

## **Improving Reading Comprehension of Deaf Learners by using Visual literacy: An Experimental Study**

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### **Abstract**

Deafness contributes towards the poor reading and writing skills of learners with deafness and ultimately it effects the whole academic performance of the deaf learners. Visual literacy is an emerging phenomena which results towards the improvement of reading skills of deaf learners can be investigated. The goal of this study was to see the impact of the visual literacy in improving word identification and discrimination ability and vocabulary improvement of deaf learners and to investigate the differences among the learners who taught with and without the use of visual literacy. sample included thirty students with hearing impairment of grade three. A test of English was used by the researcher to test the reading comprehension of students of grade three with hearing impairment. Two groups were made by random sampling technique. Both groups were pretested. After the pretest both groups were selected for the experimentation and one was taught through visual literacy while the other group was taught with traditional classroom instructions. At the end the performance of both groups were evaluated by using the posttest. The t-test was used for the comparison of statistical data analysis for both groups A significant improvement was found in reading comprehension of deaf learners who taught through the use of visual literacy. It was concluded that deaf learners can perform better in English if they are taught through the strategies of visual literacy.

### **Key words:**

Visual literacy, Reading comprehension, deaf learners.

### **Introduction**

In order to attain academic success reading is an essential area to be considered and work upon.

Reading is the understanding of any text that is read. When we discuss about the process of reading then there are five essential components of reading that need to be considered in order to make a child a good reader (IDEA, 2004). These components include vocabulary, phonological awareness, fluency and comprehension. According to Cromley and Azevedo (2007), ability to recognize the words and having a good vocabulary are the essentials for better reading comprehension. Large vocabulary leads towards the higher rate of success among students (Martino & Hoffman, 2002). Alfassi (2004) also highlights the importance of extensive vocabulary and word recognition ability of individuals towards the learning process. It is further supported by Tarchi (2010) that students who are good in reading comprehension possess the extensive vocabulary and perform better in word recognition ability.

Deaf learners are deficient in reading. They face deficits in word recognition ability and have poor vocabulary. According to Moores (2018) deaf learners tend to make less complex and poor sentences with limited vocabulary. They make more errors in the process of reading as compared to the hearing learners. In fact they remain far behind in the reading when compare with the hearing learners. They face such difficulties due to the lack in phonological awareness of language which leads

towards poor reading skills (Paul, 2001). Consequently deaf learners face academic difficulties and then less opportunities in the world of work. Moores (2018) indicates that there is no significance difference in the cognitive development of learners with and without deafness. But when they are compared on the tests of academic abilities then deaf learners show poor performance as compared to hearing learners.

Hussain (2008) suggested that the academic and reading difficulties of deaf learners can be eliminated with the use of better teaching techniques. If a teacher plans the instructions according to mental age, interest and learning styles of the deaf learners then it can lead towards the lifelong learning of deaf learners. Teaching reading is encouraged with the use of visuals as deaf are the visual learners. They use their visual ability to learn and comprehend the things. They visualize what they learn. If instructions are designed with the use of visuals then it will facilitate their learning experiences. The reading comprehension of deaf learners can be improved if the text are related with pictures and picture books are also very helpful in this regard. Wanzek and Wei (2004), describes that disable learners get motivation when taught through the use of visual experiences. If we talk about the deaf learners then they memorize the pictures and pictorial images in an effective way. The concept of running can be better comprehend by a deaf learner if it is demonstrated by a video (Hameed & Bano, 2006).

The training of the deaf teachers in terms of the use of media in instructions is also very important to be considered. Teaching requires the innovations and use of multi mean of presentations. It will enrich the learning experiences of deaf learners. The use of updated method of teaching supported by the media will motivate the deaf learners and will give an opportunity to the teachers to improve the quality of the education for them (Husnain, 2008).

Visual literacy can necessitate the learning process and motivate the students toward learning. In this style of teaching, certain associations are made with concepts. Each idea is represented through an image by using a specific technique. Visual literacy is a multistage process including detection and subsequent neurological transfer of visual stimuli to visual cortex. Cortical processing includes encoding into short term iconic storage and a longer term pictorial memory. This detection and subsequent neurological transfer are based on visual discrimination, visual recognition, storage, and retrieval of stimuli. Balouti , Bayat and Alimoradi (2012) determines that the visual perception skills improve reading skills of Dyslexic children and reading perceptions and word recognition are improved through the developed visual perceptual skills.

Brill and Branch (2001) explains that visual literacy is the ability of an individual to use the visual perception in order to discriminate and making sense out of the objects and retrieving it whenever needed. Picture books, which is one of the example of visual literacy, having the combination of text and pictures support the learning process. In fact the pictures in the books are not only the supplementary but also the essential in the books. The effects of picture books are not only on the early grade learners but also on the high school age learners (Dwyer & Baker, 2001). Hibbing and

Erickson (2003) recommend the watch read watch read method for developing reading comprehension. This method is very useful for creating background and context of the text. Students will able to predict about the text develop better comprehension.

The effectiveness of visual literacy has been discussed and studied by different researchers. The findings of the studies reveal that the visual literacy plays important role in education scenario. The students of age range 14-15 are the best users of visual information. The literacy level positively improve of young students because of visuals (Eshet, 2004). The social cultural perspectives of learners also effects the visual interpretations of individuals (Bramford, 2003). The personal understanding of the world is influenced by the background of an individual.

The results of different studies suggest and support the effectiveness of visual media in terms of teaching learning process. The use of visual media help to demonstrate the learning and retention occurs with the use of an effective visual media (Carney & Levin, 2002). A study was conducted to see the effectiveness of visual literacy in developing the academic abilities of learners. So it is need to be considered the diverse perspectives of individuals while using visuals in teaching learning process (Whitener, Lepanto & Harroff, 2002). Loeb, Stoke and Fey (2001) also emphasizes the importance of visuals in teaching learning process. Visual learning contributes towards the achievement in educational goals.

When we talk about deaf learners then they are usually called visual learners. Visual strategies are significant in making an enriched learning environment for deaf learners (Luckner, Bowen, & Carter, 2001). A mixed method study investigated the relationship between the visual multimedia and reading process of eight deaf learners. In order to improve the reading comprehension of deaf students age range between eight to twelve visual literacy strategies were used. The findings indicated the positive relationship between the visual literacy skills and reading comprehension of deaf learners (Easterbrooks & Baker, 2002). It is recommended that for the better reading comprehension of deaf learners instructions need to be designed according to the learning capabilities of these learners (Marschark, 2012). Visual material and visual strategies are necessary for teaching deaf learners (Stickgold, et. al, 2000).

### **Research problem**

The study was aim to see the usefulness of the visual literacy in improving word recognition and word discrimination ability of deaf learners and to investigate the effectiveness of the visual literacy for vocabulary enhancement of students with deafness.

### **Research hypotheses**

The following were the hypotheses of the study:

H<sub>1</sub>: There is a significant improvement in word recognition and word discrimination abilities of the learners with deafness taught through visual literacy as compared to those taught through conventional classroom instructions

H<sub>2</sub>: There is a significant improvement in vocabulary of the learners with deafness taught through visual literacy as compared to those taught through conventional classroom instructions.

### **Methodology**

It was an experimental study. The research was followed by pretest posttest control group design. Students with deafness studying in three class at primary schools of special education system of Lahore were the population of the study. The experiment was conducted at the local school of deaf learners in Lahore. The sample of 30 Students with deafness studying in 3<sup>rd</sup> grade of a high school was selected for the purpose of experimentation. The random sampling technique was employed. The English reading comprehension test which was developed by the researcher on the basis of literature review and content of English for grade III was used to assess the reading comprehension of the learners. The developed test was refined after expert validation. Cronbach alpha was used to find out

the reliability of the test. The instrument was administered to a sample of 50 students with deafness. The cronbach alpha was 0.92. A treatment was planned and given to the selected sample, the experimental group. A set of instructions was developed based on Visual Literacy:

1. Visual media including subject specific images, were used to see the usefulness of the visual literacy.
2. Students were organized in the class so the visual images could be seen by all the members of the group.
3. KWL technique was used for the better understanding of the students.
4. Topics of each session were delivered with the help of images and students were asked that what they know about this image.
5. After taking the description of the students the text was elaborated with the help of images for developing the reading comprehension of learners with deafness.
6. In order to use the visual image ability of the students, teacher repeatedly showed the images and text
7. So that students are able to transfer it to visual cortex which includes the short term iconic memory and long term pictorial memory. Moreover, they will be able to recognize, discriminate and retrieve those images with their text when needed. The teacher also asked the students to draw the images and after that relate the words of the text with the images for better understanding of the students.
8. Worksheets were used at the end of the session for the purpose of evaluation.
9. The students in the experimental group received a 45 minute class period for ten weeks.
10. There were four class periods per week.

This phase was divided into three intervention plans.

a) Intervention plan 1

Intervention plan 1 was planned to increase the word recognition and word discrimination ability of students with hearing impairment in Group A. There were certain activities which were used. 1) Color the pictures in front of the mentioned color for the recognition and discrimination of color names, 2) draw the picture in front of the written word , 3) relate or match the words with the images, 4) displaying the charts having word and images, 5) showing real objects like fruits and vegetables for the recognition and discrimination of their names while relating them with their names, 6) displaying the models of the objects like animals and birds for their name recognition and discrimination.

After each session, students were assessed on the basis of the performance of the activities.

b) Intervention Plan 2

Intervention plan 2 was planned to improve the vocabulary building of students with hearing impairment in experimental group. There were activities which were used to improve the vocabulary building of learners with hearing impairment. 1) Ask students to solve the riddles, 2) complete the incomplete words by showing the pictures of those words, 3) fill in the blanks while displaying the images of those words, 4) Correct the incorrect words, 5) select the right spelled word.

After each session, students were assessed on the basis of the performance of the activities.

c) Intervention plan 3

Intervention plan 3 was planned to improve the reading comprehension of students with hearing impairment of experimental group. There were activities which were used to improve the reading comprehension of students with hearing impairment. 1) showing the videos, 2) using the slides having the sentences and supporting images, 3) displaying the cards having the words with images for the comprehension of those words.

### Results

Table 1: *comparison of the performance of the experimental group on pretest and posttest*

	N	M	SD	T	Sig
Pretest	15	20.00	12.077	22.559	.000
Posttest	15	75.93	7.106		

To investigate the difference between the performance of experimental group on pretest and posttest paired sample t test was used. Result reveals ( $t=22.559$ ,  $p=.000$ ), that deaf learners performed better in posttest (Mean= 75.93) as compared to pretest (Mean= 20.00).

Table 2: *comparison of the performance of deaf learners in experimental group and control group on pretest*

Groups	N	M	SD	T	Sig
Experimental Group	15	20.40	11.969	.724	.475
Control Group	15	23.93	14.631		

To investigate the difference between the performance of deaf learners in experimental group and control group on pretest the independent sample t test was used. Result reveals ( $t=.724$ ,  $p=.475$ ) that no difference was found between the performances of deaf learners in both of the groups.

Table 3: *comparison of the performance of deaf learners in experimental group and control group on the posttest*

Groups	N	M	SD	T	Sig
Experimental Group	15	81.33	6.956	8.330	0.000
Control Group	15	40.07	17.882		

To investigate the difference between the performance of deaf learners in experimental group and control group on posttest the independent sample t test was used. Result reveals ( $t= 8.330$ ,  $p=0.00$ ) that there was a significant difference between the performance of deaf learners in experimental group (Mean=81.33) and control group (40.07) on posttest. Experimental group performed better as compared to control group.

Table 4: *comparison of the performance of deaf learners in experimental and control group on pretest and posttest on vocabulary building*

	Groups	N	M	SD	T	Sig
Pretest	Experimental Group	15	6.5714	2.76557	1.452	.158
	Control Group	15	8.2667	3.45309		
Posttest	Experimental Group	15	19.1333	1.30201	11.730	.000
	Control Group	15	8.6000	3.22490		

In order to see the difference between the performance of deaf learners in experimental group and control group on vocabulary building item independent sample t test was used. The analysis shows ( $t= 1.452$ ,  $p= .158$ ) that there was no difference between the performance on vocabulary building items of the experimental group and control group in the pretest. The analysis also reveals ( $t= 11.730$ ,  $p= .000$ ) that the performance in vocabulary building of the experimental group (Mean= 19.13) was better than control group (Mean= 8.6000) on the posttest.

Table 5: *comparison of the performance of deaf learners in experimental and control group on pretest and posttest on word recognition and discrimination*

	Groups	N	M	SD	T	Sig
Pretest	Experimental Group	15	11.0769	9.69933	.733	.470
	Control Group	15	13.667	8.98146		
Posttest	Experimental Group	15	36.5333	1.68466	4.008	.000
	Control Group	15	24.6667	11.3431		

In order to see the difference between the performance of deaf learners in experimental group and control group on word recognition and discrimination the independent sample t test was used. The analysis shows that ( $t= .733$ ,  $p= .470$ ) there was no difference between the performance on word recognition and discrimination items of the experimental group and control group in the pretest. The

analysis also reveals that the performance on word recognition and discrimination of the experimental group (Mean= 36.533) was better than control group (Mean= 24.66) on the posttest.

Table 6: comparison of the performance of deaf learners in experimental and control group on pretest and posttest *on reading comprehension*

	Groups	N	M	SD	T	Sig
Pretest	Experimental Group	15	2.6154	3.94838	.356	.725
	Control Group	15	2.0000	5.02849		
Posttest	Experimental Group	15	25.9333	5.65012	8.893	.000
	Control Group	15	7.6000	5.64168		

In order to see the difference between the performance of deaf learners in experimental group and control group on reading comprehension the independent sample t test was used. The analysis shows ( $t = .356$ ,  $p = .725$ ) that there was no difference between the performance on reading comprehension of the experimental group and control group in the pretest. The analysis also reveals that the performance on reading comprehension of the experimental group (Mean= 25.93) was better than control group (Mean= 7.60) on the posttest.

### Discussion

The result of the study shows that teachers of the deaf need an effective approach of teaching reading to deaf and visual literacy is proved to be useful way of teaching learners with deafness. The findings of the study are consistent with the previous studies Schirmer, (2003), Marschark, (2002), Parault & Williams. (2010), Easterbrooks & Baker, (2002). The deaf learners face reading difficulties and lack in reading comprehension as compared to hearing learners (Ali & Mahmood, 2001, Paul, 2001, Hameed & Bano, 2006, Batool & Hameed, 2018).

Further researches need to be conducted in order to see the effectiveness of visual literacy on the level of severity and types of disability, in different academic disciplines and on secondary level or higher level of education.

### Conclusion

On the basis of the findings it is concluded that Visual literacy is an effective strategy for improving the reading comprehension of learners with deafness. It positively improves the word recognition and discrimination ability of learners with deafness. It is also useful in the vocabulary enhancement of the deaf learners. In Pakistan the system of education for deaf learners needs innovative approaches and strategies for teaching for improving their reading comprehension and academics. The teachers of the deaf students follow the traditional teaching strategies in which they just focus on the writing of the content on the board and deaf learners use their memory ability to memorize the content without focusing on comprehension. The curriculum designers and text book developers need to broaden their vision in the findings while designing the textbooks and curriculum for deaf learners.

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