

## The Role of Scaffolding in Early Literacy Development among First-Grade Students in Cambodian Primary Schools

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### Abstract

Early-grade students in elementary schools must master consonants and vowels to develop accurate reading and spelling skills. This study investigates the effectiveness of word writing among Cambodian first graders with three main objectives: (1) to assess the efficacy of writing consonants and vowels, (2) to examine the relationship between orthographic ability and word-writing skills, and (3) to evaluate teacher motivation for facilitating students' writing practice. A quasi-experimental (pretest-posttest) design was employed, involving observations of 41 first-grade students. Findings indicate a statistically significant improvement in the mean score from  $M = 5.65$  ( $SD = 2.80$ ) to  $8.45$  ( $SD = 2.77$ ), a t-test ( $t = 5.318^{***}$ ;  $P\text{-value} = 0.000$ ), and a coefficient ( $r = 0.63$ ) shows that students proficient in writing consonants and vowels demonstrate improved spelling abilities and strength positively relation of their writing words. Additionally, students demonstrated enjoyment, active participation, and cooperation during classroom activities, and showed increased confidence in writing on the boards. Further research should investigate the impact of this approach on writing skills, including the construction of longer words, phrases, and sentences, as well as reading comprehension, among second- and third-graders, thereby testing the effectiveness of scaffolding across various educational contexts.

**Keywords:** consonants, primary education, scaffolding strategy, vowels, word writing

### INTRODUCTION

Since 2010, the Ministry of Education, Youth, and Sports in Cambodia has initiated improvements to Khmer reading and writing textbooks for Grades 1 to 3. Primary education is recognized as a critical period for acquiring essential reading and writing skills (Cakiroglu & Kuruyer, 2012). To establish a solid foundation, children must first learn the basic elements of the Khmer alphabet, which includes consonants and vowels. The combination of consonants with vowels, as well as the understanding of full vowels, consonant clusters, and syllable structures, is integral to reading and writing words, phrases, sentences, and short texts (Crim et al., 2008; MoEYS, 2019; Piasta et al., 2020). Thus, teachers play a vital

role in guiding students through modeling, facilitating activities, and providing appropriate words and contexts to promote literacy learning.

Research highlights significant challenges first graders face in developing writing skills. For instance, studies by Beers and Beers (1980) and Sucena et al. (2023) identify key barriers, such as insufficient knowledge of consonants and vowels, a lack of syllable recognition, and poor word retention. A recent study assessing the writing skills of first graders from Number 13 Class in Battambang city, which included 493 students for the 2024-2025 academic year, found an average writing proficiency of  $M=5.68$  (56.8%). This indicates that students' Khmer writing skills remain at a basic level.

Preliminary surveys from 11 elementary teachers in the same academic year revealed that 10 students (90.9%) struggled with vowel recognition, and an equivalent number reported difficulties with three-syllable words (27.3%). Additionally, 45.5% of students were unable to read at a fifth-grade level, and 9.1% lacked basic grammar skills. Teachers noted that students who attended kindergarten displayed foundational skills such as pencil grip and basic awareness of consonant and vowel sounds. These observations point to two primary issues affecting writing proficiency: inadequate knowledge of consonants and vowels.

Instructional practices currently employed may not adequately address these foundational literacy challenges. Scaffolding is an instructional strategy that could prove effective within this context, as supported by Larkin (2001) and Van Der Stuyf (2002). Scaffolding involves providing structured support and guidance from more knowledgeable individuals to assist learners who may struggle (Gonulal & Loewen, 2018). Recent studies, such as those by Vonna et al. (2015), confirm the positive impact of scaffolding on students' writing achievement. Furthermore, consistent teacher support and feedback are crucial for enhancing children's writing abilities (Hamblen, 1993; Jaramillo, 1996).

Despite existing literature on early literacy and the effectiveness of scaffolding as a teaching strategy, there remains a notable gap in research specifically addressing its application for improving consonant and vowel writing skills in the Cambodian context. This study aims to evaluate the effectiveness of scaffolding teaching strategies in enhancing first graders' ability to write consonants and vowels, ultimately improving word-writing outcomes. Given that first-grade students face challenges in consonant and vowel recognition (Schmidt et al., 2011; Hasan & Rezaul Karim, 2019), implementing a scaffolding approach can support students' writing proficiency alongside ongoing teacher encouragement. This investigation, therefore, seeks to fill this research gap by exploring how scaffolding can significantly benefit literacy development in primary education.

### **Research questions**

This research has the following research questions:

1. How does the efficiency of writing consonants and vowels of first graders change before and after the use of the scaffolding teaching strategy?
2. What is the relationship between students' ability to write consonants and vowels and their ability to write words?
3. How does the teacher's motivation fluctuate during the use of scaffolding teaching strategies?

## Research objectives

This research aims to:

1. To examine the efficiency of writing consonants and vowels of first graders before and after using the scaffolding teaching strategy
2. To explore the relationship between students' ability to write consonants and vowels and their ability to write words
3. To observe the teacher's motivation during the use of scaffolding teaching strategies

## LITERATURE REVIEW

Bandura's (1991) theory of cognitive development is widely applied in education and emphasises the importance of attention and motivation in the writing process, including through self-observation of one's own activities. In writing, all children require consistent attention and interaction with others to develop their writing abilities (Schunk & DiBenedetto, 2020; Zimmerman, 2000). Vygotsky's (1978) socio-psychological theory is essential for teachers and educators to provide targeted feedback that helps improve students' writing shortcomings.

## Application of Scaffolding Teaching Strategy

The concept of Scaffolding was introduced by Wood et al. (1976) and is based on Vygotsky's Zone of Proximal Development (ZPD). It is implemented by an adult or a teacher to support student learning by providing temporary assistance to help them achieve tasks that they would not be able to do alone.

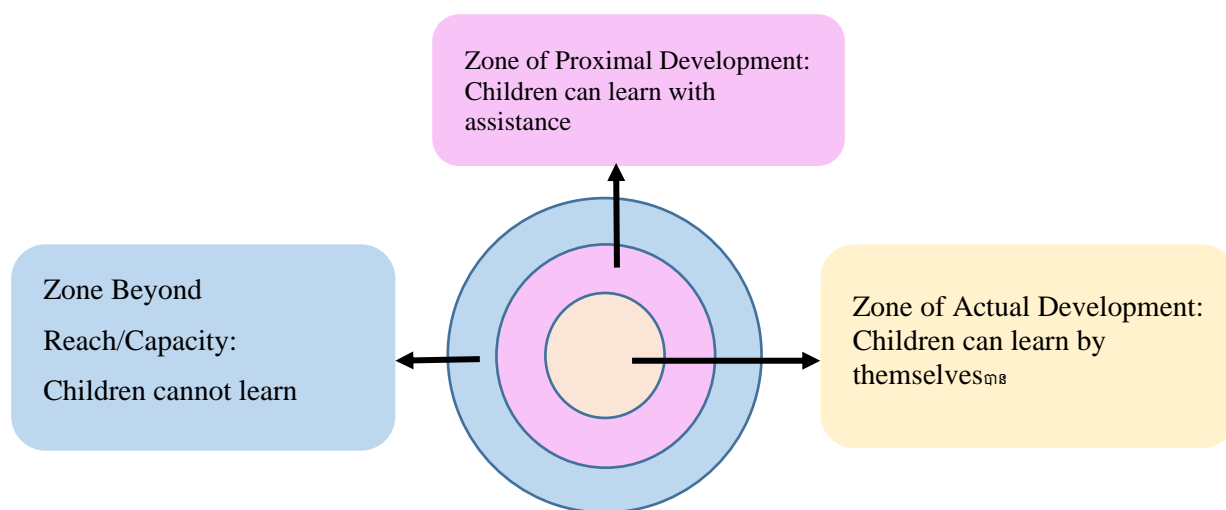
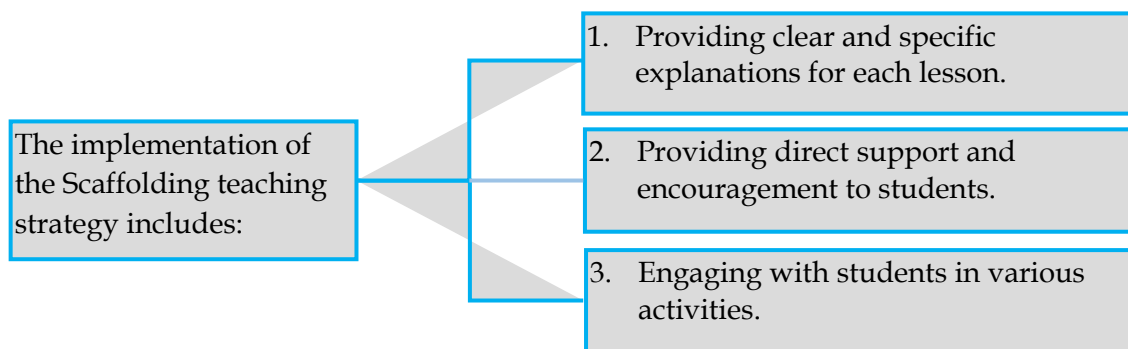


Diagram 1: Zone of Proximal Development (ZPD)

Diagram 1 illustrates that the Zone of Proximal Development (ZPD) is the gap between the Zone of Actual Development (children can learn by themselves), the Zone of Proximal Development (children learn with assistance), and the Zone Beyond Reach

(children cannot learn) (Shabani et al., 2010). The educational foundation for a child's development is contained in what Vygotsky called the Zone of Proximal Development (ZPD), which refers to the developmental gap where a child can learn with the assistance of a teacher or more capable peers (Ashari & Rinawati, 2024; Doolittle, 1997; Gibbons, 2002; Tharp & Gallimore, 1991). According to Carstens et al. (2020), the application of Vygotsky's theory in the field of education shows that the Scaffolding teaching strategy involves providing support or assistance in the learning process, where teachers help students achieve a level of understanding they cannot attain without aid, and it is widely implemented when students need assistance. Furthermore, research by Wang and Sneed (2019) explains that the application of the Scaffolding teaching strategy is indeed crucial in facilitating the acquisition of word-writing ability among students, who receive guidance from educators, teachers, and peers to gradually develop their word-writing ability on their own (Chairinkam & Yawiloeng, 2021), and have opportunities to collaborate on tasks to achieve future academic progress.



**Diagram 2: Guidelines for Implementing the Scaffolding Teaching Strategy**

Diagram 2 illustrates that when implementing the Scaffolding teaching strategy, teachers should primarily focus on providing clear and specific explanations for each lesson, offering support and encouragement, and engaging with and communicating with students through word-writing activities during the teaching and learning process (Roehler, 1996).

### Previous Studies

The implementation of the Scaffolding teaching strategy has been observed in EFL (English as a Foreign Language) writing classrooms to enhance EFL learners' English word-writing ability, as demonstrated by studies by Kamil (2017), Piamsai (2020), Sidky (2019), and Taheri and Nazmi (2021). Previous studies by Ellis (2013) and Taber (2018) have shown that teachers apply the Scaffolding teaching strategy by providing feedback and

encouragement to help undergraduate university students develop their writing skills. Furthermore, Khanza and Nufus (2019) researched word-writing among 11th-grade students using the Scaffolding teaching strategy and showed experimental success: the average pre-test score was 56.47, and the average post-test score was 74.16. This indicates that implementing the Scaffolding teaching strategy helped students improve their English word-writing skills by providing progressive training steps and continuous teacher support. In another study, Faraj (2015) found that the Scaffolding teaching strategy was effective in word-writing instruction, providing a stronger literacy foundation to improve students' ability to write English words effectively. In this single-group experiment, 30 students (10 males, 20 females, aged 20-30 years) achieved a score of 52% on the pre-test and 70% on the post-test. This means that after learning with the Scaffolding teaching strategy, students developed a stronger foundation and improved their English literacy. Separately, Baleghizadeh et al. (2011) conducted a study with 114 elementary-level participants and found that implementing the Scaffolding teaching strategy helped students write English words more effectively by providing gradual support, a crucial step in the ZPD. Moreover, research by Chen (2016) and Zhang (2014) has shown that, with the Scaffolding teaching strategy, teachers observe students' word-writing errors, provide feedback for correction and improvement, and offer praise and attention. Similarly, Singh et al. (2020b) conducted a study to confirm the effectiveness of applying the Scaffolding teaching strategy for English instruction, focusing specifically on students who were weak in word-writing. The results showed that all students crucially needed support, encouragement, and attention from their teachers. In practice, Padmadewi and Artini (2019b) also implemented the Scaffolding teaching strategy in English literacy instruction at the primary level to enhance the quality of word-writing, with students showing satisfaction through positive attitudes and interest in the word-writing activities.

### **Conceptual framework**

This study measured grade 1 students' knowledge of consonant and vowel learning using the support-and-encouragement approach, collectively known as the Scaffolding teaching strategy. For teaching writing consonants and vowels, assess students' ability to write words after they have learned to write consonants and vowels correctly, following the alphabet.

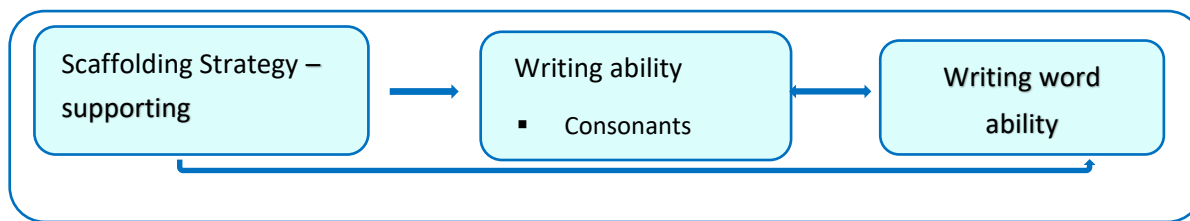


Figure 1: Shows the conceptual framework (Van Nooijen et al., 2024)

## METHOD

### Research Design

The aim of the study was to examine the effectiveness of implementing teaching strategies. Scaffolding on the ability to write consonants and vowels, and the ability to write words of first graders using a quantitative research method through a quasi-experimental one-group pretest-posttest design, to find connections and observe.

### Participants

This research study focused on grade 1 students, comprising 13 classes (493 students), with one class randomly selected. To represent the sample in this research. Simple sampling involves selecting a desired sample size by drawing random numbers (Chakrabarty, 2017; Noor et al., 2022). The representative sample consisted of 41 first-grade students, including 23 female students. This is taught using the scaffolding teaching strategy to examine the effectiveness of teaching consonants and vowels, as well as first-grade students' ability to write the word after learning with this strategy.

### Research tools

This research examined the effectiveness of implementing scaffolding teaching strategies. On the ability to write consonants and vowels, and the ability to write words of first-grade students, using two research tools for data collection, such as tests and observation checklists. The test is conducted in two stages: the initial and final tests. The initial test measures students' ability to write consonants and vowels, as well as to write words. This test is designed in Khmer and focuses on consonant groups, vowel combinations, and is used to assess the writing of 6 consonants and 6 vowels, as well as 4 words. In addition, it consists of 32 exercises, requiring students to complete it in 40 minutes before teaching, using the scaffolding teaching strategy. The final test measures students' ability to write consonants and vowels, as well as to write words. The test is designed in Khmer and focuses on consonant groups, vowel combinations, and is used to assess the writing of 6 consonants and 6 vowels, as well as 4 words. It consists of 32 exercises that students must complete within 40 minutes. After teaching using the Scaffolding teaching strategy. The observation checklist was used to observe the teacher's motivation while using teaching strategies. Scaffolding. The checklist is divided into two parts: Part 1 is used to observe the teacher's motivation for students during the implementation of the scaffolding

teaching strategy. Among the 1st, 2nd, 3rd, and 4th. For Part 2: Used to observe students' own motivation using the 1 2 3 4 5 and 6. This observation was conducted by a group of three female interns, who measured using a 4-point scale (1 = never, 2 = sometimes, 3 = often, 4 = always). The test instrument and the checklist were checked for validity and reliability. The validity of the test and the checklist was verified by three experts, indicating that all test items and each checklist indicator were indeed suitable for measuring the ability to write consonants and vowels, write words, and teacher motivation. In particular, the reliability of the instrument and the checklist was tested with 37 students, yielding a Cronbach's alpha of 0.989. This value indicates that the test instrument and checklist are indeed reliable and internally consistent in measuring the ability to write consonants and vowels, write words, and teacher motivation.

### Data collection

This research involves collecting empirical data through testing. Before teaching (Pretest) and the final test (Posttest), combined with observation. Before the experiment, the researcher administered a 40-minute pre-test to the experimental group of first-grade students to assess their existing writing knowledge. In this regard, the research assistant used an observation list to observe the teacher's motivation of the experimental group. After the experiment, the researcher administered a post-test consisting of. The same time period as the original test, within the same experimental group, was used to examine the effectiveness of scaffolding in improving first-grade students' writing ability.

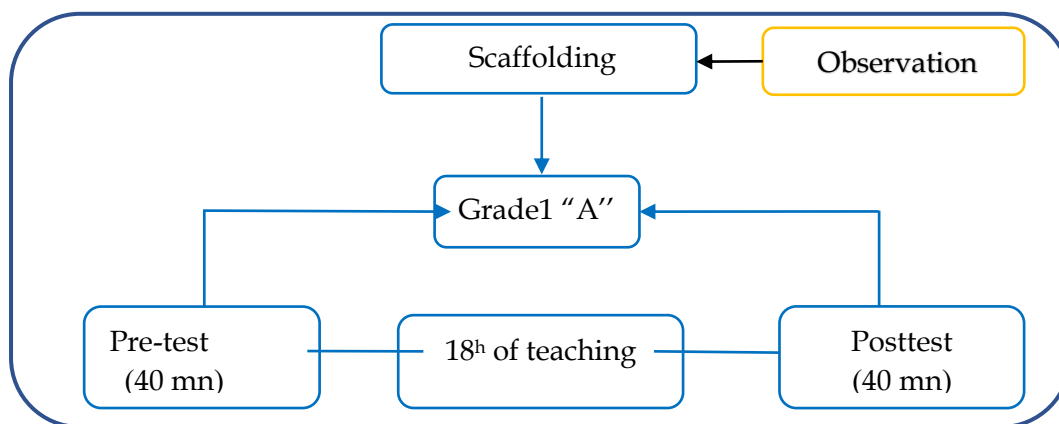


Figure 2: Data collection process

### Data analysis

This research employed quantitative data analysis in Microsoft Excel. The pre-test and post-test results from the experimental group of first-grade students were analyzed using inferential statistical methods within the model. Paired-samples t-test: A statistical test for analyzing differences in the values of a variable in a group. The test data, after

analysis, were reported as a mean score (M), Standard deviation (SD), t-test value, and P-value. The observation list was analyzed using descriptive statistics, with the data presented as frequencies and percentages.

**ETHICAL STATEMENT**

During data collection, the researcher obtained permission from the school principal and the Grade 1 teacher in charge. At the primary school, through a letter of permission from His Excellency, the Director of the Battambang Teacher Education College. The researcher adhered to the main principles, including no coercion, no disclosure of identities, and the confidentiality of all collected data.

**RESULTS**

**RQ1: How does the efficiency of writing consonants and vowels of first graders change before and after the use of the scaffolding teaching strategy?**

**Table 1. Comparing student scores before and after using scaffolding teaching strategies**

Test	N	M	SD	d	t	p-value
Pretest	41	5.65	2.80			
Posttest	41	8.45	2.77	2.80	5.318 ***	0.000

\*\*\*p<0.001

The implementation of the Scaffolding teaching strategy resulted in significant improvements in the writing abilities of grade 1 students. As shown in Table 1, the average pre-intervention score for students' writing skills was 5.65 (SD = 2.80), while the post-intervention mean increased to 8.45 (SD = 2.77). A t-test revealed a significant difference between the pre- and post-intervention scores (t = 5.318\*\*\*, p = 0.0000). This indicates that the intervention led to a statistically significant increase in students' writing performance, surpassing the 50% threshold of the established classroom standard score (8/10). Consequently, these findings suggest that the Scaffolding teaching strategy effectively enhances grade 1 students' abilities to write consonants and vowels, thereby improving their overall writing proficiency in accordance with the Khmer alphabet.

**RQ2: What is the relationship between students' ability to write consonants and vowels and their ability to write words?**

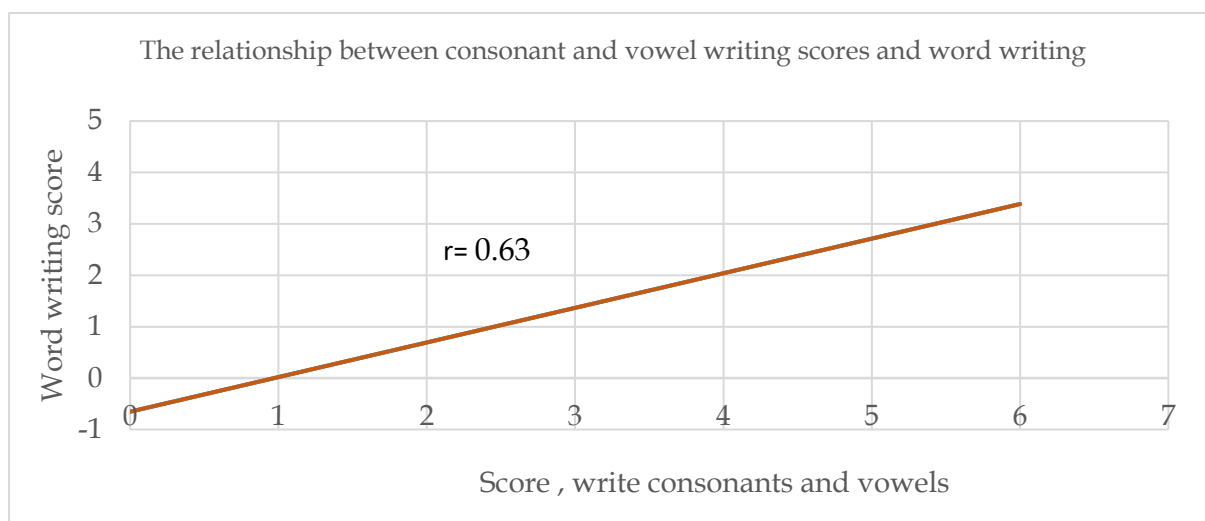
**Table 2. Demonstrates the relationship between students' ability to write consonants and vowels and their ability to write words**

Contact	Consonants and vowels	Word writing
Consonants and vowels	1	

Word writing score	0.63	1
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Correlation coefficient (r=0.1-0.3) Weak, r=0.3-0.5 Medium, r=0.5-1 Strong) (Ratner, 2009)

Table 2 illustrates the relationship between students' proficiency in writing consonants and vowels and their ability to write words. The correlation coefficient  $r = 0.63$  indicates a strong positive relationship between these two skills. This suggests that students who demonstrate competency in accurately writing consonants and vowels are likely to exhibit improved performance in word writing. Consequently, it can be concluded that mastering the correct writing of consonants and vowels according to the alphabet is directly associated with enhanced capabilities in writing words.



**Figure 3: Shows the relationship between students' consonant and vowel writing scores and word writing scores**

Figure 3 demonstrates a correlation analysis of consonant and vowel scores. And the writing score of grade 1 students is "A". The horizontal letters indicate the student's consonant and vowel writing score, and the vertical letters indicate the student's word writing score. As the consonant and vowel writing score increases, a trend towards improving writing skills emerges. This indicates that students with high scores in writing consonants and vowels are more accurate and consistency in writing their words. This relationship demonstrates reading skills and the ability to write consonants and vowels correctly. It not only helps increase understanding of how to write characters correctly, but also improves movement. But it also enables students to write words correctly according to the spelling. Therefore, when students have a strong knowledge of consonants and vowels, they can write words clearly and correctly, and their ability to learn short and long words and phrases is improved.

### RQ3: How does the teacher's motivation fluctuate during the use of scaffolding teaching strategies?

**Table 3. Demonstrates the teacher's motivation for students during the use of scaffolding teaching strategies**

Items	Frequency and percentage			
	Never	Sometimes	Often	Always
1. The teacher paid attention to teaching. Write a word to the students	0(0.00%)	10(18.51%)	22(40.74%)	22(40.74%)
2. The teacher used verbal abuse on the students.	0(0.00%)	10(18.51%)	22(40.74%)	22(40.74%)
3. Teachers encouraged students to use various learning materials.	0(0.00%)	2(3.70%)	16(29.62%)	36(66.66%)
4. The teacher provided feedback to improve when students wrote the wrong word.	0(0.00%)	10(18.51%)	22(40.74%)	22(40.74%)

Table 3 presents teachers' observations of motivational strategies during the implementation of scaffolding teaching techniques, as assessed using a 4-item checklist on a scale from "never" to "always." The item "The teacher paid attention to the students" showed a high frequency, with 40.74% of observations falling into the "always" and "often" categories, indicating that teachers provided detailed instructions and promptly addressed students' inquiries. In contrast, only 18.51% of observations were categorized as "sometimes," reflecting infrequent instructional support. The item "Teachers praise students using oral language" showed that 40.70% of observations demonstrated teachers offering positive affirmations, such as "...children write correctly, neatly, and do a good job...," thereby enhancing students' confidence and academic performance, with 18.51% rated as "sometimes," indicating insufficient verbal praise. Furthermore, for the item "Teachers always provide learning materials to students," 66.66% of teachers consistently provided materials such as books and writing instruments, contributing to increased student engagement, while 29.62% provided materials "often," and only 3.70% did so "sometimes." Finally, the item "The teacher provided feedback to improve when students wrote words incorrectly" indicated that 40.70% of observations revealed teachers actively guiding students in correcting misspellings, whereas 18.51% fell into the "sometimes" category, suggesting limited feedback in those instances. Overall, these results indicate that teachers utilizing the Scaffolding teaching strategy effectively motivated and engaged first-grade students, thereby facilitating their learning and academic achievement.

**Table 4. Demonstrates students' self-motivation during the teacher's use of scaffolding teaching strategies**

Items	Frequency and percentage			
	Never	Sometimes	Often	Always
1. Students pay attention to learning to write words when the teacher is encouraging.	0(0.00%)	8(14.81%)	26(48.14%)	20(37.03%)
2. Students participate in writing words on the board when the teacher encourages them.	0(0.00%)	8(14.81%)	26(48.14%)	20(37.03%)
3. Students collaborate in writing words when the teacher encourages them.	0(0.00%)	22(40.74%)	22(40.74%)	10(18.51%)
4. Students are more confident in writing words on the board when the teacher is encouraging.	0(0.00%)	4(7.40%)	24(44.44%)	26(48.14%)
5. Students like to write words when the teacher is encouraging.	0(0.00%)	4(7.40%)	18(33.33%)	32(59.25)
6. Students write words correctly when the teacher is encouraging.	0(0.00%)	0(0.00%)	26(48.14%)	28(51.85%)

Table 4 presents an analysis of students' self-motivation during the application of scaffolding teaching strategies, assessed through a 6-item observation checklist with four response scales (never, sometimes, often, and always). For the item "Students pay attention to learning," 26 students (48.14%) reported being often engaged, illustrating active participation in writing activities with the teacher's assistance. Additionally, 20 students (37.03%) indicated they were always involved, while 8 students (14.81%) were categorized as sometimes engaged, reflecting occasional disengagement. In the second item, "Students participate in writing words on the blackboard," a similarly high level of involvement was noted, with 26 students (48.14%) indicating frequent enjoyment aided by learning materials, and 20 students (37.03%) confirming that they always found the activity enjoyable. Regarding collaboration, 22 students (40.74%) acknowledged working together effectively, while only 10 students (18.51%) consistently contributed. The fourth item, "Students are confident in writing words on the board," revealed that 26 students (48.14%) consistently expressed confidence, while 24 students (44.44%) often felt courageous in their writing abilities. Regarding writing affinity, item 5 indicated that 32 students (59.25%) always enjoyed writing, suggesting strong intrinsic motivation, whereas 4 students (7.40%) reported low motivation despite encouragement. Finally, item 6 highlighted that 28 students (51.85%) consistently understood how to write correctly, indicating effective learning through teacher support. Collectively, these findings demonstrate that scaffolding teaching strategies significantly enhance students' motivation, participation, collaboration, confidence, and writing skills, thereby improving educational outcomes.

## DISCUSSION

This study investigated the effectiveness of scaffolding teaching strategies in enhancing grade 1 students' abilities to write consonants and vowels. The findings demonstrated significant improvement in students' writing skills, evidenced by a t-value of 5.318 ( $p = 0.000$ ) and a rejection of the null hypothesis ( $H_0$ ). This improvement is consistent with De Oliveira et al. (2023), who found that scaffolding helps students develop a foundational understanding of consonants and vowels, leading to correct word writing. The research further aligns with Back et al. (2020), who assert that scaffolding enables primary-level students to correctly articulate letters through step-by-step teacher guidance. Additionally, Albuquerque and Martins (2019) and Singh et al. (2020a) note that scaffolding not only enhances spelling and listening skills but also boosts reading abilities, thereby fostering active student participation in their learning process. The findings corroborate those of Veeramuthu et al. (2011), emphasizing that effective scaffolding helps students learn both consonants and vowels, leading to accurate spelling and word formation. This relationship emphasizes that mastery of consonant and vowel writing enhances overall writing capabilities, as noted by Håland et al. (2019) and supported by Wang et al. (2015). Furthermore, teacher motivation emerged as a critical factor, with consistent encouragement fostering a positive learning environment in which students feel confident in their writing. The study indicated that teachers who employ scaffolding strategies and provide regular encouragement led students to engage actively, collaborate, and take initiative in their learning. According to the findings of Minh et al. (2024) and Daniel et al. (2019), enhanced student motivation correlates with improved spelling and writing abilities, while Carson (2019) highlights that teacher support fosters courage and collaboration among students. Overall, the scaffolding teaching strategy not only enables students to accurately write consonants and vowels but also facilitates correct word formation and fosters a supportive learning atmosphere that leads to better educational outcomes.

Despite the promising results, this study has several methodological limitations. Reliance on observational checklists may introduce subjective bias when assessing student engagement and motivation. Additionally, the sample size and setting were limited to specific grade 1 classrooms, which may affect the generalizability of the findings. Future research should consider a broader population and incorporate mixed-methods approaches to enhance the depth and reliability of the collected data.

## CONCLUSION

The research on scaffolding teaching strategies to enhance grade 1 students' writing abilities in consonants and vowels yielded several key conclusions. The findings indicate that this instructional approach significantly improved students' capabilities to write consonants and vowels accurately, contributing to correct word formation and reducing confusion around consonant-vowel combinations. Furthermore, this strategy facilitated students' understanding of spelling and reading, establishing a vital foundation for early literacy. Pedagogically, the scaffolding technique empowers teachers to foster student autonomy and confidence throughout learning activities. Its effectiveness in fostering literacy among first graders suggests that it is adaptable for use in upper primary education and across various subjects. Therefore, it is recommended that educators consistently

implement scaffolding to reinforce students' writing fundamentals. This should involve providing structured support, clear explanations, and engaging scenarios that incite active participation, with an emphasis on collaborative feedback and encouragement. Additionally, future research should explore the application of scaffolding in writing longer words, sentence construction, and reading skills among students in grades 2 and 3, and consider its integration into broader educational contexts to evaluate its effectiveness across diverse learning environments.

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### **AUTHOR CONTRIBUTIONS**

Each author made an equal contribution to the current study and has read and given their approval to the final published version of the article.

### **DECLARATION OF INTEREST**

The authors declared that there were no potential conflicts of interest.

### **DATA AVAILABILITY**

The datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request.

### **FUNDING**

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