



Emergent Literacy Skills in Kannada-Speaking Preschool Children With Hearing Loss: Effects of Natural, Structured, and Combined Instructional Approaches on Early Reading and Writing

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Abstract

Emergent literacy is the basis for later reading and writing. Children with hearing loss often experience delays in these skills because of reduced auditory access and in turn early language learning. The present study examined whether three instructional approaches—Natural (language exposure through everyday communication and interaction without explicit grammatical instruction), Structured (systematic teaching of grammatical structures using visual sentence models and guided practice), and Combined Natural–Structured (integration of natural communication with structured grammar instruction)—differentially influenced emergent literacy outcomes in Kannada-speaking preschool children with hearing loss. A quasi-experimental pre-test–post-test design was used with three matched groups: Control (Natural), Experimental Group 1 (Structured), and Experimental Group 2 (Combined Natural–Structured), with 32 children in each group (N = 96). Reading outcomes were derived from pronoun recognition, sentence–picture matching, and case-marker identification tasks, while writing outcomes were derived from suffix completion and picture-based sentence

completion tasks from the **Test for Examining Syntax Acquisition in Kannada (TESAK)**. Descriptive statistics, Wilcoxon signed-rank tests, Kruskal–Wallis tests, and Bonferroni-adjusted Mann–Whitney U tests were used. The Combined Natural–Structured group showed the highest gains in reading (M gain = 21.41, SD = 3.07) and writing (M gain = 14.44, SD = 1.64), followed by the Structured group (reading: M gain = 14.50, SD = 4.85; writing: M gain = 9.47, SD = 5.01), whereas the Natural group showed negligible change. Between-group differences in gain scores were statistically significant for both reading, $H(2) = 78.59$, $p < .001$, $\epsilon^2 = .82$, and writing, $H(2) = 75.41$, $p < .001$, $\epsilon^2 = .79$. These findings suggest that explicit grammatical teaching integrated with meaningful communication contexts is more effective than natural exposure alone for promoting early reading and writing in preschool children with hearing loss.

Keywords: emergent literacy, hearing loss, Kannada, reading, writing, quasi-experimental design

Introduction

Emergent literacy encompasses the foundational knowledge, skills, and dispositions that precede conventional reading and writing. Early literacy is fostered by children’s interactions with oral language, print, and meaningful communication, and it is strongly associated with later academic success (Snow et al., 1998). Evidence-based shared-reading strategies such as print referencing further demonstrate that children’s attention to print can be enhanced through intentional adult support (Justice & Ezell, 2004).

In children with hearing loss there is a delay in language and literacy development. This can limit their exposure to words, sentence patterns, grammar, and early reading experiences. Research suggests these children require early and well-planned support to develop literacy skills. This is especially true for children who are deaf or hard of hearing. Research also shows that children who are deaf or hard of hearing learn best from teaching delivered according to their communication and learning needs. In Kannada, early reading and writing are highly associated with grammatical forms (e.g., person–number–gender markers and case markers). In this study, only the reading and writing parts of TESAK (Tool for Evaluation of Syntax Acquisition in Kannada) were taken for analysis. The study examined whether three different instructional approaches were applicable instructional approaches—Natural, Structured, and Combined Natural–Structured—produced different literacy outcomes in preschool children with hearing loss.

It was hypothesized that the Combined Natural–Structured approach would yield the greatest gains because it integrates explicit grammatical teaching with contextualized communication, while the Natural approach alone would produce the least improvement.

Objectives

- To examine the effectiveness of different instructional approaches in improving emergent literacy skills in preschool children with hearing loss.

Method

The study employed a **quasi-experimental pre-test–post-test design with three groups**. The control group received intervention through a Natural approach (language exposure is through maternal reflective method and guided conversation), Experimental Group 1 received a Structured approach (investigator gave drill-based instruction with three-slate and five-slate models, and explicit sentence construction. Language instruction was systematic and explicit in design for the structured intervention group. It used visually based interventions (three-slate and five-slate sentence construction models, repetition tasks, and controlled sentence practice) and the focus was on planned drill activities), and Experimental Group 2 received a Combined Natural–Structured approach.

The dataset comprised **96 preschool children with hearing loss, with 32 children in each group**.

The intervention was implemented across structured instructional sessions focusing on the development of emergent literacy skills through syntactic awareness. Three instructional approaches were employed. In the **Natural approach**, children were exposed to language through conversational interaction, storytelling, picture discussions, and guided communication using the maternal reflective method, without explicit grammatical instruction. In the **Structured approach**, the investigator provided systematic drill-based instruction using three-slate and five-slate visual sentence construction models, which organize sentence components such as time, subject, object, verb, and appropriate suffix markers to facilitate explicit teaching of grammatical structures including Person–Number–Gender markers and case markers. Instruction involved repetition tasks, guided sentence construction, and controlled sentence practice. In the **Combined Natural–Structured approach**, natural conversational interaction was integrated with structured visual sentence construction activities, allowing children to first encounter language in meaningful contexts and then practice grammatical

structures through guided exercises. This combined approach was designed to promote both functional communication and explicit grammatical learning.

Emergent literacy was operationalized using the **reading and writing sections of TESAK**. The reading domain included three tasks: (a) matching/pronoun recognition (6 marks), (b) sentence–picture matching (9 marks), and (c) case-marker identification (8 marks), yielding a total reading score of 23. The writing domain included (a) suffix completion (10 marks) and (b) picture-based sentence completion (5 marks), yielding a total writing score of 15.

Scores from the uploaded dataset were aggregated into **total reading pre-test and post-test scores and total writing pre-test and post-test scores**. Descriptive statistics (means and standard deviations) were computed for each group. Because the score distributions were non-normal and bounded, **Wilcoxon signed-rank tests** were used for within-group pre-post comparisons. **Kruskal–Wallis tests** were used to compare gain scores among groups, followed by **Bonferroni-adjusted Mann–Whitney U tests** for pairwise comparisons.

Results

Table 1

Descriptive Statistics for Reading Scores by Group

Group	n	Pre-test M (SD)	Post-test M (SD)	Gain M (SD)	Median Gain
Control (Natural)	32	2.53 (3.24)	2.56 (3.22)	0.03 (0.18)	0.00
EXP1 (Structured)	32	0.09 (0.53)	14.59 (4.99)	14.50 (4.85)	13.00
EXP2 (Combined)	32	0.00 (0.00)	21.41 (3.07)	21.41 (3.07)	23.00

Note. M = mean; SD = standard deviation.

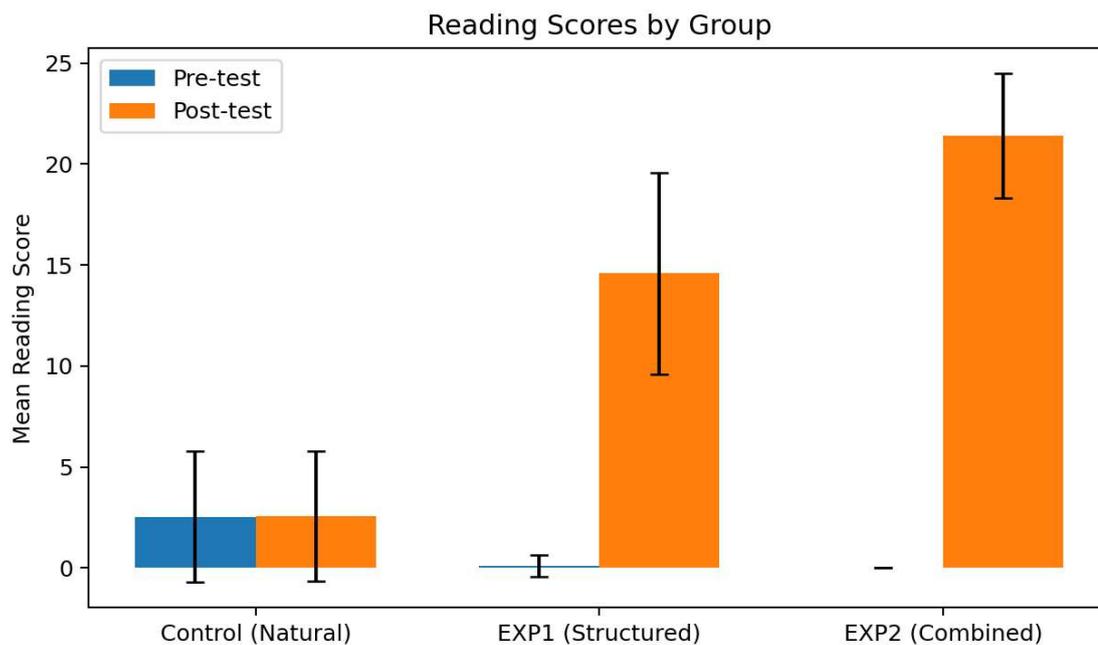


Figure 1. Mean reading pre-test and post-test scores by group.

Table 2

Descriptive Statistics for Writing Scores by Group

Group	n	Pre-test M (SD)	Post-test M (SD)	Gain M (SD)	Median Gain
Control (Natural)	32	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00
EXP1 (Structured)	32	0.00 (0.00)	9.47 (5.01)	9.47 (5.01)	8.00
EXP2 (Combined)	32	0.00 (0.00)	14.44 (1.64)	14.44 (1.64)	15.00

Note. M = mean; SD = standard deviation.

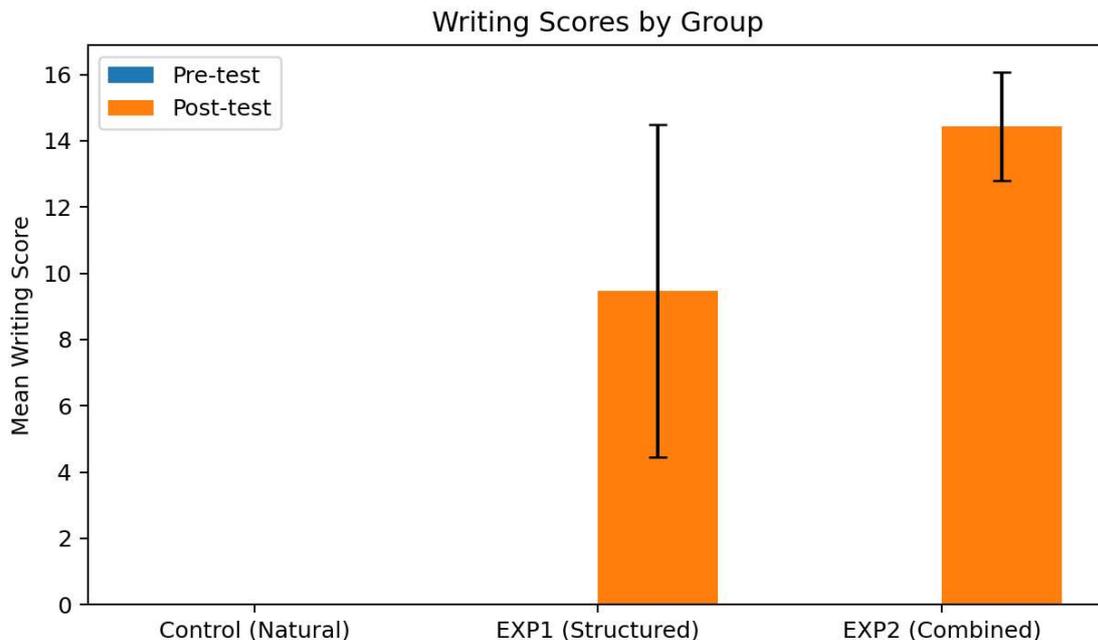


Figure 2. Mean writing pre-test and post-test scores by group.

Table 3

Within-Group Wilcoxon Signed-Rank Tests for Pre-Post Change

Group	Outcome	W	p
Control (Natural)	Reading	0.00	0.317
Control (Natural)	Writing	0.00	—
EXP1 (Structured)	Reading	0.00	< .001
EXP1 (Structured)	Writing	0.00	< .001
EXP2 (Combined)	Reading	0.00	< .001
EXP2 (Combined)	Writing	0.00	< .001

Note. Writing change in the control group was zero for all participants; therefore the p value is not interpretable.

Table 4

Kruskal–Wallis Tests Comparing Gain Scores Across Groups

Outcome	H(2)	p	ϵ^2
Reading	78.59	< .001	0.82
Writing	75.41	< .001	0.79

Note. ϵ^2 = epsilon-squared effect size.

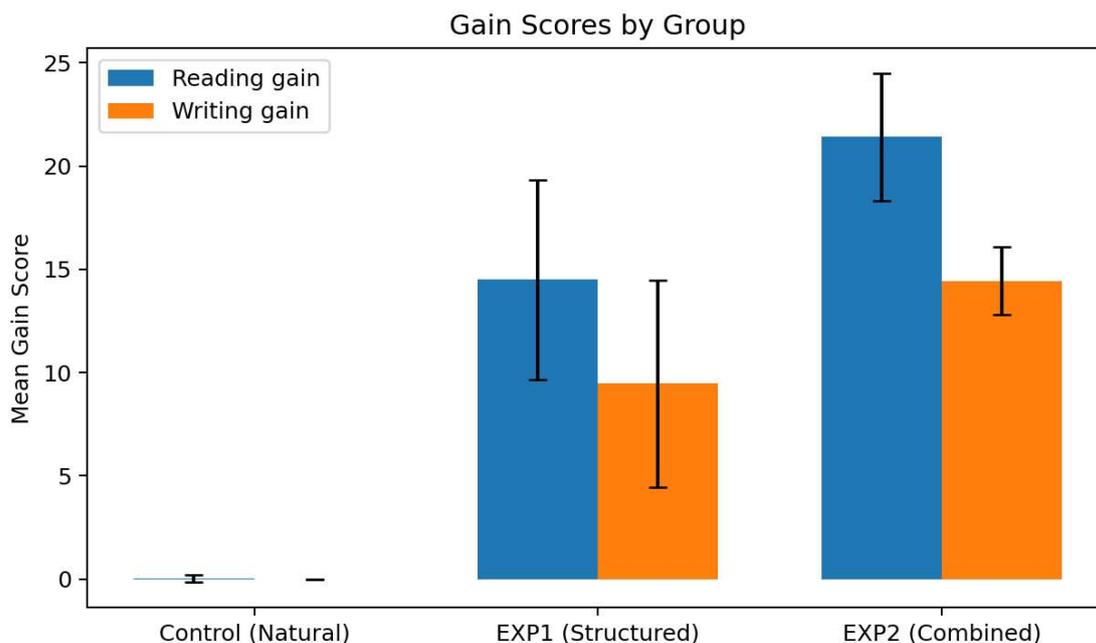


Figure 3. Mean gain scores in reading and writing by group.

Table 5

Bonferroni-Adjusted Pairwise Mann–Whitney U Tests on Gain Scores

Outcome	Comparison	U	p	Adjusted p
Reading	Control (Natural) vs. EXP1 (Structured)	0.00	< .001	< .001
Reading	Control (Natural) vs. EXP2 (Combined)	0.00	< .001	< .001
Reading	EXP1 (Structured) vs. EXP2 (Combined)	149.00	< .001	< .001
Writing	Control (Natural) vs. EXP1 (Structured)	32.00	< .001	< .001
Writing	Control (Natural) vs. EXP2 (Combined)	0.00	< .001	< .001
Writing	EXP1 (Structured) vs. EXP2 (Combined)	207.50	< .001	< .001

From Table 1 it is evident that, the control group showed virtually no change from pre-test ($M = 2.53$, $SD = 3.24$) to post-test ($M = 2.56$, $SD = 3.22$) for reading, whereas the Structured group improved from near-floor performance at pre-test ($M = 0.09$, $SD = 0.53$) to a post-test mean of 14.59 ($SD = 4.99$). The Combined

Natural–Structured group showed the greatest reading gains, improving from a pre-test mean of 0.00 to a post-test mean of 21.41 (SD = 3.07).

For writing, the control group remained at floor level from pre-test to post-test (M = 0.00 at both time points). The Structured group increased from 0.00 to a post-test mean of 9.47 (SD = 5.01), while the Combined Natural–Structured group improved from 0.00 to a post-test mean of 14.44 (SD = 1.64), approaching the maximum possible writing score of 15.

From Table 3 it is evident that, Wilcoxon signed-rank tests indicated statistically significant pre-post gains in reading and writing for both experimental groups (all p s < .001), whereas the control group showed no significant change in reading and no change in writing. From Table 4 it is obvious that, Kruskal–Wallis tests showed significant between-group differences in gain scores for both reading, $H(2) = 78.59$, $p < .001$, $\epsilon^2 = .82$, and writing, $H(2) = 75.41$, $p < .001$, $\epsilon^2 = .79$. Bonferroni-adjusted pairwise comparisons demonstrated that all group contrasts were significant for both outcomes, with the Combined Natural–Structured group outperforming the Structured group and both experimental groups outperforming the control group.

Discussion

The results reflect a distinct gradient of instruction for emergent literacy outcomes. The Combined Natural–Structured approach yielded greatest gains in reading and writing, the Structured approach brought substantial gains, and there was minimal change in the group which was taught by Natural approach. This pattern is in accord with the argument that early literacy is optimized when explicit attention to print, grammar, and sentence structure is contextualized in meaningful communicative contexts (Justice & Ezell, 2004; Moeller et al., 2007). The reading results are interesting since the control group did appear to have a mild pre-test advantage; however, it had almost no progression. By contrast, the experimental groups both started near floor level and by post-test significantly outperformed the control group, suggesting intervention rather than baseline differences alone was responsible. The very large effect sizes for reading and writing suggest that instructional approach explained a large proportion of the variability in gains in literacy. The findings of writing showed that quality of instruction had particular influence on written production. In the Natural group, writing was still absent; in the Structured group, writing was functioning up to a functional level; and in the Combined group, writing had moved to near ceiling level. This results in a parallel picture to developmental theories of literacy,

according to which both print-specific knowledge and explicit scaffolding act as support to aid the transition from receptive recognition to productive written expression (Snow et al., 1998; Justice & Ezell, 2004). Early literacy intervention, particularly with preschool children with hearing loss, may need to go beyond conversational exposure towards carefully sequenced practice with print, sentence patterns, and morphosyntactic cues. Synthesizing structured visual models with naturalistic communication seems to give adequate reinforcement children have as they learn the rules of grammatical patterns and use these patterns in reading and writing (Moeller et al., 2007; Marschark & Hauser, 2012).

Conclusion

The results demonstrate that teaching practices influence emergent literacy skills in preschoolers with hearing loss. Of the three ways, the Combined Natural–Structured method achieved the maximum improvement in reading and writing, followed by the Structured method, while the Natural approach showed comparatively limited progress. These findings indicate that combining systematic language instruction in meaningful communicative contexts to promote successful literacy development (more so than only exposure by nature) offers a potential option for promoting literacy education. Hence, the study indicates that implementing combined strategies for early reading and writing in learners of hearing loss should be integrated into the educational practices of schools and promote their potential outcomes to participate.

References

- Justice, L. M., & Ezell, H. K. (2004). Print referencing: An emergent literacy enhancement strategy. *The Reading Teacher*, 58(1), 8–17.
- Marschark, M., & Hauser, P. C. (2012). *How deaf children learn: What parents and teachers need to know*. Oxford University Press.
- Moeller, M. P., Tomblin, J. B., Yoshinaga-Itano, C., McDonald Connor, C., & Jerger, S. (2007). Current state of knowledge: Language and literacy of children with hearing impairment. *Ear and Hearing*, 28(6), 740–753.
- Snow, C. E., Burns, M. S., & Griffin, P. (Eds.). (1998). *Preventing reading difficulties in young children*. National Academy Press.