The Role of Parents in Improving the Reading Ability of Deaf and Hard-of-Hearing Children Through Story Reading

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Abstract: Parents play an important role in improving the reading and writing skills of their deaf and hard-of-hearing (DHH) children. As this research aimed, reading stories to their children at home is an important part of such improvement efforts. The study sample consisted of 341 male and female schoolteachers, 14.7% of whom were DHH teachers. In general, the results reported that parents play an important role in improving the reading and writing skills of their DHH children. Also, the results revealed that pre-reading practices play a significant role in improving the reading and writing skills of DHH children, as assessed by their teachers. In addition, during reading practice, parent skills, and post-reading practice strategies are important for DHH literacy skills. Children's reading and writing skill improvement, as rated by teachers, was significantly greater for those children whose parents were older, more experienced, and more educated; however, no differences emerged in teachers' ratings of the children's improvement in reading and writing skills as a function of their parents' gender. Suggestions and recommendations for future research are provided.
Keywords: Deaf, Children, reading, Story, Parents, Teachers

دورُ الوالدين في تحسينِ القدرة القرائية لدى الأطفالِ الصُّم وضعاف السَّمع من خلال قراءةِ القصة

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المُستْخَلَص: هدفت الدِّراسةُ إلى استكشافِ أهميةِ دور الوالدين في تحسينِ مهاراتِ القراءةِ والكتابةِ لدى الأطفال الصُّم وضعاف السَّمع من وجهة نظر المعلِّمين، وذلك من خلال قراءة القصص في المنزل، تمَّ اختيارُ المشاركين في الدِّراسة من برامج مختلفة للصُّم وضعاف السَّمع في المملكة العربيَّة السُّعودية. وتكوَّنت عينةُ الدِّراسة من (٣٤١) معلمًا ومعلمةً من المعلِّمين الذين يدرسون في مدارس، وشملت مجموعةُ الدِّراسة المعلِّمين الصُّم وضعاف السَّمع تم اختيار أفرادها بأسلوب العينة العشوائية البسيطة. وبنسبة (١٤,٧٪) من مجتمع الدِّراسة. وكشفت النَّتائج أن ممارسات ما قبل القراءة تؤدي دورًا مهمًا في تحسين مهارات القراءة والكتابة لدى الأطفال الصُّم وضعاف السَّمع، وفقًا لوجهات نظر مُعلِّميهم. بالإضافة إلى ذلك في أثناء ممارسة القراءة، ومهارات الوالدين واستراتيجيات ممارسة ما بعد القراءة مهمة لمهاراتِ القراءةِ والكتابةِ في تنميةِ مهاراتِ القراءة والكتابة لدى الأطفال. وقد خلصت النَّتائج أيضًا أنَّ دورَ الوالدين في تحسين مهارات القراءة والكتابة لدى الأطفال الصُّم وضعاف السَّمع من وجهة نظر المعلِّمين جاء بدرجةٍ كبيرة في جميع الأبعاد، ولكن أظهرت النَّتائج عدمَ وجود فروقٍ لدور الوالدين في تحسين مهارات القراءة والكتابة لدى الأطفال الصُّم وضعاف السَّمع من وجهة نظر المعلِّمين حسب مُتغيِّر الجنس، في حين وجدت فروقًا دالةً إحصائيًا لدور الوالدين في تحسين مهارات القراءة والكتابة لدى الأطفال الصُّم وضعاف السَّمع من وجهة نظر المعلِّمين حسب مُتغيِّرات: الخبرة، والعمر، والمؤهَّل العلمي.

الكلمات المفتاحية: الصم، الأطفال، القراءة، القصة، الآباء، المعلمون

Introduction:

The significance of nurturing language and literacy competencies among deaf and hard-of-hearing (DHH) children has been increasingly recognized, especially within the DHH community. Literacy is a crucial pillar of human growth and progress, exerting a pivotal influence on cognitive capacities, efforts to assimilate into society, and achievement in educational pursuits. Nevertheless, the journey toward proficient reading skills can pose significant challenges for DHH children due to their distinct communication requirements, the obstacles posed by limitations in spoken language accessibility, and questions about whether DHH children need to have access to phonology or not (Allen et al., 2009).

In Saudi Arabia, the number of deaf is approximately 720,000 (Al-Nafjan et al., 2015), so deaf education has generated interest among parents of DHH children, teachers, and researchers seeking to identify effective strategies to enhance reading competencies in children with special needs (e.g., Rock et al., 2016), especially DHH children. One particularly promising avenue is the implementation of story-reading initiatives at home, where parents proactively engage their children in collaborative reading endeavors (Rodriguez-Valls, 2009). The inherently dynamic and interactive nature of reading stories as an activity provides fertile ground for developing language acquisition and comprehension skills. This approach promises to bring significant benefits to DHH children as they work to improve their reading abilities (Rattigan-Rohr, 2012).

Previous works have explained that reading stories is one of the best practices used during the pre-reading stage (Saricoban, 2002). The target language in the current study is Arabic, as many previous studies have used languages other than Arabic (Hidayatullah et al., 2023; Parkes, 2023). The study reported herein utilized survey study to examine the effects of home-based story reading on the reading proficiency of Saudi Arabian DHH children. The study scrutinized multiple dimensions of home-based story reading, encompassing the ambiance established by parents for reading and the use of strategies before, during, and after reading sessions in order to identify the elements most crucial to fostering the effectiveness of home-based story-reading interventions.

Study Problem and Importance of the Study

Children need to acquire reading skills from early childhood because reading is the most critical practice for developing children's knowledge and is key to their academic and life success (Hayes, 2023). Despite the dearth of studies discussing home-based story-reading practice (e.g., Pandith et al., 2022), more work is needed to explain the importance of story reading, play, and activities during early childhood, which are also critical for reading development (Lee et al., 2023). Reading stories is one of the most significant reading practices to help children learn about the world in which they live. In addition, reading stories provides children with guidance and examples to help them when they experience different situations. When children read stories from a variety of books, children can develop their knowledge about cultures, events or times, places, and people; they can also learn from other individuals' experiences, which can significantly enhance their skills to engage in or deal with new situations.

Study Questions

This study addresses the following study questions:

1. What is parents' role in improving the reading ability of deaf and hard-of-hearing children through story reading?

2. Are there differences in parents' roles in improving the reading ability of deaf and hard-of-hearing children through story reading as a function of gender, age, experience, and/or educational qualifications?

Objectives of the Study

The objectives of this study are as follows:

First, the aim of this study is to examine how parents engage in story reading (inclusive of aspects such as the reading environment, requisite parental skills, and pre-/during/post-reading strategies) to enhance the reading proficiencies of their DHH children. The Second objective is to explore the degree to which the reading environment and parental proficiency in executing pre-/during/post-reading strategies collaboratively contribute to improving reading skills among DHH children through story reading as well as the role of specific variables in the extent of reading skill improvement.

Study Boundaries

The following limitations regarding the scope of the study should be kept in mind when considering the applicability of the study's findings beyond this specific set of parameters.

Objective Constraints

The scope of this study was confined to investigating the influence of parents (including factors such as the reading environment, requisite parental skills, and pre-/during/post-reading strategies) on the enhancement of their children's reading proficiencies through story reading while considering specific variables, as perceived by teachers.

Temporal Constraints

The study's temporal context is restricted to the year 2023.

Geographical Features and Human Demarcation

The geographical focus of the study is limited to teachers specialized in the field of DHH in Saudi Arabia. Also, the study specifically included educators with expertise in DHH education.

Theoretical Framework and Literature Review

A substantial percentage of DHH children are born to hearing parents who do not possess specialized knowledge of or expertise in the needs of DHH children (Antia & Kreimeyer, 2015; Rufsvold et al., 2023). Consequently, parents of DHH children, especially hearing parents, must learn and utilize various strategies to enhance their children's reading abilities. Essentially, they need to create a rich language (e.g., sign language) and literacy environment by iterating strategies, introducing new ones, and dedicating more time to these methods in pursuit of improved outcomes (Knoors & Marschark, 2018; Zarchy & Geer, 2023). Navigating these efforts requires parents to possess crisis management skills, essential tools, and stimuli that facilitate their DHH children's embrace of these strategies aimed at advancing their reading skills (Kwon, 2023).

Developing a rich literacy environment is significant for early literacy development. Such an environment can be created by providing books and producing activities for children to engage them in reading through playing (Toub

et al., 2018). Van Bergen et al. (2017) emphasized that the number of books in the home environment stands out as the most influential factor influencing a child's reading proficiency.

Furthermore, practices conducted at home to nurture children's reading skills, including factors such as parents' reading motivation and consistent engagement in shared reading sessions with their children, emerged as noteworthy factors that significantly contribute to enhancing children's motivation to read (Baker, 2003; Cubillos, 2023)

Role of the Family

The family plays a critical role in a child's social, cognitive, and language development. DHH children's linguistic development needs are particularly critical when they are born to hearing parents (Lillo-Martin et al., 2023). Family involvement in education is often paramount. Many hearings parents regard meeting the needs of DHH children as a considerable challenge; consequently, they seek the expertise of educators and specialists to support their children. This situation underscores the need for tailored programs that empower parents to proficiently educate their children with special needs (Dikeç et al., 2023)

The family's influence in nurturing a child with hearing loss is evident not only in terms of emotional support, but also in the psychological milieu the family creates while interacting with the child. The family's ability to understand and accommodate the child's condition significantly contributes to their positive upbringing. Such support affords the child opportunities for normal growth and mitigates the challenges posed by their differences. Conversely, a family's resistance to accepting the child's condition can impose formidable hurdles that the child may struggle to overcome (Safarpour & Ashori, 2023).

A vital aspect of the family's role involves fostering communication in DHH children, encompassing the development of techniques such as reading facial expressions, speech reading, head positioning, and sound frequency awareness (Papatsimouli et al., 2023). Consequently, parental involvement is imperative for nurturing these skills in children. Furthermore, parents play a crucial part in creating suitable circumstances for DHH children to engage with others and forge friendships, thereby alleviating the challenges posed by hearing loss (Duncan & Punch, 2023).

Technology to Support Reading Stories

Albalhareth and Alasmari (2023) emphasized the need to use reading strategies with students with hearing loss to enhance their comprehension and reading abilities. Information and communication technology developments have the potential to support such efforts. Fernández Batanero et al. (2022) provided an overview of information and communication technology's potential to support people with hearing loss in public spaces, underscoring the technical capabilities that DHH individuals can leverage (e.g., Bozarth, 2021)

The advent of sophisticated digital hearing aid technology has introduced novel resources for students (Haleem et al., 2022). In recent years, an array of assistive technologies catering to DHH individuals has emerged. These technologies aid students in both traditional and virtual educational settings, as well as during therapy sessions, by enhancing access to classroom content. Various amplification devices, including hearing aids, cochlear implants, and bone-anchored hearing aids, help those with

hearing loss access auditory information. Many of these technologies can be coupled with amplification devices to facilitate task performance and enhance interactions between parents and children. These advanced auditory technologies range from frequency modulation (FM) systems employed in classrooms to personal broadcasting devices suitable for use at home or within the community. However, during story reading, parents' and teachers' views toward the best practices and strategies that may support reading comprehension of DHH children may change as new technologies are developed (Spencer & Marschark, 2010). Therefore, this study investigates whether teachers believe that assistive technologies should be used in the reading environment for reading stories with their DHH children.

When reading a story for DHH children in early childhood, it is important to consider visual aids, clear and expressive signing, and the incorporation of interactive elements to engage their attention. Visual storytelling, sign language, and props or gestures can enhance their understanding and enjoyment of the story. Parents can also use graphic organizers, like visual charts or diagrams, as well as digital storytelling to help DHH children comprehend and organize story elements (Rahiem et al., 2020).

Using games and role-playing activities can be a fantastic strategy when reading stories to DHH children. Parents can assign different roles to family members or use puppets to act out the story. This interactive approach helps bring the story to life and allows children to actively participate and engage with the narrative. It is a fun and effective way to enhance their understanding and enjoyment of the story (Mather, 1989).

Another effective strategy is incorporating sign language interpreters or using video resources that feature sign language. Such a strategy ensures that DHH children have access to both the visual and linguistic aspects of the story, further promoting their comprehension and language development. In addition, providing opportunities for children to retell the story using their own words or creating their own endings can foster creativity and language expression (Huenerfauth et al., 2017).

In summary, previous work in language and literacy development shows that, for children, reading is essential for literacy development and contributes to future success. Reading stories is one way to include various practices that support literacy development for DHH children. Parents need to prepare a reading environment that encourages their children to engage with stories, and parents' knowledge of reading strategies and DHH children's needs is crucial for supporting their DHH children's literacy development.

Method and Procedures

A descriptive approach was used to provide an account of observed phenomena and establish correlations between variables within a given problem context. This quantitative approach was utilized to observe and record responses from the sample participants without manipulating or influencing their answers.

Study Population:

The sample encompassed all teachers (2,313 in total) working with DHH students in Saudi Arabia. According to data from the Ministry of Education (2021), 2,313 teachers are dedicated to educating DHH students in the kingdom: 965 females and 1,348 males.

Study Sample

The study sample consisted of 341 randomly selected male and female teachers, representing 14.7% of the potential study participants. The instrument of this study was administered online via a Google form, which was delivered to the participants.

Study Tools and Data Collection Methods

Data were gathered from two sources. The secondary sources encompassed the relevant literature, references, periodicals, articles, reports, and studies related to the study subject. The primary sources were data collected using a questionnaire designed for, adapted to, and distributed to the study sample. The questionnaire consisted of two sections. The first section captured participants' demographic information (gender, age, years of experience, job title, program type, and communication method). The second section encompassed facets associated with reading improvement strategies, spanning various dimensions: reading environment (4 items), parental skills (3 items), pre-reading strategies (7 items), strategies during reading (10 items), and strategies after reading completion (6 items). A 5-point Likert scale was used in the questionnaire (1–5; strongly disagree, disagree, neutral, agree, strongly agree, respectively). The length of the category was calculated according to the details presented in Table 1.

Table 1

Length of the Category

Category Length	Upper limit of the degree – lower limit of the degree	=	1 – 5	1.33
	Number of levels		3	

Mean values ranging from 1 to 2.333 indicated a low degree of approval. Mean values ranging from 2.34 to 3.666 indicated a medium degree of approval. A mean value range of 3.67 to 5.00 indicated a high degree of agreement.

Validity and Reliability of Study Tool

The questionnaire tool was presented to a group of five professors with expertise and specialization in early childhood and deaf education in Saudi public and private universities. Based on their observations and recommendations, certain modifications were made. After discussing these observations with the supervising professor, the questionnaire was finalized, comprising 30 items.

Validity: Internal consistency

The questionnaire was applied to the exploratory sample consisting of 25 individuals, and Pearson correlation coefficients were calculated between the items and the domains to which they belong as well as between the items/domains and the total score, as shown in Table 2. As indicated, the Pearson correlation coefficients are statistically significant at the 0.01 and 0.05 significance levels, demonstrating the validity of the internal consistency.

Table 2

Pearson Correlation Coefficients between Items and Their Domain and between Items/Domains and Total Score of Questionnaire (n = 25)

N	Statements	Pearson correlation coefficient with domain	Pearson correlation coefficient with the total score
First Domain	Reading environment	1	.978**
1	Parents need to arrange a place to read with their children	.908**	.921**
2	Parents need to use assistive technology	.943**	.952**
3	Parents need to have a library in their home	.619**	.604**
4	Parents need to use a whiteboard to help their children draw and scribble	.711**	.619**
Second Domain	Skills that parent need	1	.971**
5	Parents need to attend workshops and training programs to help develop their children's literacy skills	.888**	.860**
6	Parents need to be fluent in sign language to develop their children's literacy skills	.976**	.952**
7	Parents need special courses to help their children read letters through pictures of animals and plants whose beginning letters match the letters they are to be trained on	.979**	.948**
Third Domain	Pre-reading strategies	1	.975**
8	Before reading a story, parents should use reading strategies that help their children develop their vocabulary knowledge	.826**	.780**
9	Before reading a story, parents should talk with their children to give them an overview of the story	.719**	.619**
10	Before reading a story, parents should encourage their children to look at the pictures to help them understand the text	.752**	.860**
11	Parents should ask their children to predict the topic before reading to develop their reading comprehension	.928**	.948**
12	Parents should ask their children to choose the type of story (e.g., picture story)	.917**	.952**
13	Parents should ask their children the best time to read a story for them	.826**	.780**
14	Parents should ask their children to open the story and look at the pictures before starting to read it	.698**	.595**

N	Statements	Pearson correlation coefficient with domain	Pearson correlation coefficient with the total score
Fourth Domain	During reading strategies	1	.970**
15	During reading, parents use pictures and point at them to help their children connect between the meaning of the written form and the pictures	.925**	.860**
16	During reading, parents could teach their children letters (e.g., fingerspelling) to help their children develop their vocabulary knowledge	.853**	.778**
17	During reading, parents could ask their children to draw the story to help their children develop their reading skills	.813**	.697**
18	During reading, graphic organizers (GO; pictures) help children understand the story	.827**	.876**
19	During reading, parents encourage their children to use self-questioning	.925**	.860**
20	During or after reading, parents act and use role-playing while reading the story	.536**	.414*
21	Parents encourage their children to point to the beginning of paragraphs while reading the story	.857**	.871**
22	Parents make their children talk about what they understood from the story in their own language	.846**	.865**
23	Parents explain to their children the difference between similar letters in words	.591**	.604**
24	Parents ask their children to point to the letters whose sound they hear	.430*	.521**
Fifth Domain	Post-reading strategies	1	.996**
25	After reading, parents ask their children to summarize the story	.785**	.775**
26	Parents ask their children to identify the most prominent character in the story	.962**	.952**
27	Parents ask their children to identify the characters in the story	.784**	.780**
28	Parents ask their children whether they liked the story or not	.604**	.619**
29	Parents ask their children to indicate if the pictures are appropriate for the written text	.857**	.860**
30	Parents ask their children's opinion about the quality of pictures and papers	.962**	.952**

** = Correlation is significant at the 0.01 level (2-tailed); * = Correlation is significant at the 0.05 level (2-tailed).

Reliability

The reliability coefficient was extracted using Cronbach's alpha values for the internal consistency of the axes of the study tool. Table 3 shows the stability coefficients for the fields of the study tool.

Table 3

Cronbach's Alpha Stability Coefficient Values for the Study Scales (n = 25)

Variable	Number of items	Cronbach's alpha coefficient
Reading environment	4	0.924
Parental skills to be mastered	3	0.929
Pre-reading strategies	7	0.993
Strategies while reading	10	0.986
Post-reading strategies	6	0.977
Overall reading improvement strategies	30	0.991

Table 3 shows that the Cronbach alpha coefficients ranged between 0.986 (the highest) and 0.924 (the lowest). The overall reliability for the 30 items was 0.991. These high values indicate that the alpha values exceeded the minimum and acceptable percentage for statistical analysis, as an alpha value equal to or greater than 0.60 was considered acceptable by previous researchers (e.g., Tüzün et al., 2005). Thus, the survey elements are reliable and valid to use as a tool to collect the data for this study.

Study results and discussion

This section presents the results of the study based on the analysis of the collected data.

Demographic Variables:

Table 4 shows the distribution of the sample according to demographic categories. A nearly equal number of both genders participated: 51.3% male and 48.7% female. The greatest proportion of participating teachers have a bachelor's degree (67.2%), and more than half of the participants had been teaching for 6 to 10 years. In addition, 67.2% of the participants taught at a Deaf school, and 45.8% of participants preferred to use sign language with their DHH children.

Table 4

Demographic Distribution of Study Population

Demographic Variable	Category	Frequency	Percentage (%)
Gender	Male	175	**51.3**
	Female	166	**48.7**
Academic Qualification	Diploma	15	**4.4**
	Bachelor's	229	**67.2**
	Postgraduate studies	97	**28.4**
Years of Experience	5 or fewer	70	**20.5**
	6–10	194	**56.9**

Demographic Variable	Category	Frequency	Percentage (%)
	More than 10	77	**22.6**
Types of Programs	Deaf school	207	**67.2%**
	Students with hearing loss	101	**32.8%**
Preferred Means of Communication	Sign language	141	**45.8%**
	Auditory/oral training methods	107	**34.7%**
	Total communication	60	**19.5%**
Total		341	100

Means and Standard Deviations

This subsection presents the data related to answering the two study questions. To answer the first study question (i.e., What is parents' role in improving the reading ability of deaf and hard-of-hearing children through story reading?), the arithmetic means, standard deviations, and relative importance were considered. Table 5 presents the results.

Table 5

Means, Standard Deviations, Ranks, and Levels

N	Rank	Statements	Mean	Std. Deviation	Level
First Domain	5	Reading environment	4.25	.677	High
1	3	Parents need to arrange a place to read with their children	4.19	.744	High
2	4	Parents need to use assistive technology	4.09	.792	High
3	2	Parents need to have a library in their home	4.35	.750	High
4	1	Parents need to use a whiteboard to help their children draw and scribble	4.38	.715	High
Second Domain	3	Skills that parent need	4.46	.681	High
5	2	Parents need to attend workshops and training programs to help develop their children's literacy skills	4.46	.708	High
6	3	Parents need to be fluent in sign language to develop their children's literacy skills	4.42	.765	High
7	1	Parents need special courses to help their children read letters through pictures of animals and plants whose beginning letters match the letters they are to be trained on	4.50	.710	High
Third Domain	1	Pre-reading strategies	4.53	.681	High

N	Rank	Statements	Mean	Std. Deviation	Level
8	2	Before reading a story, parents should use reading strategies that help their children develop their vocabulary knowledge	4.55	.691	High
9	1	Before reading a story, parents should talk with their children to give them an overview of the story	4.56	.690	High
10	5	Before reading a story, parents should encourage their children to look at the pictures to help them understand the text	4.52	.709	High
11	6	Parents should ask their children to predict the topic before reading to develop their reading comprehension	4.51	.695	High
12	7	Parents should ask their children to choose the type of story (e.g., picture story)	4.50	.693	High
13	4	Parents should ask their children the best time to read a story for them	4.52	.693	High
14	3	Parents should ask their children to open the story and look at the pictures before starting to read it.	4.53	.692	High
Fourth Domain	2	During reading strategies	4.49	.675	High
15	1	During reading, parents use pictures and point at them to help their children connect between the meaning of the written form and the pictures	4.52	.692	High
16	3	During reading, parents could teach their children letters (e.g., fingerspelling) to help their children develop their vocabulary knowledge	4.52	.694	High
17	2	During reading, parents could ask their children to draw the story to help their children develop their reading skills	4.52	.693	High
18	4	During reading, graphic organizers (GO; pictures) help children understand the story	4.52	.705	High
19	6	During reading, parents encourage their children to use self-questioning	4.50	.710	High
20	10	During or after reading, parents act and use role-playing while reading the story	4.44	.755	High
21	7	Parents encourage their children to point to the beginning of paragraphs while reading the story	4.48	.726	High
22	5	Parents make their children talk about what they understood from the story in their own language	4.51	.710	High
23	8	Parents explain to their children the difference between similar letters in words	4.47	.734	High

N	Rank	Statements	Mean	Std. Deviation	Level
24	9	Parents ask their children to point to the letters whose sound they hear	4.46	.737	High
Fifth Domain	4	Post-reading strategies	4.46	.683	High
25	2	After reading, parents ask their children to summarize the story	4.48	.693	High
26	4	Parents ask their children to identify the most prominent character in the story	4.48	.722	High
27	5	Parents ask their children to identify the characters in the story	4.45	.736	High
28	1	Parents ask their children whether they liked the story or not	4.49	.705	High
29	3	Parents ask their children to indicate if the pictures are appropriate for the written text	4.48	.718	High
30	6	Parents ask their children's opinion about the quality of pictures and papers	4.42	.753	High
		Total	**4.46**	**.641**	**High**

Table 5 indicates that teachers rated parents as having an important role to play in improving DHH children's reading ability through story reading, with a mean value of 4.46 and a standard deviation of 0.641. Furthermore, pre-reading strategies are the most important practice according to teachers, who believe it is important for parents to utilize such strategies for DHH children's literacy development. The mean of pre-reading strategies was 4.53 (standard deviation = 0.681) and ranged between 4.50 and 4.56. DHH teachers believe that the most important practice before reading is that parents should talk with their children to give them an overview of the story. Meanwhile, during reading practice ranks second among teachers of DHH children, with a mean of 4.49 (standard deviation = 0.675) and a range between 4.44 and 4.52. According to these teachers, the most important strategy during reading is for parents of DHH children to use pictures and point at them to help their children connect the meaning of the written form and the pictures.

Improving the skills of parents of DHH children is the third most important domain related to story reading, with a mean of 4.46 (standard deviation = 0.681) and a range between 4.42 and 4.50. Among these skills, teachers explained that the most important items is that Parents need special courses to help their children read letters through pictures of animals and plants whose beginning letters match the letters they are to be trained on.

Post-reading strategies were considered the fourth most important practice for parents to implement during story reading as they can be important for DHH children's literacy development. The domain had a mean of 4.46 (standard deviation = 0.683), and the mean of the items ranged between 4.42 and 4.49. Teachers of DHH children thought that, among these strategies, it is important for parents to ask their children whether they liked the story or not.

Finally, teachers of DHH believed that, although the reading environment is important when reading a story, it is the least important domain with a mean of 4.25 (standard deviation = 0.677). The mean of the items in this domain, such as parents

need to use a whiteboard to help their children draw and scribble, ranged between 4.09 and 4.38.

To answer the second study question (i.e., Are there differences in parents' roles in improving the reading ability of deaf and hard-of-hearing children through story reading as a function of gender, age, experience, and/or educational qualifications?), the factors of gender, age, experience, and educational qualifications were considered, as discussed in the following subsection.

Gender

To determine if any differences in gender exist between teachers of DHH children, the mean of reading improvement strategies from teachers' perspective was considered. As Table 6 shows, no statistically significant differences existed in the arithmetic averages of parents' role in improving the reading and writing skills of their DHH children from teachers' perspective according to gender.

Table 6

Results of T-test Between Mean Reading Improvement Strategies from Teachers' Point of View Due to Gender

Gender	N	Mean	Std. Deviation	T	DF	Sig. (2-tailed)
Male	175	4.49	.654	1.009	339	**.314**
Female	166	4.42	.627			

Age

The researcher used the arithmetic mean difference and the analysis of variance (ANOVA) to identify any statistically significant differences at a significant level ($0.05 \geq \alpha$) in reading improvement strategies from teachers' point of view depending on age. Table 7 shows statistically significant differences as a function of age in parents' success in improving the reading and writing skills of their DHH children. Thus, age is important for reading story, which leads to improving DHH children's literacy skills.

Table 7

Results of the Mean Difference Test to Identify Differences Between the Averages in the Reading Improvement Strategies from Teachers' Point of View Due to Age

Source	Sum of Squares	DF	Mean Square	F	Sig.
Between Groups	3.263	2	1.631	4.045	.018
Within Groups	136.314	338	.403		
Total	139.577	340			

To demonstrate the nature of the age differences in parents' capacity to improve the reading and writing skills of DHH children, post-hoc comparisons were conducted. Table 8 shows statistically significant differences between the age group greater than 40 years old and the age group less than 30 years old, in favor of the age group greater than 40 years old.

Table 8

Multiple Comparisons: Scheffe

Age		Mean Difference (I-J	Sig.
40 years or older	Younger than 30 years	.288*	.024
	30–39 years	.189	.089

Educational Qualification

The researcher used the arithmetic mean difference and ANOVA to find any statistically significant differences at a significant level ($0.05 \geq \alpha$) in reading improvement strategies from teachers' point of view based upon educational qualifications. Table 9 shows the statistically significant differences between the mean rated improvement scores for the reading and writing skills of DHH children as a function of parents' educational qualifications.

Table 9

Results of the Mean Difference Test to Find Differences Between the Averages in Reading Improvement Strategies as a Function of Educational Qualifications

Source	Sum of Squares	DF	Mean Square	F	Sig.
Between Groups	5.183	2	2.591		
Within Groups	134.395	338	.398	6.517	.002
Total	139.577	340			

Furthermore, to demonstrate the significance of the differences between the arithmetic means of parents' role in improving DHH children's reading and writing skills from teachers' perspective according to the educational qualification variable, post-hoc comparisons were used, as shown in Table 10. The results indicate statistically significant differences between bachelor's and postgraduate studies, in favor of postgraduate studies.

Table 10

Multiple Comparisons: Scheffe

Educational Qualification		Mean Difference (I-J)	Sig.
Postgraduate studies	Diploma	.264	.321
	Bachelor	.274*	.002

Years of Experience

We used the arithmetic mean difference and ANOVA to find statistically significant differences at a significant level ($0.05 \geq \alpha$) in reading improvement strategies from teachers' point of view due to experience. Table 11 shows statistically significant differences in the arithmetic averages of parents' role in improving the reading and writing skills of DHH children from teachers' perspectives according to years of experience.

Table 11

Results of the Mean Difference Test to Find Differences Between the Averages in Reading Improvement Strategies Through the Teachers' Point of View Due to the Years of Experience

Source	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	9.393	2	4.697	12.194	.000
Within Groups	130.184	338	.385		
Total	139.577	340			

To demonstrate the significance of the differences in the arithmetic means of parents' role in improving DHH children's reading and writing skills from teachers' perspectives according to years of experience, post-hoc comparisons were used, as shown in Table 12.

Table 12

Multiple Comparisons: Scheffe

Years of Experience		Mean Difference (I-J)	Sig.
5–10 years	Fewer than 5 years	.455*	.002
	5–10 years	-.175-*	.047
More than 10 years	Fewer than 5 years	.630*	.000
	5–10 years	.175*	.047

Table 12 shows statistically significant differences in the level of experience between fewer than 5 years and 5–10 years, favoring 5–10 years, as well as between fewer than 5 years and more than 10 years, favoring more than 10 years. Differences also emerged between 5–10 years and more than 10 years, favoring the longer term of experience.

Discussion

This study aimed to show how home-based story-reading activities contribute to enhancing DHH children's reading skills. It also sought to investigate the collective impact of reading environments and parental proficiency in pre-, during, and post-reading strategies to enhance DHH children's reading abilities through story reading. As detailed in the finding, educators perceived the pre-reading practices as a potential locus for diverse literary practices, facilitated by many important practices. The most important one was identified as parents activating their DHH children's prior knowledge before reading the story. This strategy can motivate DHH children and facilitate their reading comprehension. This finding aligned with the argument made by Albalhareth et al. (2022), who explained the importance of building DHH children's background knowledge before reading a story (Farquharson & Babeu, 2020). Before reading, parents need to ask their DHH children about the story to build their background knowledge which is one the most crucial components of reading and reading comprehension.

The results also illustrate that during reading practice is considered the second most importance practice according to teachers of DHH children. Many previous works on reading and reading comprehension have reported that during reading strategies and practice are the most discussed topic in the literature. Albalhareth and Alasmari (2023) claimed that during reading strategies were the common strategies that teachers of DHH children use to help them make sense of the texts. As the current study reported, using

a picture story is necessary, so parents can utilize pictures to help their DHH children understand the meaning of the texts (Hayden & Prince, 2023; see Nikolopoulos et al., 2023). This study also explained of importance of using visual material with very young children, especially DHH children (Lane et al., 1996; Rahiem et al., 2020). Furthermore, courses should be provided to parents of DHH children to help them read and explicitly teach them to read letters through pictures. Creating a more welcoming home environment through the integration of child-oriented games was deemed significant, echoing Plowman's (2016) emphasis on the interplay among learning, play, and digital media within domestic settings. This finding also encompassed parents' interest in specialized courses aimed at teaching letter recognition to their children, employing strategies such as reading stories aloud to provide insights into the narrative, and employing visual aids to connect written content with corresponding imagery, supporting Smith's (1983) work. Furthermore, parents showed a preference for gauging their children's story preferences, selecting engaging narratives that fostered enthusiasm and motivation for reading.

No statistically significant gender-based differences emerged in teachers' perspectives on the success of parents' reading improvement strategies. This finding suggests that both male and female parents possess similar skills necessary for fostering their children's reading proficiencies. This divergence can be attributed to societal discrepancies, resulting in variations in data collection and outcomes. The gender variable was found not to influence the application of reading teaching strategies for DHH children, a trend supported by Silver et al. (2023).

Statistically significant differences emerged in teachers' ratings of the effectiveness of parents' reading improvement strategies as a function of parental age: older parents were rated as being more effective, suggesting that parental age plays a role in shaping the skills acquired for enhancing DHH children' reading abilities. Accumulated life experiences and skills contribute to the more effective application of these strategies as parents age, in line with the observations of Zaidman et al. (2023). In addition, getting the meaning from the text is important for reading recompensing (Brown & Pressley, 2023) studies such as Albalhareth et al. (2022) have highlighted the significance of early parent–child interaction in fostering language and literacy skills, especially in the context of reading comprehension.

The results also demonstrated statistically significant differences in teachers' perceptions of reading improvement strategy efficacy based on educational qualifications. This finding indicates that higher academic qualifications correlate with a more evident adoption of reading strategies. This trend aligns with the findings of Albalhareth and Alasmari (2023) and emphasizes the role of educational background in the proficient application of reading strategies. The insights from the results also resonate with previous studies, as exemplified by Wolbers et al. (2023), who emphasized the influence of professional experience on the utilization of strategies for improving DHH children's reading abilities.

Finally, the results revealed statistically significant differences in rated effectiveness of reading improvement strategies based on years of experience. Years of experience have shown an impact on the effectiveness of reading training strategies for DHH children. Notably, previous studies, including Ng et al. (2023) and Albalhareth and Alasmari (2023), emphasized the importance of the role of years of experience in improving reading training strategies.

Recommendations

The study targeted teachers of DHH children who responded to the questionnaire. Based on the findings, we propose that parents of DHH children should participate in specialized courses focused on reading training strategies. The goal of these courses would be to enhance the effectiveness of the teaching methods used for children's training. In addition, our results suggest the usefulness of creating a unique genre of stories, specifically video books, that incorporate tools designed to motivate DHH children to engage in reading. These tools might include visual elements such as pictures. Furthermore, the study recommends developing educational games tailored to the needs of DHH children. These games could be used as an additional method for facilitating their learning. We also recommend investigating the role of DHH parents in facilitating their DHH children's reading skills, which may differ from the role of hearing parents (Lane et al., 1996).

Limitations

This study was limited to young children (1–6 years old), a developmental stage characterized by the novelty of encountering letters and words for the first time. This inherent novelty can pose challenges when teaching children to read, particularly considering their heightened curiosity. This challenge is magnified for parents, especially when the children are DHH, requiring the repetitive and diverse implementation of the story strategy. Therefore, we encourage future research aimed at investigating which strategies are more beneficial for developing DHH children's reading skills and comprehension.

Conclusion

Reading is undeniably one of the most pivotal activities in which parents engage with their children to foster their literacy development. Parents can employ various activities while engaging in story-reading sessions. The current study delved into the significance of parental involvement in enhancing the reading and literacy proficiencies of DHH children through the avenue of home-based story reading. The findings unequivocally underscored the vital role parents play in cultivating children's literacy, particularly when facilitated through story reading.

Of noteworthy importance is the integration of technology and the creation of conducive home environments. These elements emerged as critical variables that significantly contribute to supporting children's literacy development while participating in story-reading sessions. Our conclusion is that parents' active participation in their children's reading endeavors yields substantial benefits, accentuating the pivotal role parents have in shaping the literacy journey of DHH children.

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