

## ENHANCING NARRATIVE WRITING ABILITY OF A CI LEARNER WITH THE HELP OF PICTURE STORIES AND MINDMAPS

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**Abstract:** *The present research aimed at investigating the impact and benefits of picture storytelling and mind maps on the narrative abilities of a CI student. Action research was conducted to help CI learner write better narratives using picture stories and mind maps. In the present study an action research based on mixed methods research approach was used. The quantitative part of mixed methods research comprised of pre and post-tests whereas the qualitative method was based on interviews and observations. The data was collected over a period of six months, during which the participant was taught for 30-40 minutes daily. The overall results showed a significant improvement in narrative writing ability of the participant. The result also depicted efficacy of picture storytelling and mind maps leading to essential need to incorporate them in English classes in order to help the CI learner to write to narratives to her best of her abilities. This research also showed the effectuality of these strategies as a guide to teachers providing guidance in planning and conducting English language lessons.*

**Keywords:** Cochlear Implant, Narratives, Mind Maps, Picture Stories

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## **Introduction**

1980s witnessed cochlear implants replacing hearing aids in those suffering from severe to intense hearing loss. In comparison to other pedagogical approaches, said implants are more significant in terms of speech and hearing improvement(s), as claimed by Archbold (2010), and Mayer and Leigh (2010). Cochlear implants not only restore hearing, but also improve speech and consequently, other language skills, like writing.

A task like writing can be most daunting for students, hearing-impaired ones as well as the rest. Research shows the former, with their implants, lagging from the latter group in reading comprehension and written composition tasks. (Geers & Hayes, 2011; Spencer, et al., 2003, Marschark, Rhoten, & Fabich, 2007). Expressions in narrative writing are poorer for children with hearing impairment as compared to normal hearing peer group (Wu, et al., 2015). For instance, they cannot properly make use of syntactical elements determiners, pronouns, conjunctions, etc. (Spencer, et al., 2003), nor can they proficiently form complex sentences. Resulting narratives are incomprehensible, based on incorrect usage of connectors and coordinating narrative clauses (Griffith, et al., 1990).

According to research, there are better chances of developing lexical skill in speech (Caselli, et al. 2012) and age required spoken competence like normal children, if a child receives cochlear implantation before second year of age (Baldassari, et al. 2009; Ramirez, et al., 2009).

According to Spencer, et al., (2003) and Arfe et al., (2014) it is very important for hearing-impaired students to develop academically, socially, and personally by developing comprehension skills. They also stated that reading and writing skills pose a significant challenge in both acquisition and development of language of hearing-impaired children. Blamey, et al., (2001) noticed that CIs showed important results in children's speech comprehension plus communication. Similar long-term results have not been witnessed in other areas, though. Furthermore, it has also been reported (Geers, et al., 2003) that like normal students, a significant number of students with CIs are effective learners yet approximately one third are unable to understand tasks in advanced grades.

Keeping these issues and their scope in mind, the current research study purposed at extensively exposing respondent to aspects of receptive language, including picture storytelling for enhancing lexicon and development 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 present research aimed at:

- Developing narrative ability of the CI student with the help of picture stories.
- Teaching the CI student to write in a cohesive manner using picture stories and reduce grammatical errors of the CI student.
- Improving the structure and plan of CI

\ student's narrative writing and recording her thoughts with the help of mind mapping.

### **Research Questions**

The research questions are as follows:

1. To what extent picture story telling as a strategy help a cochlear implanted in composing narratives?
2. How far do picture stories help a cochlear implanted learner to create cohesion in the narratives?
3. How far does picture story telling help in the reducing errors of grammar and lexical density of the cochlear implanted learner?
4. Does a cochlear implanted learner find it easier to express her thoughts and ideas, structure and plan the narrative writing with the help of mind maps?
5. Is there any improvement in the narrative writing skills of the CI student after the intervention?

### **Literature Review Cochlear Implantation**

Cochlear implant, essentially an electronic device, is named due to the ear function it imitates. The ear's cochlea transforms sound into neural messages. The implant does not improve normal hearing rather, it simulates natural sound in its relays as compared to sound amplification of conventional hearing aids. According to documented research on cochlear implants, they cause significant improvement in language development and speech perception in hearing impaired children with severe-profound loss (Blameyet al., 2006; Moog, 2002; Nicholas & Geers, 2007).

### **Narrative**

It is a kind of fictional story—including a movie—or a real-life experience in spoken or written form. Narratives contain a combination

of both linguistic and pragmatic aspects of language. Hence narrative skills are considered as a productive field by researchers like particularly in terms of connected speech for assessment and participation in discourse-level activities (Vandewalle, et al., 2012). According to Murri, et al., (2015) this one skill, narration, combined within it are other skills, including syntax, semantics, working memory, and general knowledge.

### **Cochlear Implanted and Writing Difficulties**

A complex task like writing is meant for both normal-hearing and hearing-impaired children. Due to faulty hearing, deaf children encounter problems understanding base ideas, event association, and relations between language structures (Schopmeyer, et al., 2000). This research focuses on word level vocabulary and sentence level syntax to describe linguistic abilities of CI learners (Svirsky, & Robbins, Miyamoto, 2000; Tomblin, Spencer, et al., 1999).

### **Cochlear Implanted and Narrative Writing**

Written language is based on coding thoughts and experiences etc. using written symbols (Albertini, et al., 2015)). Unfortunately, the hearing impairment creates hindrance in the development of listening and speaking skills because reading and writing skills builds on the use of phonological, syntactic, semantic, and pragmatic skills, which start with the development of lingual practice in the early years of childhood before school. Mascia-Reed (2012) claims it is hard for hearing-impaired children to express ideas in writing, as compared to normal hearing children. This is mainly because writing is a process dependent on various things, like selecting ideas during thinking stage, ordering thoughts before

writing them, choosing how to express them (grammar, vocabulary, etc.). Wolbers, et al., (2016) believe that the writing process approach which is primarily based on prewriting, drafting, revising and editing and publishing; aids learners with hearing impairment in improving their written expression as it does for normal hearing children. Writing by hearing impaired students show signs to their late reading and speaking skills, as studies by Gormley, et al., (2011) indicate; it is sketchy, contains less clauses and verbs, lack of complex sentence structure, weak syntax, vocabulary, and failure to conclude thoughts in the end.

Research carried out on written language composed by Mandarin-speaking children with CIs pointed towards problems they face in composition (Wu et al. 2015). It was also noted that the CI students 'descriptions which were concrete in nature. Similarly, as Boons, et al, (2013) claim, CI implanted children also depict signs of weak oral narration skills; they belong to the category of students with delayed discourse language skills. As stated by Raimes, (1983) it is possible to improve their narrative composition with use of picture stories; they depict shared experiences to students in the classroom setting, too.

### **Writing Strategies Picture Stories and Mind Maps as Interventional Tools**

There is not much doubt that pictures are very effective for learning and teaching English language. Their usefulness and ability to simulate students' imaginations has been focused on by Heaton (1988).

Pictures can be provided to students in instructed and free exercise tasks, as stated by Raimes (1983). Modern research conducted by Cunillera, Camara, Laine, and Rodriguez-

Fornellset, (2010) and Alidoost, et al., (2014) has hinted at the positive effects picture cues have on language acquisition. Using picture cues can aid in fast, coherent shift from one thought to another for university level learners (Alidoost et al., 2014). In fact, Cherry, et al., (1996) have demonstrated how visuals are also very effective for adult learners.

Mind maps serve as pre-intervention writing tools; thoughts are connected to each other via symbols, not words. There is a structurally viable approach in logically focusing on organization of content in case memory fails. Consequently, working memory and automaticity—both are closely connected to the cognitive process of composition—are brought into play through this approach. New concepts are better introduced, organized, and simplified using mind maps. Since information is simply connected, it is easier to follow through, make contrasts/comparisons of and sequence (Buzan, 2006).

### **Methodology**

#### **Action Research**

The present study is an action research based on mixed methods research approach. Action Research can be used to solve problems through investigations as Hanson and Brady (2011) stated that it is a systematic method that enables people to investigate the problems and derive effective solutions to them. The quantitative part of mixed methods research comprised of pre and post-tests whereas the qualitative method was based on interviews and observations. The rationale behind choosing mixed methods was first to assess the level of understanding of the respondent before intervention; then help cochlear implanted learner to develop her narrative; and last to elucidate the effect of picture

storytelling and mind maps on her narrative writing skills. The action research comprised of four phases: planning, action, observation and reflection (Greenbank, 2007; Kemmis, 2009).

### **Planning Phase**

Planning Phase comprised of two steps: selection of the participants and picture story books.

### **Selection of the participant**

For the present research single subject was selected as Wendall, et al., (2015) has highlighted the advantage of using SSD with low incidence populations like DHH. Firstly, in SSD all participants receive intervention. Secondly, Children with hearing impairment who receive individualized instructional programs, it is not ethically appropriate to exclude them from a beneficial intervention. Thirdly, in an action research, SSD can be employed by the teachers once the problem is identified and the best possible treatment is designed. It enables a teacher to collect and analyze data so that best instructional decisions could be made.

A congenitally deaf, ten years and two months old female participant was selected for the present research. The participant was diagnosed with hearing loss at nine months age and was cochlear implanted at eighteen months age prior to her second birthday.

### **Selection of the books**

Hargrave and Senehal's (2000) guidelines were kept in mind while selecting the 11 Ladybird Readers.

### **Reconnaissance**

In the reconnaissance stage the in- depth interview of the participant was conducted to know about her perceptions about writing in English Language. Two pre-tests were administered to determine her writing levels. Pretest I was based on the picture story writing and the participant was asked to write a story based on the given pictures. In Pre-test II the participant wrote a story in her own words after reading a picture storybook. The two Pretests helped the researcher to determine her existing narrative ability.

### **Action Phase**

#### **Researcher's role as a researcher and a teacher**

During teaching the researcher's role was of a teacher to facilitate student in learning by scaffolding.

### **Intervention stage**

A cyclical process of co-planning, teaching, observing and reflecting was conducted during the intervention stage. For some of the lessons the teacher and the therapist observed the researcher; while in others, they were observed by the researcher. The researcher, the therapist and the teacher reflected on the action and then planned for the next cycle. The sessions were held five days a week for 30-40 minutes. One cycle was completed in two weeks' time and in six months all together twelve cycles were conducted. Observations were recorded in form of field notes during the intervention stage

**Table 1** Audio logical summary of the CI Student

| Hearing Loss                                   | Bilateral Implant | Type of Implant | Implant Experience   |
|--|-------------------|-----------------|----------------------|
| Bilateral Profound to severe<br>Sensory neural | No                | MedelCombi +    | 9 years and 5 months |

**Table 2** Demographic Data of the CI Student

| Chronological Age | Class | Age at Diagnosis | Age at Implant | Duration of use |
|-------------------|-------|------------------|----------------|-----------------|
| 10 years 2months  | 5     | 9 months         | 18 months      | All Day         |

**Cycle**

Step I: Brain storming was done to build the confidence and attain the attention of the student.

Step II: Read aloud technique was used to read out picture stories to the participant. The researcher used gestures, modulation, and pictures as she read stories to the participant. The participant was given an auditory bombardment of parts of speech like adjectives, conjunctions, adverbs, pronouns etc. The participant felt free to ask questions whenever something was not clear or needed more explanation.

Step III & IV: In this step the stories were revisited two or three times so that the new

concepts, words, syntactic structures sequence of the story could be reinforced.

Step V: In this step retelling of the story with the help of pictures was encouraged. The participant’s utterances were recasted whenever a form was either not produced or was incorrectly produced like once she said, “He buyed the apples”, and the sentence was recasted by the researcher, ‘Yes, he bought apples”.

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

Step VII: In the next step student participant was asked to compose the first draft then to recheck and revise it.

Step VIII: Errors such as grammatical, paragraphing, tenses and spelling were pointed out. The participant was asked to do the corrections and compose the final draft.

### **Observation and reflection phase**

The participant was closely and minutely observed while listening to picture story and constructing mind maps. The researcher has planned the next cycle of action research in the light of the reflection shared by the therapist the teacher and the researcher. After every complete cycle narrative writing samples were collected.

### **Post intervention**

Two post-tests were conducted after completion of intervention so that the effectiveness of picture storytelling and mind maps on her narrative abilities could be determined. To gauge participant's opinion regarding the new strategies for composing narratives; post interview was conducted.

### **Analysis of the written product**

Labov and Waletzky's (1967) altered version of the high point analysis was used in the original form to analyze the narratives. Conduction of assessment was carried out in 3 parts: score of narrative structure was marked

from five points in first parts; two types of cohesion scores—four points for conjunction usage and four for specifying references—were calculated in second part. Conclusively, thirteen points were set for overall narration skills.

The length of the final drafts of narratives was determined by counting the number of words. Furthermore, percentage of grammatical errors was computed, too, which included inflections or subject-verb agreements, missing function words, incorrect word sequences and prepositions or pronouns. To measure lexical density, percentage of content words (verbs, common and proper nouns, adjectives) was calculated.

### **Reliability**

Aforementioned written pieces were analyzed by two coders unaware of writer's hearing impairment. When uncertainty arose, discussion was held, regarding cohesion scores and narrative capacity, to reach an agreement.

### **Results**

Descriptive statistics was used to analyze the quantitative data obtained from pre-tests and post-tests.

*Figure 3:* Shows comparison of pre and post-test I with gain in parameters like number of words, sentences and narrative ability score and decrease in grammatical errors and content words.

**Table 3 Data for Multiple Baseline on all Measures of Narrative Ability of the CI Participant**

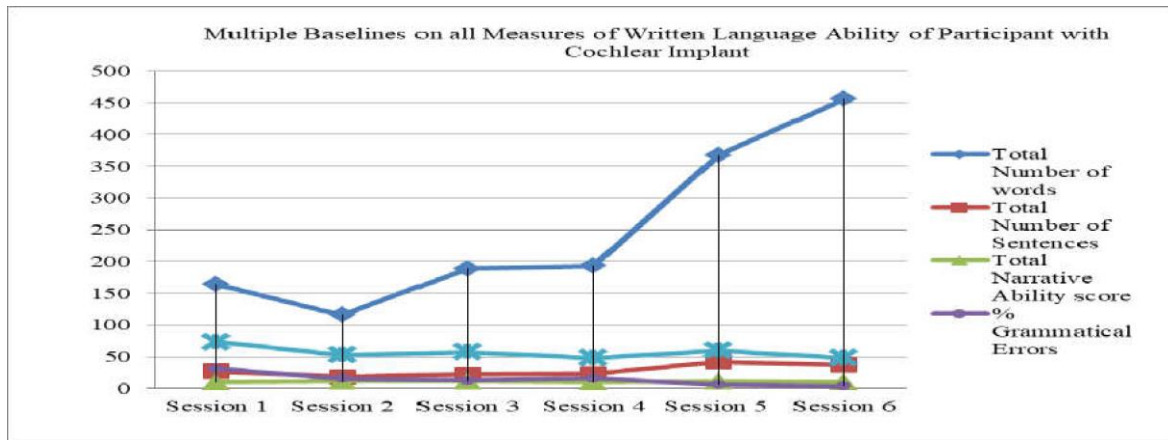
| Measure: Written Product | CI Participant |      |      |     |      |      |      |       |
|--------------------------|----------------|------|------|-----|------|------|------|-------|
|                          | Cycles         |      |      |     |      |      | M    | SD    |
|                          | 1              | 2    | 3    | 4   | 5    | 6    |      |       |
| No. of words             | 164            | 116  | 189  | 193 | 368  | 456  | 247  | 133.1 |
| No. of Sentences         | 27             | 18   | 22   | 23  | 42   | 37   | 28   | 9.3   |
| Narrative Ability score  | 10             | 11   | 11   | 10  | 11   | 10   | 10.5 | .54   |
| Grammatical Errors (%)   | 31             | 15.5 | 12.6 | 16  | 6    | 3.7  | 14   | 9.6   |
| Content Words (%)        | 73             | 53   | 57.6 | 48  | 59.8 | 47.8 | 56   | 9.4   |

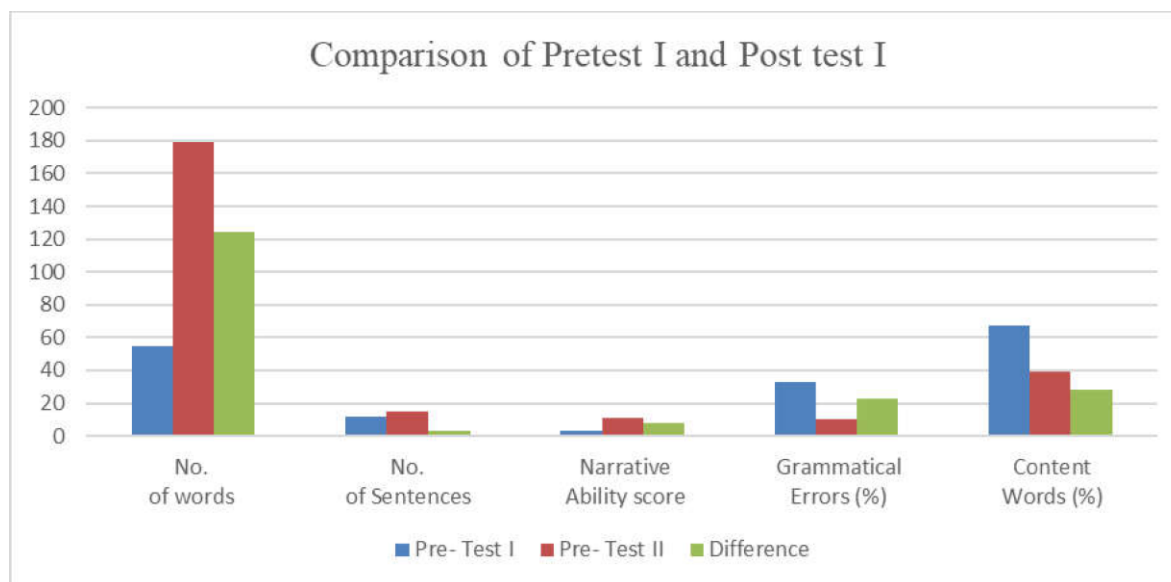
**Table 4 Comparison of the Pre-test I and Post-test I of the CI Participant for all Measures of the Narrative Product**

| Measure: Written Product | CI Participant |             |       |
|--------------------------|----------------|-------------|-------|
|                          | Pre-test 1     | Post Test 1 | Diff. |
|                          |                |             |       |



|                         |      |     |      |
|-------------------------|------|-----|------|
| No. of words            | 55   | 179 | 124  |
| No. of Sentences        | 12   | 15  | 3    |
| Narrative Ability score | 3    | 11  | 8    |
| Grammatical Errors (%)  | 32.7 | 10  | 22.7 |
| Content Words (%)       | 67   | 39  | 28   |

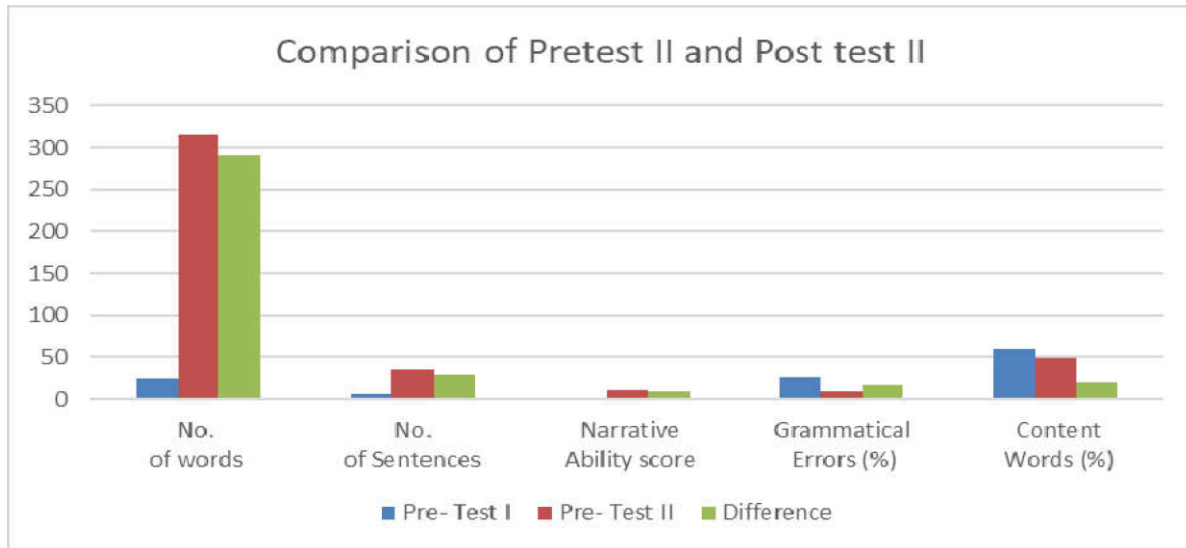




*Figure 2:* Shows comparison of pre and post-test I with gain in parameters like number of words, sentences and narrative ability score and decrease in grammatical errors and content words.

**Table 5 Comparison of the Pre-test II and Post- test II of the CI Participant for all Measures of the Narrative Product**

| Measure: Written Product | CI Participant |              |       |
|--------------------------|----------------|--------------|-------|
|                          | Pretest II     | Post Test II | Diff. |
| No. of words             | 25             | 316          | 291   |
| No of Sentences          | 6              | 36           | 30    |
| Narrative Ability score  | 2              | 11           | 9     |
| Grammatical Errors (%)   | 26             | 9            | 17    |
| Content Words (%)        | 60             | 49           | 20    |



### Pre-writing data analysis

The participant was a talkative but a keen learner. She demonstrated significant creativity in her work. Learning problems faced by her were particularly related to reading and writing skills including arranging ideas, use of punctuation, grammar, sentence structure and memory. Two pre-tests were administered to her; one was based on writing a story from provided pictures. This she accomplished with somewhat ease: starting out quick and writing with clear focus despite no prior writing strategy used; stopping only a few times to think as she wrote. The resulting pre-test piece she wrote consisted of one paragraph of twelve lines, fifty-five words. Total narrative ability score of three were achieved, grammatical error of 32.7 % and content score of 67 %.

The second pre-test involved a picture book. The resulting piece contained six sentences, twenty-five words. She received a total narrative ability score of two, grammatical error was scored as 18 % and content score as 60 %. However, this was too brief to be give

an extensive analysis on, despite indicating the following things:

- Sentences began in the same way; use of ‘the boy.’ they lacked connectives and were not structurally varied.
- A high lexical density percentage pointed to less sophisticated language.
- In regard to orientation, both tests involved objects, actions and characters.
- Events were ordered chronologically in pre-test I (Complicating Actions). Characters’ reactions to those events were also present.
- A conclusion was absent in both tests.
- Ideas were relevant to the topic, albeit a basic content including tense and preposition errors.
- Pronouns were repeated.
- Limited use of simple vocabulary was made.
- Ideas were somewhat organized.

### **Post writing data analysis**

In the six months period of intervention, changes were noted in participant's writing skills. She remarkably improved in terms of vocabulary usage, complex sentences, use of adjectives, prepositions, and conjunctions. Mind maps were also used by the participant, resulting in organized, descriptively detailed writing with creative ideas expanded upon. Her pre- and post- tests comparison showed improvements in structural, grammatical, contextual, and organizational scores so, mind maps and picture stories that were read aloud proved to be highly advantageous for the participant.

In the first post-writing sample, the picture story writing was composed of four paragraphs, fifteen sentences and one hundred and seventy-nine words in which ideas were well connected. Scores received on this were: 11 for narrative ability, 9 % for grammatical error and 39 % for content words. Sentences were fluent enough, involving good vocabulary use alongside pronouns, prepositions, and conjunctions. In particular, conjunctions were used quite well by the participant; for instance, in the second-last paragraph, the participant wrote, "Out of nowhere, one stranger came to me. He said, "my mother was calling me but I ignored him because I did not know him and started playing again." Similarly, the last paragraph started off with: "She enjoyed while listening to my stories." Participant's correct article usage, which became somewhat of a concern, was noted throughout.

The second post-writing sample was based on the picture story book. The resulting composition contained four paragraphs, thirty-

six sentences and three hundred and eighteen words which included exciting facts related to the story. As for scores, 11 were assigned for total narrative ability, 9% for grammatical error and 49% for content. Overall, it was noted that sentence production was grammatically correct, including use of conjunction, pronouns and proper adjectives, for instance, 'deep, dark forest', 'twisting path', 'nice and perfect present.' Every paragraph contained as well as began and ended with sound grammatical sentences.

Furthermore, the participant was observed to develop interest and inquisitiveness within two weeks; she asked questions about characters from the stories, too. Her understanding of the stories improved gradually, and she was able to recall the forgotten words. Participant's stories were initially devoid of a basic structure; they were sketchy. But, by the end of the eighth week, they were structured and sequenced well and narrated confidently. Improvement phase started off as, at the end of the ninth week, participant's mother was informed about her use of new words. And by the end of the session, there was much improvement in how her stories began and concluded, albeit small details being neglected here and there. The participant began to use of pronouns, prepositions, adjectives, and conjunctions were by the fourteenth week; she started to create compound sentences and add small details within sentences. Thus, cognitive overload was reduced with the help of mind maps and read-aloud methods for picture stories; they enabled the participant to form automaticity alongside meta-cognition in the writing process. During revision, the participant was observed to have noticed her

own punctuation errors and removed them herself.

The critical friend and the therapist provided the required reflection after each cycle. They apprehended the researcher on their awareness of CI student needs, their requisites for narrative writing, using the read-aloud technique most effectively and sustaining participant's interest and focus to develop desire to read further. The English teacher in her first reflection emphasized that the new learnt words to be inculcated through reinforcement while revisiting the story. The gradual momentum and rapport, developed between the learner and researcher, came to be appreciated by her, particularly in terms of how the researcher taught the learner things like verb conjugation and recasting while revisiting and retelling, as per needed. Furthermore, the therapist also appreciated the researcher's understanding and awareness of CI student's needs; researcher made good effort to translate new words into participant's mother tongue; said words in a natural way rather than exaggerating them; used actions to explain new expressions and used meaning sentences to define new words rather than explaining them in isolation. The researcher was requested by the therapist to develop stronger eye contact in the starting reflective sessions. The effort on the researcher's part to comply was appraised by the therapist. Furthermore, it was suggested by the therapist to ask the participant more frequently what it meant. Therefore, these sessions proved to be result-oriented and genuinely innovative.

### **Discussion**

Before proposed questions of this research are addressed, this study's demonstration of importance of instruction in writing strategies

should be kept in mind. That instruction molds developmental processes in significant ways, particularly structuring of ideas and the store therein. Due to problems in lower-order skills, CI learners face difficulties in forming perfectly structured syntactic sentences. Studies have demonstrated these difficulties are associated with deficit(s) in working memory (Bourdin & Fayol, 1994). Evidence of this in current study was found in participant's pre-tests; she constructed only a few sentences using simple sentences structures with grammatical mistakes and lack of subject-verb agreement, narrative scores were low, and she was unable to develop cohesion between adjacent sentences, thereby ending up creating global textual problems. Wu et al. (2015) study also showed that the cochlear implanted wrote comparatively shorter narratives and encountered difficulty in understanding them as compared to the normal-hearing peers of the same age and grade.

Using proportion of orientation, most of them point to predominance of picture descriptions; they are quite common and are not relevant in resolving problem (Geers & Crosson, 2001) and prior to receiving additional intensified auditory input, the participant's pre-tests demonstrated a large number of orientations.

Story plot was weak in the pre-tests and characters' actions were resolved only near the ending. Minimum use of conjunctions (except for 'and'), pronouns or modifiers was made for tying putting the story's parts together. Descriptions in the story were null of actual properties which highlight a true narrative. Thus, pre-test results are in accordance with prior narrative studies conducted by D/HH (Griffith, Ripich & Dastoli, 1990; King & Quigley 1985; Yoshinago-Itano & Snyder,

1985). The lack of feeling and action was depicted in the written narratives similarly, Wu et al. (2015) research also depicted absence of feeling and action which showed reduced focus of cochlear implanted individuals and that might have no concrete presence and a reduced centrality and focus on the storyline.

Techniques like mind maps simplify the task of writing in that they help in structuring and organize ideas easily. This holds true for the participant of this research, too. Although during six months' intervention period, the participant was observed to be developing meta-cognitive ability in writing a narrative with sequence; connecting the storyline using causal/temporal connectors seemed to coherently organize her ideas, too. Furthermore, these results are also in accordance with the study conducted by Alidiost et al. (2014).

The cognitive component, the working memory, is also involved in writing. Paivio's (2007) cognitive model revolves around use of pictures and videos and making the process of narrating a story more imaginative. This model is related to use of syntactic structure, vocabulary, prepositions, and conjunctions. His dual coding theory advocates input of new ideas to learners by through visual imagery.

According to Paivio (2007), verbal and nonverbal information is processed in the brain by two systems; they support each other, resulting in efficient recall. This happens in such a way that the two systems, being interconnected, enable learners to recall a story differently, but better, when they are presented with visual imagery and words, together or in close proximity. This helps them in maintaining associated concepts in working

memory (Baddeley, 1998). The visual cues, therefore, help in retention of memory.

The picture story telling through read aloud has the potential of giving access to children to simultaneous instruction. The use of different tools, like images, videos, text tracking and the story was told by both audio and visual means simultaneously reducing cognitive load. A deficit observed in the participant at hand was difficulties with memory. Even though she was capable of verbally interpreting good ideas, she was incapable of remembering them long enough to actually write them down. The participant herself expressed this in her pre interview: "I often forget to write all the ideas." This was also evident in her pre-writing samples. However, mind maps and picture storytelling seemed to have helped with this, for they imparted a visual framework for expressing ideas, thereby providing a means to refer back to those ideas when memory didn't serve well. Chen, Wang, and Lee (2013) also stated that storytelling activities at elementary level proves to be beneficial in improving presentation skills, thinking skills and imagination of children.

Similarly, mind maps demonstrate how a new sentence is branching off another and therefore tells what ideas connected; the participant was able to create quite several cohesive paragraphs. This structural aspect was something the participant struggled with before, as expressed by her during her interview. The link between cognitive overload and transcription process particularly in second and fourth graders has been investigated by Bourdin & Fayol (1994); it was concluded that when children experienced processed lower-level writing skills less efficiently, more writing difficulties resulted as

a consequence, hence more stress being placed, in turn, on the working memory.

The importance of reviewing and planning in writing process has been pointed out by Flower and Hayes (1981). For these steps improve the overall quality of writing. So, keeping their important in mind as proposed by Flower and Hayes (1981), the participant was instructed to tick off ideas on her mind map that she had expressed in her writing. This resulted in reduction of memory difficulties and therefore cognitive overload by letting the learner focus on one idea at a time.

The participant actively reviewed her work after constructing each written text, to check whether all the ideas marked on mind maps had indeed been expressed, and also to look for errors in the mechanics (Young, 2000) of writing. Furthermore, mind maps also proved very instrumental in helping the participant find a clear focus and purpose, create, arrange and recall related ideas, and start new paragraphs. The participant expressed her likeness and enjoyment towards all the storytelling sessions, retell session and sketching mind maps in particular. She liked to draw, therefore, she liked mind maps.

The participant received an extensive auditory exposure during the intervention phase. As such, her post-test showed orientation, evaluation, and conjunctions linked to semantic relation in the stories. The knowledge of syntax helps in developing cohesion in a narrative. And the intervention phase during the study showed how the use of connectors in narratives benefitted the learner to relate and connect sentences (Snow&Dickinson,1990). In the proceeding sessions, lesser errors were found in

participant's use of verb conjugation, grammar and parts of speech. These results and findings confirm those of Kara, Aydin, and Cagiltay(2013), where development of cognition improves throughstorytelling.A significant improvement was noted in the post writing samples of the participant as a result of purposefully designed intervention programme, to improve storytelling observed in D/HH children and Pakulski & Kaderavek (2012) also reported similar kind of findings. The participant teacher was of the view that discussions or brainstorming, giving word bank or visual prompts before writing prove to be quite beneficial to the CI learner. The participant also agreed about the fact that reading story books enabled her to improve her English a lot, for she could now write greater number of sentences with lesser errors as well as use new words like 'delicious' and 'gigantic.' 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). It was demonstrated by the post-tests that C1 used temporal conjunctions, consequently helping in ordering events. However, the tests also depicted lesser causal conjunctions; this is reflective of a lack of linguistic maturity instead of a lack of understanding of cause-effect relation (Geers & Crosson, 2001). Intense exposure and intervention proved to be beneficial for writing narratives, as evident from comparison of participant's pre- and post- tests. Similarly, et al., (2012) and Mirza et al., (2015)studies also depicted that narrative based intervention approaches helped in improvement in spoken narrative skills of children with CI.

## **Conclusion**

This research aimed at determining effectiveness of mind maps and picture storytelling and proves the positive impact these tools have on narrative writing. These tools can help learners with cochlear implants in improving their ability to write narratives. The current findings and results also conclude that with the use of reading storybooks reading with adults, the participant in question was involved in motivating activity; it provided her with various contextualized exposures to words she was unfamiliar with. 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). Multiple times exposure to storybooks and the teacher's explanations of target words and proved to be beneficial for the participants the most. It has also been reported by Biemller and Boote (2006); Justice, Swanson and Buebler (2008); Smeets, van Dijknand Bus (2012) that more words are learnt with a second or even a third retelling, coupled with an explanation of target vocabulary, such as using them in sentences. Furthermore, picture storytelling imparted valuable linguistic data, for it enabled the participant to give context to meaning, make guesses about the content through that and ultimately helped her in learning the new vocabulary in an efficient way. These findings, therefore, shed light on the desperate need for incorporating mind maps and picture storytelling tools in educational environments and settings by educators and teachers. To use these tools and

those like these, teachers must learn about the cognitive processes that add to CI learner's narrative ability, as well as the role(s) played by picture storytelling and mind maps in supporting those processes. Thus, it is deduced that picture storytelling and mind mapping proved to be an effective pre-writing strategy to enhance the narratives of CI learner and proved to be beneficial as these strategies provided multi- contextualized exposures to new words, improved organization, and easy recall, making connections and writing information in form of paragraphs. It is also concluded from the results that an intervention specially designed for developing narratives writing skills can be attained through storytelling and mind mapping. Moreover, it emphasizes the benefits of using picture storytelling and mind maps by teachers and educators in educational settings. However, to use them in an effective way, it is essential for teachers to understand the cognitive processes that contribute to CI learner's writing ability and the role that picture storytelling and mind mapping play in supporting these cognitive processes.

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