Original Research Article

Chaining Strategy and Language Comprehension Development among Deaf Pupils in Tanzania

ABSTRACT

For a number of years, deaf pupils in Tanzania have been encountering comprehension problems at different levels of their education. Interesting enough, deaf pupils in the country have been attending primary education for ten years whereby chaining strategy has been a common strategy for teaching them reading skills. Despite the use of chaining strategy which was being promoted by different scholars in the world as a strongest strategy in promoting reading skill, still, deaf graduated with poor reading ability. Thus, the current study intended to find out the usefulness of chaining strategy in developing language comprehension among deaf pupils in Tanzania. The study was conducted in four special primary schools for deaf from Dare es Salaam, Njombe, Kagera and Tabora and was guided by the theory of simple view of reading and (VARK) model. It employed mixed research approach with a convergent research design. In-depth interview, observation, questionnaire and test were employed in collecting data from 20 teachers and 162 deaf pupils respectively. Data were analyzed through descriptive, simple linear regression and content analysis. It was revealed that chaining strategy had significant contribution in developing deaf pupils' ability of generating meaning from individual words and short sentences. It was also revealed that chaining strategy had insignificant influence in developing deaf pupils' ability of generating meaning from long sentences and reading texts without challenges. It was concluded that, chaining strategy does not guarantee the development of language comprehension among deaf pupils, unless extra innovations are done. It was recommended that, deaf need to be identified and exposed to sign language in early ages, also early grade teachers need to be competent in sign language.

Keywords: Deaf, Chaining Strategy, Language Comprehension, Reading, Literacy, Sign language, Fingerspelling.

1. INTRODUCTION

1.1 Background of the Study

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Language comprehension is the process of generating mearing form either spoken or written information [1], [2]. With reference to deaf, language comprehension is the ability of understanding written or signed codes [3]. Language comprehension is one of the important sub-skills for reading development which are developed at early years of life among the children [4]. This is from the reason that, in early years, the brain of children is capable of capturing easily different information considered to be the foundation of reading skills [5]. Thus, it is within this time when teachers need to be more careful and creative in making sure that children are acquiring language comprehension skills. That is why school curricula of various countries include important sub-skills for reading development such as language comprehension development to be among the knowledge being taught in the first years of education of their children. For that matter, when a child misses these important skills s/he may end up being low achiever or drop out of school system [6].

Due to hearing challenges that deaf children encounter, deaf have been facing challenges in developing language comprehension that has in-turn caused reading problems to them [7]. The problem has been reported by a number of studies from different areas of the world. For instance, studies from USA, UK, South Africa, Kenya and Uganda report reading difficulties as one of the problems facing deaf children in these countries [8], [9]. This is the reason on why teachers and different stakeholders have been straggling in making sure that deaf acquire language comprehension as their hearing peers. The efforts have influenced different scholars to develop and come up with different reading intervention strategies and techniques for deaf children. One of the proposed strategies by a number of scholars is chaining strategy.

Chaining strategy is one of the teaching technique that supports the development of language comprehension among pupils through increasing their opportunity to make more associations [10]. Therefore, it can be argued that, chaining strategy supports the development of language comprehension among deaf pupils through increasing their opportunity to make more associations that add more linguistic meaning to the concepts being learned [10]. That is why [11] proposed chaining strategy as one of the effective intervention measures for handling reading problems among deaf children because it promoted the development of word recognition ability and language comprehension ability among the deaf. Likewise, [12] highlights that chaining strategy helps deaf children in discovering the interconnectedness of different concepts and in constructing meaning of particular concepts

Tanzania being one of the countries facing the challenges of having deaf pupils with poor language comprehension, teachers adapted chaining strategy in teaching reading skills to deaf [13]. Regardless of the use of chaining strategy as well as other efforts, still deaf children continue to perform poorly in reading and this lowers their transition rate from primary to secondary education [14]. As well, a few of those who move to secondary education manage to complete and get a good score at that level [15]. This is proved by [16] whose study revealed that, 54% of 86 secondary school deaf students in Tanzania involved in the study dropped out of school and 82% of those students who reached form four failed in their final examination. Likewise, another study by [17] on literacy skills among form two deaf students in 24 secondary schools found that all 428 studied students had some varying literacy challenges. Majority of 428 students could neither read nor produce intelligible written texts in either Kiswahili or English language.

Further, the 2022 Standard Four National Examination results provide another evidence which shows that 84.8% and 90.1% of deaf pupils from two of the primary schools for deaf in Tanzania performed poorly in Kiswahili while 63.6% and 54.5% of the same students performed poorly in English respectively [18]. These are language subjects whose performance depend much on reading ability of an individual [19]. Also, the 2022 Standard Seven Examination results show that 92.6%, 54.6% and 50% of deaf pupils from three primary school for deaf respectively, failed the exam in general [20]. Similarly, the 2022 Ordinary Secondary Level National Examination results show that 92% of deaf students from the only special secondary schools for deaf in Tanzania got division zero while the remaining 8% got division four [21]. The overall poor performance of deaf students in Tanzania are directly linked to poor reading skills as [22], says that bad or undeveloped reading skills impact the overall academic performance of the student, because it is the means of constructing meaning and acquiring new knowledge. While this was puzzling, the effectiveness of chaining strategy in the context of Tanzania was not known, hence invited for search of knowledge. Therefore, this study intended to investigate the usefulness of chaining strategy in developing language comprehension ability among deaf pupils in Tanzania.

1.2 The study objective

This study aimed at determining the usefulness of chaining strategy in developing language comprehension ability among deaf pupils in Tanzania.

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Also add the Problem Statement and Significance of the Study.

2. Literature Review

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Chaining strategy supports the development of language comprehension among deaf pupils through increasing their opportunity to make more associations that add more linguistic meaning to the word being learned [10] According to [23], chaining strategy takes multiple forms as it emphasizes on the use of more than one techniques or approach together when teaching reading skills which in turn support language comprehension development among deaf.

This is in line with the study by [24] that investigated the efficacy of applying multi-sensory coding strategies (chaining) to facilitate elementary phase deaf readers' reading development. This study employed experimental research design where sign language in combination with multiple visual, tactile and kinesthetic coding strategies was used to facilitate literacy development to the experimental group of 64 deaf children. The study showed improved language comprehension abilities among the group of deaf children. This agrees with a single subject study by [25] that examined the impact of multimedia learning strategy in improving reading skills of deaf. The study used a sample size of 5 deaf students to conclude that the use of multimedia strategy improved reading abilities of deaf pupils.

Likewise, a quantitative study by [26] with 32 deaf children supports the use of chaining strategy. This study was on fingerspelling as a novel gateway into reading fluency in deaf bilinguals. Its finding revels that the development of English reading proficiency is facilitated through chaining the fingerspelling, sign language, and written words. The experimental study by [27] which studied how deaf pupils learned reading compression of words, gave more support about the use of chaining strategy. Through the sample size of 6 deaf pupils, the study was able to conclude that the use of chaining strategy that combined (written words, fingerspelling and a signs) promoted deaf pupils' comprehension ability.

Furthermore, [28] conducted a review study on the journal articles on the use of chaining to support the vocabulary and literacy development of deaf students. The review included written English, empirical articles that were published in peer-reviewed journals after 2005, whereby a total of eleven articles were reviewed. The findings show that the use of chaining strategy support reading development among bilingual deaf students. Lastly, the study on shared reading by [29] showed positive results on children's literacy for parents who used chaining strategy as a mediating strategy between America Sign Language and English. This study adapted experimental research design and involved 10 deaf mothers with their deaf children who were between the ages of 3–5 years. All of the mothers had some college experience with eight of the deaf mothers completing graduate school, while five were trained as school teachers. Four of the deaf mothers in this study used the chaining strategy with their deaf children to bridge America Sign Language with written English and obtained positive results.

All reviewed studies employed quantitative research approach with experimental design. Thus the studies believed on only one approach in understanding how chaining strategy influence the development of language comprehension among deaf children. Likewise, none of the study under this section that involved teachers as respondents. For that matter, they did not consider teachers as one of the factors that contribute much in teaching and learning of reading skills through chaining strategy. Each of the reviewed studies involved participants less than 65, the number that is not suitable for generalization. On the other hand, all of the reviewed studies did not tell if all studied deaf students were in one class level of were from different levels.

As well, the studies did not present the tests that were used in testing reading ability of deaf students after the intervention. The reviewed literatures under this part did not show if the strategy could be adapted and work better in other areas different from where their studies were conducted. Moreover, none of the reviewed literatures highlighted the usefulness of chaining strategy in developing language comprehension ability among deaf pupils in Tanzania. Again this continued to highlight the need of having this study conducted in Tanzania.

3. METHODOLOGY

3.1 Design

This study used a convergent research design in which qualitative and quantitative data on the effectiveness of chaining strategy in developing language comprehension among deaf pupils in Tanzania were collected simultaneously in one phase. This study opted for convergent research over explanatory and exploratory sequential design because under the two later designs there was high possibility of data from the first phase affecting the finding of the second phase. Thus this study believed that the convergent design could eliminate the possibilities of bias through conducting both quantitative and qualitative studies on usefulness of chaining strategy in developing language comprehension ability among deaf pupils in Tanzania concurrently.

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3.2 Sample

This study used purposive and simple random sampling techniques. Purposive sampling technique was used in selecting the study area and teachers who teach reading subject to deaf pupils in standard one, two and three in the four special primary schools for deaf in Tanzania for qualitative aspect. The researcher employed this technique in the study so as to intentionally select respondents and study area with pre-determined characteristics by research objective and who had rich information about chaining strategy and language comprehension ability among deaf pupils in Tanzania.

Simple random sampling technique was used in selecting standard one, two and three deaf pupils and their teachers from the selected four special primary schools for deaf in Tanzania for quantitative research aspect. In obtaining participants through the use of simple random sampling technique which is one of the types of probability sampling techniques, the researcher used the fishbowl technique.

The quantitative sample size of the study was calculated by using the formula suggested by Yamane in 1967. A total of 182[1] responders (20 teachers and 162 deaf pupils) were selected for data collection. 162 deaf students were obtained from the four primary schools by selecting 40 deaf students from three schools and 42 students from the fourth schools as it had many students. Out of 20 teachers selected for quantitative data collection, 12 of them were also involved in qualitative aspect of this study which was the interview. The researcher interviewed participants until when saturation of the information was reached. This was determined by repetition of information from new respondents. When this was noted the researcher stopped from conducting interview.

[1] This was calculated by using the formula suggested by Yamane in 1967 that is $n = N/(1+Ne^2)$. Whereby: n = sample size, N = population size, and e = Margin of error (MoE). The study used margin error of 5% or 0.05. Since the total number of targeted populations for quantitative part of this study was 334 teacher trainees, the sample size was calculated as follows:

$n = \frac{334}{1+334(0.05)^2}$; $n = \frac{334}{1+334(0.0025)}$; $n = 182.02$; Thus $n \approx 182$

3.3 Data Collection

This study used in-depth interview, observation, and test as well as questionnaire data collection methods to collect data from all selected respondents. In-depth interview was used to collect data from teachers who have the experience of teaching reading subjects to deaf in standard one, two and three in the selected four special primary schools for deaf on the usefulness of chaining strategy in developing language comprehension ability among deaf pupils in Tanzania. Through observation the researcher witnessed how teachers applied chaining strategy in teaching language comprehension and how deaf pupils demonstrated language comprehension abilities. Questionnaires and a test were used to collect data from teachers and deaf pupils respectively on language comprehension abilities of deaf pupils from standard one, two and three teachers from the four selected special primary schools for deaf in Tanzania.

3.4 Validity and Reliability

In this study, validity of the tools and the study was ensured by some experts from Department of Special Needs Education to assess the relevance of the research and tools content that were used in the interview and observation guide as well as questionnaires and test. Likewise, Triangulation was another strategy for ensuring validity that was used in this study, under this technique the researcher used four data collection methods which are in-depth interview, observation, questionnaire and test. Further, the researcher used two types of respondents which are deaf students and their teachers from special primary schools for deaf in Tanzania. Furthermore, the researcher used more than two individuals for expert audit and peer-debriefing to ensure the exactness of the content and avoid biasness. The reliability of this study was determined through Cronbach's alpha, which measured if a group of items in the data collection tools consistently measured the same characteristic through showing their level of agreement. Cronbach's alpha value of 0.744 was obtained, thus it indicated the elevated level of agreement among the items in the research tools because the Cronbach's alpha value of 0.7 was regarded as the minimum acceptable value.

4. RESULTS AND DISCUSSION

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This study sought to determine the usefulness of chaining strategy in developing language comprehension ability among deaf pupils in Tanzania. Five Likert scale questionnaires, test and observation were used in collecting data from teacher respondents and deaf pupils respectively. Teachers teaching in selected 4 primary schools in Tanzania were requested to rate the usefulness of chaining strategy in developing deaf pupils' language comprehension abilities. Likewise, deaf pupils were given a test that helped a researcher to determine their comprehension skills as the way of predicting the usefulness of chaining strategy. Comprehension ability was determined by four sub-skills that included generating meaning from individual separate words, short and long written sentences as well as ability to read written texts without challenges. The quantitative data of this objective were analyzed descriptively as well as through simple linear regression and presented in a table form. Qualitative data were analyzed thematically and presented in a form of short narrations with quotes.

Study findings revealed average usefulness of chaining strategy in developing language comprehension among deaf pupils in Tanzania. Table 1 presents respondents' rates on the utility of chaining strategy in developing and enhancing deaf pupils' ability in generating meaning from individual separate words, short and long written sentences as well as reading written texts without challenges.

Table 1: Respondents' rates on the usefulness of chaining strategy in developing deaf pupils' ability to generate meaning

Statements	Very Poor		Poor		Fair		Good		Excellent	
	F	%	F	%	F	%	F	%	F	%
Individual separate words	0	0	1	5	4	20	7	35	8	40
Short written sentences	0	0	0	0	7	35	8	40	5	25
Long written sentences	0	0	2	10	16	80	2	10	0	0
Written texts without challenges	4	20	6	30	9	45	1	5	0	0

Source: Field data (2023) F = Frequency

Three quarter 15(75%) of teacher respondents as presented in table 1, believed that chaining strategy was clearly useful in making deaf students develop ability to generate meaning from separate words. The findings are in-line with the study by [10] who show that chaining strategy help deaf children to generate word meaning through making associations. Likewise, [30] say that, chaining strategy facilitate understanding of meaning of various words because it makes direct connection of the written word, sign language, fingerspelling and picture representing words. This implicates that, most of deaf pupils taught under this strategy their ability to read and understand the meaning of words is highly enhanced with the strategy.

Study findings though questionnaires were supported by responses from interview which show that majority of deaf pupils were very competent in understanding the meaning of separate individual words. This is exemplified by a response from one of the teacher respondents who said:

> *As you might have noticed, when our students are shown words they faster give the sign of that word or if there is a picture or real object they point to it directly. I am 100% sure that this is the impact of chaining strategy as it helps in generating identification and connecting skills. I assure you that the strategy has helped me to enhance this skill among the students in my class.*

Another teacher respondent added that:

> *When deaf enroll in primary school we usually start teaching them sign language and fingerspelling, when they show some level of mastering the two skills it is when we start introducing them to different vocabularies through the use of chaining strategy. Chaining strategy is very useful in creating or generating meaning of different words to deaf students because it enables them to connect pictures of objects they had in mind with signs and fingerspelling they learn in early time of their studies together with new written vocabularies under study.*

The third teacher respondent was quoted saying that:

> *Majority of deaf students here (almost 98% of them) understand meaning of individual words. I mean that they are good at giving the signs corresponding to individual words because when teaching vocabularies, I usually use the strategy that bring different information concerning a certain vocabulary together (chaining strategy) and thus students get to understand the word in details as all information related to it will be exposed to them.*

Although teachers appreciated the usefulness of chaining strategy in developing deaf pupils' ability of understanding individual words, the task of teaching reading skills to deaf is not easy. This due to the fact that when deaf come to school they have to learn sign language first so

that it can enable them use or apply chaining strategy. Thus, the use of chaining strategy depends on sign language competency to both teachers and students. As well, the earlier views on previous paragraph show that the impact of chaining strategy also depends on teachers' commitments of designing and applying the strategy.

In the same way, study results as shown in table 1 indicate that, more than half of teacher respondents 13(65%) were confident in the usefulness of chaining strategy in developing deaf pupils' ability of generating meaning from short written sentences. The results predict that a good number of deaf pupils were doing well as far as generating meaning from short sentences is concern. This is supported by [28] who show that, the use of chaining strategy support reading development among bilingual deaf students. The findings are also in-line with [31] whose study showed that, deaf preferred the use of chaining strategy because it supported them to comprehend better. This implies that teachers usually use chaining strategy when teaching comprehension skills to deaf pupils.

Moreover, responses from interview add on the above findings by showing that a lot of deaf pupils under this study were competent in generating meaning from short written sentences as the impact of chaining strategy. This is exemplified from a response from one of the teacher respondents who said:

> *I usually use chaining strategy in teaching my deaf students, but it takes time for them to acquire the ability to read sentences. At least they are trying with short sentences but when it comes to long sentences they only end up giving out one to two signs of the words within the sentences. They can't tell what the entire sentences means*.

Another teacher respondent added:

> *More than half of my class is capable of reading and understanding short sentences. One of the strategies I am using involves signing words, fingerspelling them, showing pictures related to those words and connecting ideas to generate meaning of the written sentences (chaining strategy). The strategy is very helpful in teaching deaf students with different levels of understanding. As well, the strategy is too demanding and you need to be creative with it, because sometimes on top of what I said I also connect videos through tables so as to make my students understand and get clear concept or mental picture of the words and sentences they are learning.*

It is true that there are some of the deaf pupils who were capable of generating meaning from short sentences, but it was observed that there were some who were not good in understanding short written sentences. The above interviewees' responses act as the evidence that cements on the idea that the witnessed deaf pupils' ability to generate meaning from short written sentences was the impact of the use of chaining strategy.

Study findings as presented by table 1 also indicate that more than three quarter 16(80%) of teacher respondents under this study, highlighted the usefulness of chaining strategy in developing deaf pupils' ability to generate meaning from long written sentences being average. The findings are contradicting the study by [23] who concluded that chaining strategy support language comprehension development among deaf. This denotes that many of the pupils were only able to understand some parts of the long sentences but not as a whole.

The findings of the study presented in the previous paragraph were supported by responses from interview which show that majority of the deaf pupils were not capable of generating

meaning from long written sentences. This is exemplified in a response from one of the teacher respondents who said:

> I usually use chaining strategy in teaching my deaf students, but it takes time for them to acquire the ability to read sentences. At least they are trying with short sentences but when it comes to long sentences they only end up giving out one to two signs of the words within the sentences. They can't tell what the entire sentences meant.

Another interviewee commented that:

> *Although, I apply chaining strategy but very few deaf students are able to generate meaning from long sentences, paragraph or pages of written texts. It is almost 3 students out of 16 students are capable of generating meaning from long sentences, paragraph or pages of written texts.*

From observation method, it was noticed that deaf pupils from the schools under this study were poor in reading long sentences. Most of them could not read even a sentences correctly. Instead of reading and responding to what the sentences were telling them to do they kept on fingerspelling word by word. This implies that deaf pupils were good in fingerspelling and understanding meaning of individual words and short sentences of two to three words, but they could not connect and get the meaning of the long sentences. This is contrary to [26] who revealed that the development of English reading proficiency among deaf children was facilitated through chaining strategy.

Lastly, study findings in table 1 show that, half 10(50%) of the teacher respondents in this study indicated that chaining strategy was not useful in developing deaf pupils' ability to generate meaning from written texts without challenges. The current study contradicts the finding by [32] who revealed that the use of chaining strategy of multiple modes of reading cues, such as print, pictures, and sign language resulted into enjoyable and interesting standard reading practices among deaf. This exposes that there was a number of deaf pupils in this study who were able to read but mostly they were not perfect in their reading.

Study findings presented in previous paragraph on the usefulness of chaining strategy in developing deaf pupils' ability to generate meaning from written texts without challenges were supported by responses from interview. Findings from interview method show that some of the deaf pupils were incompetent in reading written texts without challenges. This is exemplified from a response from one of the teacher respondents who was quoted saying that:

> *Frankly speaking, very few deaf students can read without challenges. Some can read but to some level they face difficulties. For example, high percent of the students are capable of comprehending up to word level, but they struggle when it comes in reading sentences, paragraphs and texts.*

In conforming findings of questionnaires and key informant interview, deaf pupils were given a test that intended to capture their language comprehension ability. The study results were used to confirm teachers' responses on the usefulness of chaining strategy in developing deaf pupils' language comprehension ability (table 2).

Table 2: Deaf Pupils' Test Results on Language Comprehension Ability

Language Comprehension	Frequency	Percent (%)
Not capable	58	35.8
Very poor	27	16.7
Poor	26	16
Fair	21	13
Good	17	10.5
Very Good	13	8

Source: Field data (2023)

Study findings as indicated in table 2 revealed that, chaining strategy used in teaching deaf pupils had slight impact on their language comprehension ability. This is from the reason that, more than half 111(68.5) of the deaf pupils involved in this study demonstrated language comprehension abilities ranging from not being capable of comprehending to having poor comprehension ability. Likewise, this contradicts the finding by [32] who revealed that the use of chaining strategy of multiple modes of reading cues, such as print, pictures, and sign language resulted into enjoyable and interesting standard reading practices among deaf.

Furthermore, simple linear regression analysis was conducted to further prove statistically the study findings on the usefulness of chaining strategy in developing deaf pupils' language comprehension ability. The regression results showed that chaining strategy affect deaf pupils' language comprehension by 32.2%. This is well summarized by table 3 which shows R^2 value of 32.2% with its Adjusted R^2 value of 0.285.

Table 3: Model Summary of Chaining strategy and deaf pupils' language comprehension ability

Model	R	R Square	Adjusted R Square
1	.495[a]	.322	.285

a. Predictors: (Constant): Usefulness of Chaining strategy in developing language comprehension among deaf pupils

Similarly, the regression results indicate insignificant relationship (p = .191) with positive effect size (β = .495) between the use of chaining strategy and development of deaf pupils' language comprehension ability. The value is insignificant because the obtained p value is above the recommended range (.05 or less than that). Independently, chaining strategy was significant in developing deaf pupils' ability of generating meaning from individual separate words (p = .000) and ability in generating meaning from short written sentences (p = .002). Contrary, chaining strategy was insignificant in developing deaf pupils' ability of generating meaning from long sentences (p = .672) and ability to read written texts without challenges (p = .089). The statistical results imply that, chaining strategy affects differently the development of the sub-skills for language comprehension with no direct combined effect to the general language comprehension ability among deaf pupils. Thus, this gives the reasons for the observed incapability of deaf students in generating meaning from long written sentences and reading written texts without challenges. Table 4 and 5 give the clear summary of this.

Table 4: Usefulness of chaining strategy in developing deaf pupils' language comprehension ability

Coefficients[a]				
		Unstandardized Coefficients	Standardized Coefficients	
Model		B	Beta	Sig.
1	(Constant)	1.375		.297

	Usefulness of Chaining strategy in developing deaf pupils' language comprehension ability	.243	.495	.191

a. Dependent Variable: Deaf pupils' language comprehension ability

Table 5: Usefulness of chaining strategy in developing deaf pupils' language comprehension sub-skills

Coefficients[a]

Model		Unstandardized Coefficients B	Standardized Coefficients Beta	Sig.
1	(Constant)	.139		.816
	understanding meaning of separate words	.905	.835	.000
2	(Constant)	.873		.254
	understanding meaning of short written sentences	.686	.655	.002
3	(Constant)	3.400		.070
	understanding meaning of long written sentences	-.250	.101	.672
4	(Constant)	1.086		.048
	reading written texts without challenges	-.368	.390	.089

a. Dependent Variables: Deaf pupils' ability of generating meaning from individual words, short and long written sentences as well as reading written texts without challenges

In general, the use of chaining strategy is very useful in developing deaf pupils' ability of comprehending separate individual words and short sentences among deaf pupils. The same strategy has slight impact on enhancing deaf pupils' ability of comprehending long written sentences and ability to read written texts without challenges.

4. CONCLUSION AND RECOMMENDATIONS

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The finding of this study revealed that the use of chaining strategy in teaching language comprehension among deaf pupils has significant impact in developing deaf pupils' ability of generating meaning from individual words and short written sentences. The study also noted that chaining strategy had insignificant effect in developing deaf pupils' ability of generating meaning from long written sentences and reading written texts without challenges. Building on these findings, it is logical to conclude that, the use of chaining strategy does not guarantee deaf pupils' language comprehension. Therefore, more initiatives and creativity are needed to supplement the strength of chaining strategy in developing deaf pupils' comprehension ability.

It is recommended that the government should make sure that competent teachers for deaf are employed. As well, in collaboration with different stakeholders, the government should ensure that teachers for deaf are given frequent in-service trainings to update their sign language skills as well as the skills to teach reading to deaf pupils.

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