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INVESTIGATING THE EFFECT OF PICTURE STORIES AND MIND MAPS ON NARRATIVE WRITING ABILITIES OF COCHLEAR IMPLANTED STUDENTS

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Abstract

Purpose: *The present study aimed at investigating the impact and effectiveness of picture stories and mind mapping as writing tools for cochlear implanted students.*

Method: *Action research was conducted to improve cochlear implanted learners' narrative writing skills with the help of picture storytelling and mind maps. The data was collected in two phases. After the success of intervention applied on one participant in phase I, the same intervention was given to three more participants over a period of two months, during both phases the participants were taught for 30-40 minutes five days a week.*

Results: *The overall findings showed positive outcomes in the writing ability of the participants. The results also indicated a sound level of the effectiveness of picture storytelling and mind maps suggesting imperative need to incorporate them in educational settings in order to help cochlear implanted learners write to their maximum potential. This research also showed the effectiveness of these tools as a guide to teachers, offering practical help, plan and conduct lessons especially where writing skills in English is taught as a second language.*

Conclusion: *It is concluded that specifically designed intervention for the development of narrative writing skill can promote competency even though it is the difficulty that is faced by the D/HH students in storytelling.*

Key Words: *Cochlear Implant, Narrative Writing, Mind Mapping, Picture Storytelling*.

I. Introduction

The electronic device, cochlear implant, takes its name from the ear function that it replaces. The cochlear function is essential for transforming sound into neural messages; the implant however, does not enhance normal hearing but simulates natural sound in its relays in opposition to the sound amplification of conventional hearing aids. According to Archbold (2010) and Mayer and Leigh (2010) the usefulness of cochlear implantation in hearing and speech improvement is more conducive to educational outcomes than any other pedagogy approach.

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If cochlear implant restores hearing, it also aids spoken language and comparatively improves language skills such as writing. Documented research on cochlear implants has proven that they have a marked benefit on the language development and perception of speech of severe to profound hearing loss children (Blamey, Sarant, Paatsch, Barry, Bow, 2006; Moog, 2002; Nicholas & Geers, 2007).

Writing is for both normal-hearing and hearing-impaired children, a task that is high in complexity. Albertini, Marschark, and Kincheloe, (2015) define written production as a complex function which involves coding thoughts, experiences and information using written symbols. Unfortunately, the defect of hearing impairment is an obstacle in the development of listening and speaking skills because reading and writing skills form on the use of phonological, syntactic, semantic and pragmatic skills, which commences with the development of lingual practice in the initial years of childhood before school. Mascia-Reed (2012) states that for children with normal hearing, expressing ideas in writing, following grammar rules and a certain order like sequencing is natural but it is a complicated task for children with hearing loss. This is because written expression needs synergy of various skills which are: selecting ideas while thinking, the organization of thoughts before writing and choosing appropriate vocabulary to deliver the intended meaning, while giving attention to the relationship between letters and spellings Studies show that children with CIs lag behind their hearing peers in written composition and reading comprehension (Geers & Hayes, 2011; Spencer, Barker & Tomblin 2003; Marschark, Rhoten & Fabich, 2007). Children with CI present poorer written expression than their normal peers in extensive narrative writing (Wu, Ko, Chen,Tsou, & Chao, 2015). Studies indicate that they are not proficient in adequately applying parts of speech such as pronouns, determiners, conjunctions with constructions (Spencer, Barker &Tomblin, 2003). Deaf children face problems in comprehending core ideas, event association, and connections between language structures owing to interrupted hearing (Schopmeyer, Mellon, Dobaj, Grant & Niparko, 2000).This research centers on the sentence level syntax and word level vocabulary in order to describe the language skills for children with cochlear implants (Svirsky, Robbins & Miyamoto,2000; Tomblin, Spencer, Flock, Tyler, & Gantz, 1999).

According experts the writing process approach, which is based on steps of prewriting, drafting, revising and editing, and publishing also helps children with hearing loss improve their written expression skills, like children with normal hearing (Wolbers, Dostal, Graham, Branum-Martin, Kilpatrick & Saulsburry, 2016). Studies by Gormley, Sarachan-Deily Albertini and Schley, (2011) show that late development of oral and reading skills are evident in written products of students with hearing loss. Compared to normal hearing peers they write sketchy essays , use less action words and clauses, use simple tenses, make spelling and syntax errors and fail to organize and summarize their thoughts at the end.

Wu et al. (2015) conducted a study on Mandarin-Speaking cochlear implanted children and their written language ability which highlighted the issues regarding the stories written by CI students. It was observed that the implanted students focused singularly on concrete descriptions. CIs exhibit weak oral narrative skills in comparison with their normal hearing peers of same age. It is a fact that children with CIs belong to the discourse language delayed group (Boons, De Raeve, Langereis, Peeraer, Wouters & van Wieringen, 2013). Narrative writing can however be aided with use of picture stories that in turn can also provide shared experiences for the students in the classroom setting (Raimes, 1983).

According to research, there are better chances of developing lexical skill in speech (Caselli, Rinaldi &Varuzza, 2012) and age required spoken competence like normal children, if a child receives cochlear

implantation before second year of age (Baldassari, Schmidt & Schubert, 2009; Ramirez, Odell & Archbold, 2009).

Development of comprehension and understanding text composition is essential for personal, social, and academic development of these children (Arfe, Nicolini & Pozzebon, 2014; Spencer, Barker, & Tomblin, 2003), as enhancement of literacy skills remains a substantial challenge in both acquisition and advancement.

The capability of pictures in being effective tools for teaching and learning of English language cannot be disputed. Heaton (1988) focused on the effectiveness of the usefulness of picture stories and their capacity for simulation of the imaginations of the students.

Raimes (1983) states that a variety of guided and free writing exercises can be based upon pairs of pictures and pictures in sequences given to the students. Recent research indicates that pictures cues do have a positive impact on language learning (Cunillera, Camara, Laine, & Rodriguez-Fornellset, 2010; Cherry, Park, Frieske & Smith, 1996, & Alidoost, Tabatabaei, Bakhtiarvand, 2014). Alidoost et al. (2014) inferred that the use of picture cues can help in smooth and coherent transition from one idea to another at the university level learners. Pictures were also considered to being extremely helpful for adult learners by Cherry et al. (1996).

Mind maps act as pre-intervention writing tools that allow for representation of linking thoughts with symbols instead of extraneous words. Structurally, this approach aids in a logical focus on organization of learning in the event of memory fails. This also encourages working memory and automaticity as both are vitally linked to the cognitive process of writing. The introduction and organization of new concepts is simplified under this construct allowing connection and sequencing of information against prior knowledge and comparison and contrasting of two or more related aspects (Buzan, 2006).

With the scope and requirement of this issue in mind, the present research study aimed at extensive exposure of the respondent to aspects of receptive language that include picture storytelling for vocabulary enhancement and improvement of syntactical structures. Also, mind-mapping in associating thoughts with symbols instead of extraneous words, thereby enhancing learning outcomes through aiding the cochlear implanted participant with organization, expounding, and sequencing ideas along with concepts (Buzan, 2006).

Objectives

The objectives of the study are to:

- develop narrative writing ability of the CI learner with help of picture stories.
- teach the CI learner to write in a cohesive manner and minimize their grammatical errors.
- help the CI improve the structure and plan of narrative writing and record thought with the help of mind mapping.

Research Questions

The research questions are as follows:

1. To what extent picture stories facilitate narrative writing ability in CI students?

2. How far do picture stories help cochlear implanted learners to write narratives in a cohesive manner?

3. To what extent picture story telling helps in reducing grammatical errors and lexical density of the cochlear implanted students?

4. Do CI learners find it easier to write their ideas, structure and plan the narrative writing using mind maps?

5. Is there any statistically significant difference in the achievement of the CI students due to the intervention?

II. Methodology

The following procedure was adopted in the first phase and after the successful intervention it was given to three more students.

Action Research

For this study, the researcher selected 'Action Research.' This method consisted of four phases: planning, action, observing, and reflection (Greenbank, 2007& Kemmis, 2009).

Planning Phase

The first step in this phase was the searching of the participants and the selection of the picture story books.

Selection of the Participants

CI children form quite heterogeneous group (Pisoni, Kronenberger, Conway, Horn, Karpicke & Henning, 2008), and in the present study demographic factors like age at implantation, time as deaf, time with implants and main stream schooling were kept in consideration. Four participants, one male and three females with congenitally deaf bilateral severe to profound hearing loss were selected for the study.

Picture Story Books selection

Guidelines provided by Hargrave and Senehal's (2000) were used for the selection of the books. Consultation with speech therapist and the English teacher helped in the selection of 11 Ladybird Readers.

Selection of Research Site and Entry Negotiation

A private place for the intervention without much environmental distractions as per recommendation of the speech therapist was selected. Both parents' consent and student's assent was obtained

Reconnaissance

In the reconnaissance the researcher interviewed the students to know their perception about writing in English Language. Two pre-tests were conducted to gain an understanding of their writing levels. First pretest was based on the pictures and the students were asked to compose stories with the help of given pictures. For the second pre-test the students were asked to read a picture story and after reading it they were asked to rewrite the story in their own words. This helped the researcher to find out the existing teaching learning process.

III. Action Phase

Research Participants

The research participant included the English Language teacher, the therapist, and cochlear implanted students of grade 5.

Intervention Stage

The intervention stage consisted of a cyclical process of co-planning, teaching, observing and reflecting. The teacher and the therapist observed the researcher in some of the lessons; while in others, they were being observed. The researcher, the therapist and the teacher both reflected on the action and plan for the next lesson. This process continued for four cycles for five days a week for 30-40 minutes. During the implementation phase, observations in form of field notes were recorded.

During the intervention period the following points were kept in mind. Not to split words emphatically, repeat the words where necessary, translate new words into mother tongue, not to go too slow with word as it can hamper the natural manner of articulation, demonstrate certain expressions through gestures, to ensure the understanding of the information, new words which require further explanation always inquire the students about what did they hear, give time to the child time to process the information, provide auditory input, followed by visual cues then present the target again with the auditory stimulus exclusively, repeat the names to impress them on learners, new vocabulary words should be explained with meanings for deeper understanding, new words to be explained in form of simple sentences and relate them to a familiar event or give synonyms and antonyms or even simple definitions, or put them in a category of the similar words, not to read loudly rather to lesser her voice and pitch because of proximity to the learner, sit next to the student especially on the side with better hearing.

Cycle

Step I : Warm up activity was conducted to build and have the confidence of the student.

Step II: The researcher adopted the read aloud method with modulation, gestures pointing at pictures and talked about pictures. There was auditory bombardment syntactic structures likes, pronouns adjectives adverbs, tenses contraction, conjunction. The participant students were encouraged to ask question in case of ambiguity or clarification.

Step III &IV: Next was to revisit the story reinforcing the new concepts, words, syntactic structures sequence of the story.

Step V: The researcher encouraged the participant to retell the story with the help of pictures. In case form was either or not produced or was produced incorrectly, the participant utterance was recasted by the researcher. In recasting, the meaning of participant's utterance was maintained with addition of syntactic information for e.g. the participant's utterance was. "He buyed the apples", the recast given by the researcher was, 'Yes, he bought apples".

Step VI: After the completion of each story mind maps were constructed. For the first two stories, the participants were taught how to construct a mind map and later on followed by the guided mind map and independent construction.

Step VII: In the next step student participants were asked to make the story's first draft then recheck and revise.

Step VIII: The English teacher marked the grammatical errors, paragraphing, tenses error and spelling errors. The participants were asked to rewrite the final draft removing all the errors.

Observation and Reflection Phases of Action Research

During the action phase, the researcher closely observed the students listening to picture story and while constructing mind maps. The English teacher and the therapist also observed the researcher teacher's teaching. At the end of the class reflections and observations were shared and the researcher planned the next cycle of action research. After every complete cycle narrative writing samples were collected.

Post-intervention

After completing the intervention, post writing samples were collected, analyzed and compared with the prewriting samples to determine the effectiveness of picture storytelling and mind maps. A feedback interview was conducted with the participant on the new strategies for narrative writing.

Analysis of the written product

The written narratives were analyzed on the basis of theme units called as t-units as stated by Hunt (as cited in Crosson & Geers, 2001). The two coders analyzed the narratives into theme-units.

Narrative structure score

In order to analyze the narratives Labov and Waletzky's (1967) modified version of the high point anaylsis was used in the original form. The assessment was conducted in three parts: in the first part narrative structure score was calculated and there five maximum points for it. The second part consisted of two kinds of cohesion scores. The first type of cohesion score was based on the usage of conjunctions and carried maximum four points and the second type of cohesion score was about the reference specification which also carried maximum 4 points. Hence, the maximum score for total narrative ability was thirteen points.

The total length of the narratives was measured by counting the number of words. The finalized revised drafts were used for computing the total length of the narratives. A comparison between the two pre-tests and post-tests, with the same picture and picture story used for the pretest was drawn in accordance to the number of words for each picture; the number of words was linked to the number of pictures under consideration. Also, the grammatical errors' percentage was calculated. Errors committed in subject verb agreement or inflections, incorrect sequence of words, number of omitted function words, incorrect preposition or pronoun were calculated as grammatical errors. The content words percentage like verbs, common and proper nouns, and adjectives was computed for the measurement of lexical density.

Reliability

The two coders who were blind to the hearing level of the participants analyzed the written products. In case where there was some uncertainty, consensus was reached through discussion about grammatical errors, narrative ability and cohesion scores.

IV. Results

The quantitative data obtained from pre-tests and post-tests were analyzed through descriptive and inferential statistics.

Table 1

Demographic Information of the CI learners

	Participant I	Participant II	Participant III	Participant IV
Gender	Female	Female	Male	Female
Chronological Age	10years 2 months	10years 6 months	10years 11 months	10years
Class	5	5	5	5

Table 2

Demographic Data of the CI Learners

CI Students	Age at Diagnosis	Age at Implant	Duration of use
P I	9 months	18 months	All day
P II	10 months	20 months	All day
P III	12 months	18 months	12-15 hours
P IV	3 months	9 months	12 hours+

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Table 3 *Audiological Summary of the CI Learners*

	P I	P II	P III	P IV
Hearing Loss	Bilateral Profound to severe sensory neural	Bilateral Profound to severe sensory neural	Bilateral Profound to severe sensory neural	Bilateral Profound to severe sensory neural
Bilateral Implant	No	No	Yes	No
Type of Implant	MedelCombi +	MedelCombi+	Nucleus	Nucleus
Implant Experience	9 yrs & 5 months	9 yrs & 4 months	9 yrs & 11 months	9 yrs & 9 monthss

Table 4 *Comparison of Pre-Test1 & Post Test1 Results on all Measures of Written Language Ability in all the Participants with Cochlear Implant*

Measure:	All Participants with CI											
Written Product	Pre-Test I				Post Test I				Paired Mean	Paired S.D	t	p-value
	PI	P II	P III	PIV	P I	PII	PIII	PIV				
Total Number of words	55	25	46	26	179	127	138	107	99.8	18.3	10.9	.002
Total Number of Sentences	12	5	9	8	15	13	14	10	4.5	2.6	3.4	.042
Total Narrative Ability score	3	2	4	0	11	10	12	9	8.3	0.5	33.0	.000
% Grammatical Errors	32.7	40	71	65	10	13	8.6	3.7	43.4	21.4	4.0	.027

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% Content Words	67	48	60.9	92	39	41.7	45.6	43.9	24.4	18.1	2.7	.074

p-value ≤ 0.05 indicates a significant difference between the means.

Table 24 results show the significant differences between the mean results for the pre-test I and post-test I for the students with cochlear implant. The difference was highly significant ($p < .001$) for total narrative ability score. The difference was significant ($p < .01$) for the parameter total number of words. There was also significant difference although at lower level for the parameters such as total number of sentences and percentage of grammatical errors. It also shows that there was no significant difference in the percentage of the content words.

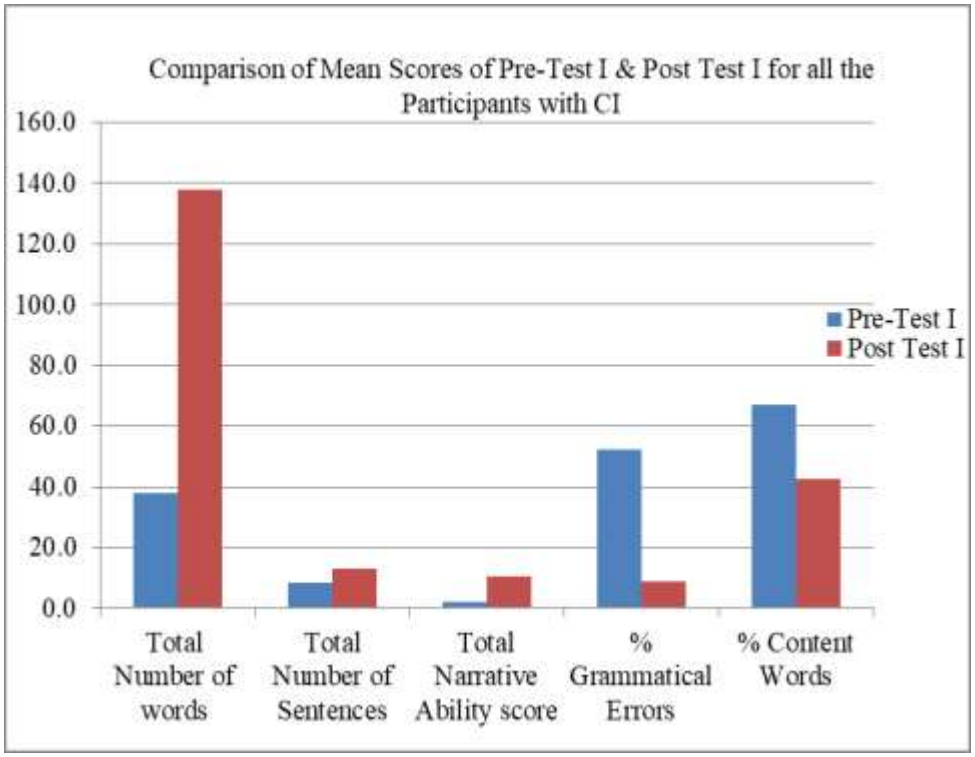

Figure 1. Shows mean scores of pre-test I and post-test I on all measures of written language ability for all the participants showing significant gain in total number of words, total number of sentences, total narrative ability score, grammatical errors and content words.

Table 5

Comparison of Pre-Test II& Post Test II Results on all Measures of Written Language Ability in all the Participants with Cochlear Implant

Measures: Written Product	All Participants with CI											
	Pre-Test II				Post Test II				Paired Mean	Paired S.D	T	p-value
	I	II	III	IV	I	II	III	IV				
Total Number of words	25	29	30	35	316	159	190	137	-170.8	83.6	-4.1	0.026
Total Number of Sentences	6	7	7	7	36	21	21	21	NA	NA	NA	NA
Total Narrative Ability score	2	2	3	4	11	11	11	11	-8.3	1.0	-17.9	0.000
% Grammatical Errors	26	55	60	22.8	9	22.6	18	8	26.6	12.9	4.1	0.026
% Content Words	60	51.7	73.3	62.7	49	52	52.1	56	9.7	9.0	2.1	0.121

Table 5 shows the results of the paired sample t-test for all the variables except for total number of sentences as the data was not normally distributed The data was checked for Normality using Shapiro- Wilk's test, since p-value of Shapiro-Wilk's test was < 0.05, for "Total Number of Sentences", indicating deviation from normal distribution. Wilcoxon Signed Ranks Test was applied to the data which yielded the results as, z= -1.890, p-value = 0.059. However, there is a significant difference in grammatical errors and total number of words and highly significant difference in total narrative ability scores.

Table 6

Wilcoxon Signed Ranks Test

Measure: Written Product	MeanRank	Sum of Ranks	z	p-value
Total Number of Sentences	2.50	10.0	-1.890	0.059

Table 6 results show that there was insignificant difference (p= 0.0059) in total number of sentences according to Wilcoxon Signed Ranks Test.

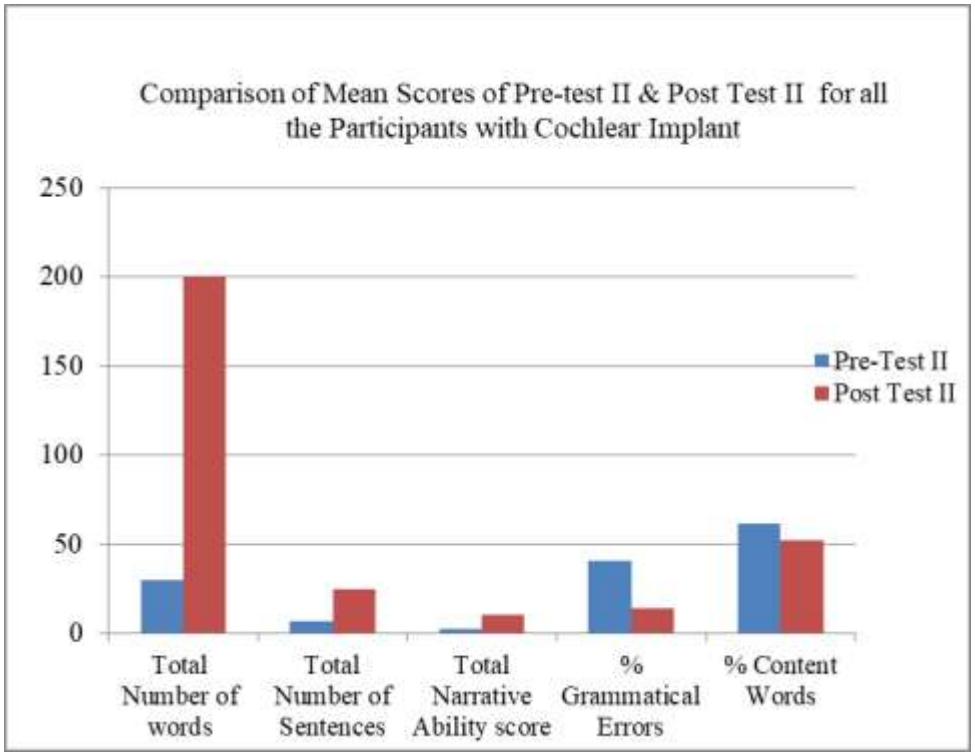

Figure 2. Shows comparison of mean scores for all the variables showing a significant gain in total number of words, total narrative ability scores and significant decrease in grammatical errors and there was no significant gain in total number of sentences and decrease in percentage of content words.

V. Discussion

In order to answer the proposed research questions it is important to remember that this study demonstrates that instruction in writing strategies shapes the developmental process in important ways; particularly the structure of the story and structure and development of ideas.

Writing involves a number of processes with different cognitive components, an important component being working memory. Paivio's (2007) cognitive model is based on the use of videos and picture to make story telling more alive and imaginative. This method teaches vocabulary, syntactic structure, use of connectors and prepositions. His dual coding theory, supports the learners input of new ideas by presenting visual imagery.

Working memory also plays an important role in coordinating writing processes: generating ideas, planning paragraphs and reviewing texts that interact recursively during the generation of written material (Berninger, Abbott, Thomson, Wagner, Swanson, Wijsman, & Raskind, 2006). For cochlear implanted learner this can cognitive overload making process tedious. This was evident in all the participants' pre writing samples as they failed to construct any paragraphs. Mind Maps helped each participant construct a number of paragraphs by showing them that each main branch along with its subsidiary branches was the start of a new paragraph. This understanding helped develop and structure the written product: a difficulty expressed in their interviews by the teachers.

Flower and Hayes (1981) point out, that planning and reviewing are important in the writing process as they enhance the quality of writing. Keeping in mind the importance of planning and reviewing as advocated by Flower and Hayes (1981) each participant was taught to tick each idea on their mind map after it was expressed. This reduced cognitive overload and memory difficulties by allowing the learners to focus on one idea at a time. After the construction of a written text each the construction of written text each participant reviewed their work to look for errors in the mechanics (Young, 2000) of writing and to cross check whether all the idea generated in MM had been included. Mind Map also helped the participants to find a clear purpose and focus, generate and organize related ideas, plan structure (start a new paragraph) and recall ideas for writing. Be creative, stay focused and interested due to multisensory elements like pictures and colours.

The picture telling story telling through read aloud has the potential to give children access to simultaneous instruction, which reduces the cognitive load by using several modalities like videos, pictures and the story both heard and seen simultaneously. As stated by the participants in their pre interview "they often forget to write all their ideas" which was evident in their pre writing samples. Picture storytelling and Mind Maps gave them a visual framework to express their ideas and subsequently refer back to when memory failed.

Language teaching methods for the C1 should be innovative like informal activities and games. Justice, Swanson, Buebler (2008) conducted an intervention study developed on narrative - based training research on 5 to 8 years old C1 children. Their research concluded the significance of intervention method among C1 increasing syntax and narrative output. This study produced results showing benefits of picture story reading to C1 learners. Read aloud and use of Mind Maps increased language learning. The research had the intervention pattern of enhancement strategies such as; prereview/review, revisit, explanations, retelling, recasting and pictures. When exposed to picture storytelling through read aloud and revisiting twice or thrice with intensified instruction, the participants improved in the language and wrote stories with more words. They made stories with new words, classic pattern; better narrative structure score, lesser grammatical errors and content words. These findings are consistent with previous studies in which picture and video support (Chambers, Cheung, Madden, Slavin & Gifford 2006; Smeets, van Dijekn, & Bus 2012) multiple exposure (Penno, Wilkinson & Moore 2002; Hargrave & Senechal 1997).

The results of this study highlight the requirement of purposefully designed intervention programme, to improve storytelling observed in D/HH children (Pakulski & Kaderavek, 2012; Paul 1998; Walker, Munro & Rikards, 1998) a marked improvement has been seen between the participant's prewriting and post writing samples. In the later sessions, the stories appeared more coherent, structured and organised. The participant demonstrated lesser errors in grammar, parts of speech and verb conjugation. These findings affirm that of Kara, Aydin & Cagiltay (2013) according to which cognitive development enhance through storytelling. It has further been advocated by the school of research, which focuses the intellectual and pragmatic enhancement, when storytelling takes place cognition improves (Harriot & Martin 2004, Sima & Cordi, 2003).

The participants before they were given additional intensified auditory input showed that their pre-tests contained proportionally more orientations. Thus a larger proportion of orientation depicts a predominance of picture descriptions which are very common and irrelevant to resolving problem (Crosson & Geers 2001).

The pre-tests depicted a lack of resolutions which in turn show a weak story plot in which the actions of the characters do not resolve highpoint. The stories were descriptive in nature rather than evaluative. They made minimal use of conjunctions except for "and", pronouns or modifiers to tie the elements of the story together. The

stories primarily consisted of descriptive statements and lacked the characteristics of a true narrative. The pre-test results are in line with previous studies of narratives written by D/HH (Grifth, Ripich, & Dastoli 1990; King & Quigley1985; Klecan-Aker & Blondeau 1990, Yoshinago-Itano &Snyder1985).

The use of intense exposure and intervention brought forward fruitful effect on narrative writing. A comparison between post-test and pre-test showed that the students benefited from the extensive auditory exposure. After receiving the extensive auditory exposure during the intervention phase, their post-test reflected evaluation, orientation, conjunction linked to semantic relation in the stories. The intervention in the study showed the use of conjunctions in narratives helped the learners to join sentences (Snow, Tabors, Nicholson, & Kurland, 1990)

The post-tests depicted that C1 used temporal conjunctions and help in the temporal ordering of the events. However, the post tests showed fewer causal conjunctions which reflects a lack of linguistic maturity rather than a lack of understanding of cause effect relation (Crosson & Geers, 2001).

The picture storytelling and mind maps aid a writer to structure his/her writing with relative ease, which appeared to be the case for each participant; however in varying degrees with participant I and III benefiting the most. It is important to note some of the participants grouped or structured any ideas during their pre writing sample, which suggests their lack of a meta-cognition or application of simplest writing heuristics used to solve writing difficulties.

During the four week intervention period the participant IV constantly expressed the need to vary her sentence beginning to make writing interesting. Expressing ideas as complete sentences is a demanding process for most writers. CI learners struggle to produce efficient syntactic structured sentences due to difficulties in lower order skills. Studies have associated these difficulties due to deficit in working memory (Bourdin & Fayol 1994). This was evident in all four participants' pre-tests in which they had constructed simple sentences, however failed to establish a cohesive link between adjacent sentence creating global textual problems. The pre-tests showed poor narrative structure score, a few number of sentences, grammatical incorrect sentences, with some missing words no subject verb agreement.

During the intervention period the participant began to develop automaticity and metacognitive awareness. This helped the participants developed tacit knowledge to construct grammatically coherent sentences, use of connectives stories with classic pattern. With improved narrative structure score, improved linked elaborated topic related ideas and structured necessary paragraphs.

However, over two months intervention period the participants seemed to develop the meta cognitive ability to write a narrative with sequential nature and the connecting storyline by causal/temporal connectors, organised their ideas coherently. These results are in line with the study conducted by Alidoost, Tabatabaei and Bakhtiarvand (2014).

Mind mapping is a strategy that facilitates narrative writing skills in a cochlear implanted student. A number of studies have shown the effectiveness of using Mind Maps as a writing framework (Budd, 2004; Mento, Martinelli & Jones, 1999). Children showed greater concentration levels, stayed on a task for longer and adopted greater independence in studying using mind maps (Cain, 2002. Salzberg -Luduig (2008) further looked at the use of mind maps and his research showed a statistically significant improvement in memory recall with the group using Mind Maps. In this research it can be seen that Mind Maps, to a large extent, improved the quality of

students' writing. This is further supported by the interviews and observations conducted which showed that each participant recognized improvement in their writing and attributed their progress to the application of Mind Maps. Participants' perceptions about Mind Maps during the post interview were positive.

They reported that mind maps helped them see the bigger picture and plan text appropriately. The colour and picture incorporated in Mind Maps seemed to be a paramount feature, which helped to link and relate ideas into different paragraphs.

The participants felt that Mind Maps facilitated the use and development of paragraphs. They explained that Mind Maps helped not only in structuring of ideas but allowed the ideas to be presented in a clear, simple and logical format. They further claimed that Mind Maps helped them to maintain focus were appealing and fun to create. It thus appeared that Mind Maps assisted the participants in creating and merging ideas into coherent form which facilitated the writing process.

A major purpose of Mind Maps was to provide a framework for writing by giving learners a starting point to plan, express and generate ideas in order to construct a written piece of text. During observation it became apparent that participants initially used Mind Maps to brainstorm ideas subsequently making links between ideas. Once the plan was completed, participants found that Mind Maps kept them focused during writing. The participants stated that linear outlines were the most popular prewriting strategy used in school. Plans in graphic form like Mind Maps were the least popular; however the results of present research showed that they appeared to be beneficial.Each participant repeatedly stated that Mind Maps helped them to generate ideas and structure their written text coherently something they were unable to do with linear outlines.

In ascertaining students' perception of Mind Maps after using it over two months in students perceived Mind Maps as fun, interesting motivating approach to learning; students conceptualizing Mind Maps as having a variety of purposes in learning language; students reported that Mind Maps enhanced their learning in a variety of ways. When asked about their views regarding Mind Maps they were of opinion that they enjoyed creating Mind Maps. During the interview, students identified a range of ways that Mind Maps helped them increased attention, better organized thinking and ideas, improved memory, deeper thinking and ideas, improved memory, deeper understanding, better approach for sharing ideas during assessment and improved note taking. The following are some of the students' comments about how Mind Maps helped in writing a better composition.

Fun aspect of Mind Maps was attributed to the opportunity to be creative closely linked to affective types of outcomes and cognitive learning. The students were of the view that Mind Maps helped them organize their ideas and they would like to work in groups in class and thought that group work would be more fun, they would get opportunity to learn from others.

In ascertaining students’ perception about picture storytelling students’ perceived picture storytelling was different and interesting. One participant commented that her teacher has never read them stories like the researcher who read them with love and smile, actions and gestures. Another participant was of the view that he liked to talk about colourful pictures and the teacher explained everything to him. The participants in these narrative sessions described their satisfaction in retelling and revisiting stories. The participants responded positively and liked the use of new and interesting styles. They understood stories, structure, new words, made paragraphs, used paragraph, better vocabulary. They made fewer mistakes, added details and extended composition. Narrative intervention studies with the hearing impaired is few and far between. The study conducted by Luetke-Stahlman, Griffiths & Montgomery (1999) focused the narrative retelling sessions of a 7 year old young

girl. Syntactic and semantic improvements were recorded in retellings. She also scored well in a reading test. The researchers suggested using a narrative retelling with hearing impaired children.

VI. Conclusion

The overall findings show that picture storytelling and Mind Maps proved to be an effective tool used to aid cochlear implanted learners' progress in their writing. Picture storytelling and Mind Maps are effective because the components used to create them i.e. organisation, easy recall, making associations and breaking information in suitable paragraphs compliment a cochlear implanted learner's strengths while attending to their weaknesses.

The findings of this research show that a specifically designed intervention for the development of narrative writing skill can promote competency even though the difficulty faced by the D/HH students in storytelling (Pakulski & Kaderavek 2012, Paul 1998; Walker, Munro & Rikards, 1998).

It is also concluded from the findings that through storybook reading with adults, participant were engaged in motivating activity that provided multiple contextualized exposures to unknown words. Providing word learning a framework such as within stories gave the participants opportunities to apply meaning immediate context and demonstrated significantly improving novel word learning (Stahl & Fairbanks, 1986). Repeated exposure to storybooks and the teacher's explanations of target words and benefited the participants the most. Biemller and Boote (2006); Justice et al., (2008); Smeets et al., (2012) also reported greater word learning with a second or third retelling and an explanation of target vocabulary. Picture storytelling also provided high linguistic value as the participants were able to contextualize meaning, guess about the content through them and helped them to acquire new vocabulary more efficiently.

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