Cross-linguistic phonological interference slows progression toward higher-level skills like blending and segmenting. Generalized instruction undermines the need for sustained, low-risk practice, while inadequate resources and training result in misaligned interventions. Assessment bias further risks misdiagnosis, leading to inefficient allocation of limited instructional support and delayed remediation for learners with true phonological deficits

4. Conclusion & Recommendations

The study concludes that phonological deficits among Grade One learners are a multi-layered condition originating from insufficient early oral language stimulation at home and compounded by delayed parental awareness and inappropriate early literacy experiences that emphasize visual symbols over sound-based instruction. These early gaps lead to persistent auditory processing difficulties that manifest in poor phonological awareness skills, low classroom participation, and avoidant learner behavior. The findings further demonstrate that multilingual classroom contexts intensify these challenges through phoneme transfer interference, assessment ambiguity, and limited instructional resources, collectively hindering effective early remediation and reinforcing a cycle of academic withdrawal and reading difficulty.

Based on the findings, the study recommends the implementation of parent-focused literacy programs that emphasize the importance of early acoustic play, dialogic reading, and reduced screen exposure during early childhood. It also recommends the establishment of low-risk phonological practice opportunities within Grade One classrooms to support sound blending and segmentation while reducing learner anxiety. In addition, the study recommends systematic teacher training in early phonological screening and the development of linguistically responsive instructional materials and assessment tools to improve identification accuracy and intervention effectiveness in multilingual classroom settings.

The study is limited by its qualitative case study design conducted in a single public school, which restricts the generalizability of the findings to broader populations. The purposive and small sample size limits statistical representation, and the reliance on teacher and parent recall introduces the possibility of subjective or incomplete reporting. Furthermore, the researcher's role as the primary instrument for data interpretation may have introduced bias, although this was mitigated through systematic analysis and triangulation of data sources.

Compliance with ethical standards

The study was conducted in accordance with accepted academic and institutional ethical standards for qualitative, non-experimental research involving human participants. Participation was voluntary, data collection procedures posed no physical or psychological risk, and confidentiality and anonymity of all participants were maintained throughout the research process.

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Conflict of interest statement

The author declares that there were no financial, personal, or professional conflicts of interest related to this study.

Statement of ethical approval

The study employed non-invasive qualitative methods, including interviews and classroom observations, and did not involve experimental procedures; therefore, formal ethics committee approval was not sought or required.

Statement of informed consent

Informed consent was obtained from all participating teachers and from the parents or legal guardians of the learners prior to data collection. Participation was voluntary, confidentiality was ensured through the use of pseudonyms, and no personally identifiable information was reported.

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