

Teaching Practices for Students with Hearing Impairment in South Punjab: A Dilemma

Muhammad Ashfaq¹, Muhammad Javed Aftab², Sadia Tariq³

¹Assistant Professor, Department of Special Education, University of Education, Lahore, Pakistan

²Assistant Professor, Department of Special Education, University of Education Lahore, (Faisalabad Campus), Pakistan

³M.Phil. Special Education, Department of Special Education, Government of Punjab

Correspondence: drmjavedaftab@ue.edu.pk²

ABSTRACT

This study was conducted to identify teaching practices being used in schools of South Punjab for students with hearing impairment. The study focused on the needs of students with hearing impairment, their educational objectives being fulfilled with current teaching practices and number of students with hearing impairment in classroom. A representative sample of 120 teachers were randomly selected from the population. The data was collected through questionnaire from the teachers of children with hearing impairment. Current teaching practices being used in the schools of south Punjab are unable to fulfil the needs of students as well as the educational objectives. Sign language experts, record keeper, multimedia, communication assistive devices, hearing aids and sound field system (SFS) are the needed resources in classrooms for students with hearing impairment. It was also concluded that effective teaching practices and maximum use of available resources are necessary elements to meet the educational needs of students with hearing impairments. It is recommended that Teachers and professionals should have expertise in sign language for impressive communication.

Keywords: Teaching Practices, Hearing Impairment, Curriculum, Total Communication, Assistive Technology, Reading and Writing Skills, Inclusion and Special Education.

Introduction

The educational process for children with hearing impairment focuses on the academic, lingual, intellectual, individual as well as the social needs by providing continuous aids and knowledge according to their own personal needs (Garate, Batamula & Kite, 2016).

In Pakistan, children with hearing impairment are receiving education in segregated school settings. These children are settled in separate school, keeping them away from children without disabilities of their age. This segregated system has diminished every chance of socialization between children with hearing impairment and children without disabilities. As a result, we shut them off from the everyday academic activities as well as the socio-emotional experiences of other children. Anyhow, because of the developments made in the educational system all over the world the concept of "Education for All" is trailing towards a setup that supports inclusion (Akram & Bashir, 2011).

Article History

Received:
August 19, 2022

Revised:
September 26, 2022

Accepted:
September 28, 2022

Published:
September 30, 2022

The challenges and difficulties that are faced by the teachers of children with hearing impairment are alarming. Communication is the most crucial problem for the teachers in delivering teaching practices in educational setup (Hallahan & Kauffman, 1994).

Teaching practices have been categorized on the basis of linguistics and communicational modes used to deliver educational information and experiences. The oral approach allows the teachers, who use it as pedagogical strategy to provide directions and communication in the native language of that country. Bilingual approach helps the teacher, who uses it as pedagogical strategy to provide direction and communicational mode in the native sign language of the Deaf community and the spoken and written form of that country. At present, most of the educators advocate the use of total communication approach. Total Communication approach helps teachers to deliver directions through the simultaneous use of the native language of that country as well as the sign system created to reproduce the syntactic and semantic structure of spoken language. Each approach has different targeted goals (Garate, Batamula & Kite, 2016).

In school system of some countries, the education of children with hearing impairment is considered as different from general education, especially regarding to the theoretical, intellectual, lingual and communal aspects are chosen for the stature of “hearing impairment”. Some schools are adapting special and segregated settings for the teaching practices of children with hearing impairment instead of placing them in general schools’ settings which is recognized as the main element for the inclusive processing (Hyde, Onha & Hjulstad, 2005). In developed countries professionals are using microcomputers to teach reading, writing and sign language to students with hearing impairment (Hallahan & Kauffman, 1994).

Few researches have been conducted in Pakistan on teaching students with hearing impairments but their results have not been generalized within the teaching community who serve in schools for hearing impairment. It is implied that there are some gaps in early year education of students, particularly in the teaching practices of the teachers who are responsible for the implementation of curriculum developed for young children with hearing difficulties in schools for children with hearing impairment in the Punjab province of Pakistan (Fatima, Hussain, & Malik, 2016).

The objectives of this study were to identify methods of teaching practices used by the teachers for teaching students with hearing impairment in the schools of South Punjab. The significance of this study will help teachers to identify and compare different approaches and techniques being used in different schools of south Punjab. This study will redound to the benefit of teachers to adopt teaching practices that suite best with the context and well-being of the students with hearing impairment.

Literature Review

Hearing impairment constitutes hard of hearing and deaf describing the severity of the impairment. The hard of hearing people have some hearing or they can hear with the help of assistive devices and implants whereas the deaf people cannot hear at all. It was recognized that students with hearing impairment are facing more difficulties in mathematical problems than hearing students. The children with hearing impairment find problem in communication, socio-emotional behaviours, to understand abstract reasoning as well as facing problems in comprehension which lead to poor academic achievement (Nwadinobi, 2019).

The major causes of hearing impairment are the diseases related to auricle, external auditory canal, middle ear, inner ear, or central auditory pathways. The causes for the hearing impairment and the types of hearing impairment are both interlinked such as the conductive hearing loss; a type of hearing impairment that is caused by the diseases of inner ear where as another type called sensorineural hearing loss is caused by diseases of the auricle, external auditory canal, or inner ear generally. Lastly the mixed hearing loss is the combination of conductive and sensorineural hearing loss (Eggermont, 2019).

The students with hearing impairment find difficulties in following verbal directions, oral expressions, interpersonal skills and some form of articulation difficulties. These students are usually passive and have difficulties coping with aggressiveness and frustration (Watson, 2019).

It is considered that poor reading skill of children with hearing impairment is because of phonological processing problem. Teachers mostly read the words out loud and by pronunciation of words. Most of children with hearing impairment are unable to hear speech sounds even with the use of assistive devices. Encoding of speech sounds is important for reading as it helps the child to hold bits of information in his memory for a short span of time in order to comprehend the information in his brain (Thurston, Shuman & Johnson, 2017).

Most students with hearing impairment perform with low level of writing although there is no disturbance in practice for writing. The writing skills of students with hearing impairment can be categorized as brief and precise sentences with simple form of verb, some subordinate clauses and some conjoined independent clauses. Children are usually confined to associative types writing techniques by announcing different techniques without illustration. Teachers of students with hearing impairment find it difficult to teach the lower and higher order skills of written expression despite the fact that they endorse it because they cannot harmonize teaching of content and form as students with hearing impairment find it hard to work with form (Wolbers, 2008).

For the best educational experiences, student with hearing impairment may need modifications and assistive devices such as FM systems, hearing loops and modifications like sound treated rooms; seating positions etc. The modifications and assistance should be provided to each student according to his personal and basic needs. Child whose hearing ability is affected in early childhood is dissimilar to the child whose hearing is affected later in life with regard to disadvantages concerning education such as limitation in vocabulary affecting literary skills of the child. Hearing impairment can affect the child in perceiving knowledge in ordinary setup. For a student with hearing impairment, there should be combination of technology that includes both listening devices and computer-based software. As stated, earlier children with hearing impairment are passive and find difficulties in communication which limits their interaction with hearing fellows. Therefore, this can affect the learning process and develops anxiety and rigidity in children with hearing impairment and hamper their participation in curricular and co-curricular activities (Wessel, 2017).

Teaching practices with different assistive listening devices if available in the classroom such as induction loop system, hearing aids, personal FM system, group hearing aids and sound field system can benefit the teacher for making learning effective (Behling & Linder, 2017). It is now being acknowledged that the most authentic teaching practice is to work with cooperation of the facets of direct instruction method and elements of child-centered curriculum. The encouragement and engrossment of students in learning depends upon the teacher's outstanding acquaintance of subject matter. In order to teach specific skills, to deliver knowledge, and for the participation of student in learning environment is developed by the teacher. The role of teacher is also to recognize the complications and difficulties faced by students with hearing impairment in carrying out the academic tasks. Because of insufficient consideration upon the actual complications of the students with hearing impairment, teachers do not assess their performance on the actual weaknesses in verbal and non-verbal areas thus treating and punishing the students badly which makes the students with hearing impairment dull and least interested towards learning (Aftab, Khan & Hussain, 2017).

Luckner & Ayantoye (2013) suggested that information, abilities and understanding of teachers should be over and above to teach students with hearing impairment in individualistic classrooms. Skills introduction in class by teacher like participation and discourse, induction of FM systems and audiological devices, tools for assessment and the process for recording data, education and communication, maintaining time and resources are necessary for organizing suitable educational atmosphere for students with hearing impairment. Important features needed for the provisions of quality

education and the programs that prepare pre-service teachers putting their abilities, knowledge and understanding in order that label transitioning roles of teachers teaching students with hearing impairment.

Managing students in a classroom is necessary for an effective teaching learning process. Students with hearing difficulties in inclusive class room should be seated at front or close to the teacher for a better view of whiteboard and for better sound acquisition. As a result teacher can pay more attention towards student and the student perform better. Other students in classroom should participate along with teachers in an inclusive setup to help the student with hearing impairment to learn and comprehend the lectures. Further several strategies were also suggested to help students with hearing loss like getting student's attentiveness before starting to converse with class, reducing other noises from surroundings, making eye contact with student having hearing difficulties, having clear or moderate speed, make them participate in class discussion and keeping record of their progress on regular basis (Brown, 2006).

For an effective teaching learning process visual cues play an important part as student with hearing difficulties use visual ability to understand and memorize information in the brain. Using videos with subtitles to teach or to deliver the lecture will improve comprehension. For class discussions rearrange seating position for the student with hearing loss to have a clear view of the whole class so that he or she can look upon the person who is talking. The class discussions are important to make children with hearing impairment active and to build their self-confidence by making them able to interact with peers (Brown, 2006).

Wolbers (2008) found that students with hearing impairment are benefited by the use of multimedia in classroom while teaching to improve writing skills. This suggests that teachers of students with hearing impairment should profoundly incorporate guided tasks like multimedia for improving writing skills in the classroom. Students ponder, share ideas and ask queries about the text by using these kinds of activities make them responsible for their learning.

Girgin (2013) suggested that teaching interactive reading should be interesting and not tedious and also not be taught as tasks. He proposed reading one storybook for whole week enabling students with hearing impairment to identify theme, happenings and portraits of the story for comprehension of theme described in story. Moreover, constant reading help students command the reading plan which is made to demonstrate the aspects of language that is written in book. For developing interest, teachers should ask intuition of students with hearing impairment by showing cover and title of story then should use techniques like questioning, assembling and correcting to rectify ideas and concepts of students. For better understanding of phonemes and vocabulary teacher should write different words with pictorial information on whiteboard.

Technology is considered as product that is equipped with high level of scientific information. Old classical teaching methods are not enough to meet the needs of students with hearing impairment. Deficiencies in old classical teaching methods can be precluded by using advanced technology in classroom. Computer and other electronic devices can help in creating more opportunities, developing and enhancing interest, reducing instructional time improving educational abilities of students with hearing impairment. Different teaching styles and pedagogies, by using computer in their instructions, can develop analytical reasoning and learning skills more effectively for student's concrete knowledge and remain in their long-term memory. Practices and seminars should be organized for in-service teachers to increase knowledge and abilities to use the technology (Alshammari, 2008).

Baglama, Haksiz & Uzunboylu (2018) found that technology used in teaching practices enhance the learning of students with hearing impairment and can perform better academically. It was also found that the enthusiasm of students with hearing impairment significantly enhanced. Computer and mobile applications along with sign language improve the communication of students with hearing impairment.

A study conducted in Nigeria found that experts of sign language, portfolio record keeper, assistive technology like multimedia, communication assistive devices such as hearing aids and sound field system are the resources that make the learning effective in the classroom for students with hearing impairment. It was recommended that teachers and professionals should have expertise in sign language. It was also concluded that effective teaching practices and best utilization of available resources are mandatory to meet the needs of students with hearing difficulties (Onuigbo, Osadebe & Achebe, 2017).

Ntinda, Thwala, Tfusi (2018) studied experienced gaps in professional capabilities to teach differentiated curriculum for which they needed refresher courses and trainings. The communicational gap between teachers and students with hearing impairment was mainly because of variation in sign language between different regions of the country because every region or state has its own sign language. It was found that in services teachers required refreshers courses and trainings in order to learn teamwork, consultancy practices, tools for assessing and literary skills for educating children with hearing impairment. They further suggested an immediate need to have a standardized sign language enhancing positive teaching learning process and betterment of the social lives of students with hearing impairment. For designing and implementing programs that support learners with hearing impairment, their teachers and parents as well teacher's experiences should be understood completely.

Vocabulary acquired at early age helps students to read and comprehend it in adulthood. Studies in US report that students with hearing impairment particularly especially those with severe-to-profound hearing loss have graduated from high school with ability to read equivalent to a fourth grader, and often finish school with ability equivalent to second grader (William, 2012). A study in Saudi Arabia resulted that the identification and understanding of students with hearing difficulties who were taught with intervention were better than those who did not receive an intervention (Alqraini & Paul, 2020).

About 30 to 50 percent of children with hearing impairment have been identified with more than one disability which includes social, physical, sensory, academic and cognitive disabilities (Guardino & Cannon, 2015). Educators educating children with hearing impairment along with other disability have reported that they are not prepared enough to teach these children to fulfil their basic necessities that are required to learn effectively in the classrooms (Guardino, 2015). The practical effect of these disabilities and assembling students who have same educational requirements can be a successful means to meet the needs of these children. Utilizing the homogeneities of these student instead of paying attention to their variations promote successful teaching learning process. Teachers and parents can work together to concentrate on the educational needs of child instead of the disability. Keeping in mind the needs of children with hearing impairment along with other disabilities can assist combine intervention and teaching strategies for an effective and easy teaching learning process. The practical categorization system helps to understand the effect of these special needs in class and teaching process in addition to learning outside the school. Teachers can utilize these categorizations for organizing suitable teaching strategies and assistance for the children with hearing difficulties along with the consent of parents. The fresh and pre-service educators can be benefited with this by establishing an association between practical effect and particular disability upon teaching learning process as well as the classroom (Schley & Trussell, 2019).

Total Communication is a teaching method that consists of various modes of communicational techniques and speech. As students with hearing impairment use eye sight to learn and understand so teachers use pictures with communicational techniques to bring effectiveness in teaching. Teachers educate through such a new way that students try to understand by creating a rational link between their residual hearing and their visual ability. It needs to have tasks that include auditory trainings and hearing skills with every class. For students with hearing impairment, curriculum needs to be modified in such a way that it supports their intellect, speech and other learning areas. Reading and writing curriculum is thought to be principle as a stable medium between systematic and comprehensive procedures. The goal of curriculum is achieved by targeted objective evaluation and proper planning for its implementation by teachers and school management (Ugwuany & Ubah, 2017).

Active teaching methods are considered to be the most appropriate in recent years because these methods provide every basic educational necessity that a student with hearing impairment requires along with developing his/her speech. Total communication method is considered to be most appropriate because it eliminates all the barriers between a student, teachers and the teaching learning process. Active teaching methods intrigue the students with hearing impairment to learn and help them to interact with their surroundings as these methods are concerned with their intellect and social skills. Use of images along with these methods provides high order learning that eases the learning process of children with hearing impairment (Bucur, 2013).

In Pakistan, students with deafness and hard of hearing have been studying in segregated setup from the beginning. They are kept in separate settings from hearing children. Aural and oral techniques are being used for teaching in alliance with sign language in Pakistan. The sign language in Pakistan significantly differs from one region to another because the signs are not adopted as unified standard nationally (Akram & Bashir 2011).

Khatoon (2003) reported that teachers of students with deafness and hard of hearing in educational institutions are not able to use proper sign language and have command on each subject that is taught in schools. It was also found that finger spelling and cued speech are not being used by teachers in special schools for students with hearing impairment as well as there is no specific training or courses for teachers in Pakistan.

Husain (2008) reported that educational system in Pakistan is very backward especially with teaching methods used by teachers to teach students with deafness and hard of hearing. Teaching practices are not able to educate the students with hearing impairment for self-reliance and making them competent persons in order to cope with latest trends of hearing world.

Basic methods of teaching students with deafness or hard of hearing are Oral, Manual and total communication method as these methods aim to develop speech and sign language. In Pakistan, education of children with deafness and hard of hearing is carried through different modes that involves teaching with hearing aids, loop induction system, speech and language therapy, sign language, finger spelling, cued speech, lip reading and total communication technique aligned with vocational education. It was stated that special education services have been granted to students with hearing impairment in schools. It was found that schools lacked facilities; the main element was to work on residual hearing and developing speech in curriculum, apart from medical and assistive equipment. They suggested that there should be modifications and adaptations as first concern in curriculum. Seminars and campaigns should be arranged by the Governing bodies to inform and provide knowledge to change perception of people towards educating children with hearing impairment, and to make sure that children with deafness or hard of hearing are becoming competent through practice and coaching (Mushtaq & Reba, 2014).

Research Methodology

Descriptive research design was selected for this research. For this purpose, teachers working in the government schools for students with hearing impairment in southern Punjab constituted the population of the study. A sample of 124 teachers specialized in working with students with hearing impairment was selected through stratified random sampling technique from the population of this research.

Research Tool Development

A self-developed questionnaire was used to gather the data from the participants of the research. To confirm the validity of the research tool, it was sent to the experts in the field of special education. Moreover, they have expertise in the research and development of the same field. Their recommendations were incorporated for the enhancement of the validity of the research tool. To check the reliability of the research instrument, Cronbach's Alpha was used, and found the calculated value of the reliability coefficient .70 which is strong enough for the further proceeding of the research procedure.

Data Collection

As there are no standardized instruments which can meet the local norms to find out the teaching practices for students with hearing impairment in southern Punjab, researchers made questionnaire to collect the data from the teachers working with students with hearing impairment in south Punjab. Questionnaire was consisting of 35 items related to teaching practices for students with hearing impairment. It was validated by experts with 25 years' experience of teaching, research and development. Researchers themselves supervised the questionnaire entertained by teachers teaching students with hearing impairment in public schools for students with hearing impairment in southern Punjab, Pakistan. The respondents were guided for their concerns towards questionnaire.

Data Analysis

For this research descriptive and inferential statistics both were used for data analysis. For this purpose, Statistical Package for Social Sciences (SPSS) was used. In Descriptive statistics Frequency distribution, Mean, Standard Deviation, Standard error Variation and Percentages were generated. For inferential statistics independent sample t-test and ANOVA was generated using SPSS.

Table 1: *Frequency Distribution*

Statement	SA	A	UD	D	SD	M	S.D
Students with hearing impairment usually understand the content through total communication method.	70 (56.5%)	50 (40.3%)	2 (1.6%)	2 (1.6%)	0 (0%)	4.5	.61
Sign language plays an important role in teaching learning process	92 (74.2%)	32 (25.8%)	0 (0%)	0 (0%)	0 (0%)	4.7	.43
My teaching strategies help students with hearing impairment in learning when the content is altered.	12 (9.7%)	34 (27.4%)	23 (18.5%)	33 (26.6%)	22 (17.7%)	2.8	1.2
I use assistive devices in classroom to make the teaching effective.	20 (16.1%)	44 (35.5) %	40 (32.3%)	20 (16.1%)	0 (0%)	3.5	.94
Pictorial information is helpful in teaching students with hearing impairment.	81 (65.3%)	35 (28.2%)	8 (6.5%)	0 (0%)	0 (0%)	4.5	.61
The student-teacher ratio affects the teaching learning process.	82 (66.1%)	35 (28.2%)	6 (4.8%)	1 (0.8%)	0 (0%)	4.5	.62
Current teaching practices not able to educate students with hearing impairment to be self-reliant and competent person to cope with the latest trends of hearing world.	0 (0%)	10 (8.1%)	12 (9.7%)	43 (34.7%)	59 (47.6%)	1.7	.92

Table 2: *Independent sample t-test*

Gender	N	Mean	df	t	sig
Male	39	140.97	120	-.85	.52
Female	83	142.19	75.15		

**P < .05 Level of Significance*

Table 2 shows that there is no significant difference in teaching practices of male and female teachers of southern Punjab.

Table 3: *Age of Respondents*

Groups	Sum of Squares	df	Mean Square	F	Sig.
Between groups	98.75	2	49.37	1.05	.35
Within Groups	4744.63	101	46.97		

**P < .05 Level of Significance*

Table 3 indicates that there is no significant difference between and within mean of age of the respondents. F ratio is significant i.e., greater than 0.05 alpha level ($F = 1.051$, $p = .35$) which indicates that there is no significant difference between responses of respondents on the basis of their age.

Table 4: *Academic Qualification of the respondents*

Groups	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	245.30	3	81.76	1.75	.16
Within Groups	4573.68	98	46.67		

**P < .05 Level of Significance*

Table 4 indicates that there is no significant difference between and within mean of academic qualification of respondents. F ratio is significant i.e., greater than 0.05 alpha level ($F = 1.725$, $P = .16$) which indicates that there is no significant difference between responses of respondents on the basis of their academic qualification.

Table 5: *Professional Qualification of the respondents*

Groups	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	654.70	4	163.67	3.71	.008
Within Groups	4143.79	94	44.08		

**P < .05 Level of Significance*

Table 5 indicates that there is significant difference between and within mean of age of respondents. F ratio is significant i.e., less than 0.05 alpha level ($F = 3.713$, $p = .008$) which indicates that there is significant difference between responses of respondents on the basis of their professional qualification.

Table 6 (Teaching experience of respondents)

Groups	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	10.53	2	5.26	4.93	.02
Within Groups	12.80	12	1.06		

**P < .05 Level of Significance*

Table 6 indicates that there is significant difference between and within mean of age of the respondents. F ratio is significant i.e., less than 0.05 alpha level ($F = 4.938$, $p = .027$) which indicates that there is significant difference between responses of respondents on the basis of their teaching experience.

Table 7: *Number of students*

Groups	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	91.46	2	45.73	4.46	.02
Within Groups	276.40	27	10.23		

*p < .05 Level of Significance

Table 7 indicates that there is significant difference between and within mean of number of students of the respondents. F ratio is significant i.e., less than 0.05 alpha level ($F = 4.467$, $p = .021$) which indicates that there is significant difference between responses of respondents on the basis of their number of students.

Findings

Findings of this research shows that the current teaching practices being used in schools of southern Punjab are based on Total communication method upon which 70% of the respondents responded with Strongly Agree, 50% responded with Agree and 1.6% responded undecided. The major emphasis is upon the Sign language upon which 74% of the respondents responded Strongly Agree, 25.8% responded with Agree. It was found that teaching practices used in Southern Punjab do not fulfil the desired objectives upon which 27.4% of the respondents responded Strongly Disagree, 26.6% responded Disagree and 18.5% responded undecided.

Findings of the study also shows that teaching aids, assistive devices and pictorial information are helpful in teaching learning process of children with hearing impairment upon which 65.3% responded with Strongly Agree, 28.2% responded with Agree and 6.5% responded undecided.

It also shows that 66.1% responded with strongly Agree, 28.2% responded Agree and 4.8% responded Undecided to an ideal teacher-student ratio which help ensure individualize attention to students. It was found that current teaching practices in southern Punjab are unsatisfactory upon which 43.5 respondents responded Disagree, 20.8% people responded Strongly Disagree and 25.0% responded undecided.

Inferential statistics findings of this research show that there is no significant difference in teaching practices of male and female teachers of southern Punjab. It was found that there is no significant difference among responses of respondents regarding teaching practices on the basis of their age and academic qualification.

It was found that there is significant difference among responses of respondents regarding teaching practices on the basis of their professional qualification and on the basis of their teaching experience. It was also found that there is significant difference among responses of respondents on the basis of their number of students.

Discussion

This study sought to identify methods of teaching practices used by the teachers for the students with hearing impairment in the schools of South Punjab. Researchers tried to find out the teaching practices that were being used in the schools of south Punjab and if used teaching practices were competent enough to fulfil the learning needs of the children with hearing impairment.

Kim & Im (2014) demonstrated that teaching practices that focus on students' written expression and sign language can help to improve learning abilities of students with hearing impairment. Wood (2009) found no difference in teaching practices of male and female teachers teaching students with hearing impairment.

Barry (2012) found that number of students as well as teaching experience of the teachers' matter in the teaching-learning process of the students with hearing impairment.

Conclusion

This study concluded that there is no significant difference between teaching practices of male and female teachers teaching students with hearing impairment in south Punjab. It was found that age and academic qualification does not have any impact on teaching practices being used in schools of South Punjab. However, the professional qualification of teachers', teaching experience of teacher and number of students in each classroom affects the teaching practices as well as teaching learning process of students with hearing impairment.

Acknowledgments

None


Conflict of Interest

Authors have no conflict of interest.


Funding Source

The authors received no funding to conduct this study.

ORCID iDs

Muhammad Ashfaq¹  <https://orcid.org/0000-0001-6268-205X>

Muhammad Javed Aftab²  <https://orcid.org/0000-0001-7715-9085>

Sadia Tariq³  <https://orcid.org/0000-0001-5664-9632>

References

- Aftab, M. J., Khan, T.M., & Hussain, T. (2017). Validation of Screening Checklist for Learning Difficulties in Mathematics. *Bulletin of Education and Research*, 39 (2), 119-126.
- Akram, B., Bashir, R. (2011). Special Education and Deaf Children in Pakistan: An Overview. *Journal of Elementary Education*, 22(2), 33-44.
- Alqraini, F. M., Paul, P.V. (2020). The Effects of a Vocabulary Intervention on Teaching Multiple-Meaning Words to Students Who Are d/Deaf and Hard of Hearing. *Journal of Deaf Studies and Deaf Education*, 25(2), 1–21. <https://doi.org/10.1093/deafed/enaa015>.
- Al-Shammari, Z. (2008). *The Benefits of Technology Use in Teaching Students with Special Needs. Paper presented at the 8th Congress of Scientific Research Outlook in the Arab World*, Scientific Innovation and Sustained Development, Morocco, 281-289 https://www.researchgate.net/publication/275209190_The_Benefits_of_Technology_Use_in_Teaching_Students_with_Special_Needs.
- Baglama, B., Haksiz, M., & Uzunboylu, H. (2018). Technologies Used in Education of Hearing Impaired Individuals. *Journal org.iJet*, 13(9).
- Behling, K., Kathryn, L.E. (2017) Collaborations Between Centers for Teaching and Learning and Offices of Disability Services. *Journal of Postsecondary Education and Disability*, 30(2).
- Bucur, L. (2013). *The role of total communication in optimizing the teaching-learning process for the hearing impaired students*. Doctoral Thesis. Babeş-bolyai university, Romania.
- Eggermont, J.J. (2019). *The Auditory Brain and Age-Related Hearing Impairment*. Academic process publishing, 69-97.

- Fatima, G., Hussain, A. C., & Malik, M. (2016). Instructional Practices used by Special Education Teachers in Classrooms of Young Children with Deafness. *Bulletin of Education and Research*, 38(1), 89-100.
- Gárate, M., Batamula, C., & Kite, B. J. (2016). *Deaf Education*. https://www.academia.edu/31664365/Deaf_Education.
- Girgin, U. (2013). Teacher strategies in shared reading for children with hearing impairment. *Egitim Arastirmalari-Eurasian Journal of Educational Research*, 53(3), 249-268.
- Guardino, C. (2015). Evaluating teachers' preparedness to work with students who are deaf and hard of hearing with disabilities. *American Annals of the Deaf*, 160(4), 415-426. <http://doi.org/10.1353/aad.2015.0030>
- Guardino, C., & Cannon, J. E. (2015). Theory, research, and practice for students who are deaf and hard of hearing with disabilities: Addressing the challenges from birth to postsecondary education. *American Annals of the Deaf*, 160, 347-355. <http://doi.org/10.1353/aad.2015.0030>.
- Heward, W. L., Morgan, S.R. A., & Konrad, M. *Exceptional children: Introduction to Special children*. (11th Ed.) Pearson. <https://pdfs.semanticscholar.org/9aa0/8eaeab5d1b4a3b8db551e215c06d9cadac50.pdf>.
- Husain, Z. (2008). *A study of self-image of deaf community in Lahore*. Unpublished Master's Thesis: Department of special education; University of Punjab, Lahore.
- Hyde, M., Onha, S.E., & Hjulstad, O. (2005). Education of the deaf in Australia and Norway: A comparative study of the interpretations and applications of inclusion. *American Annals of the Deaf*, 164(5), 28-41.
- Im, S., Kim, O. (2014). An approach to teach science to students with limited language proficiency: in the case of students with hearing impairment. *International Journal of Science and Mathematics Education* 12, 1393–1406. <https://doi.org/10.1007/s10763-013-9465-1>.
- Khatoon, A. (2003). *A historical and evaluative study of special*. Doctoral Thesis: Special Education Department, University of Karachi.
- Linda P. Thurston, L. P., Cindy Shuman, C., & Johnson, C. (2017). Developing reading skills in deaf students. *Journal of Postsecondary Education and Disability*, 30(2).
- Luckner, J., Ayantoye, C. (2013). Itinerant Teachers of Students Who Are Deaf or Hard of Hearing: Practices and Preparation. *Journal of Deaf Studies and Deaf Education*, 18(3), 20-28.
- Mushtaq, R., Reba, A. (2014). *Capacity Building Initiatives for Hearing– Impaired Children's Education in Khyber Pakhtunkhwa, Pakistan*. Doctoral Thesis: Special Education Department, University of Peshawar.
- Ntinda, K., Thwala, S.K., & Tfusi, B. (2019). Experiences of Teachers of Deaf and Hard- of- Hearing Students' in a Special Needs School: An Exploratory Study. *Journal of Education and Training Studies*, 7, 85-92.
- Nwadinobi, V. (2019). *Chapter eight: hearing impairment*. https://www.researchgate.net/publication/336025368_CHAPTER_EIGHT_HEARING_IMPAIRMENT.
- Onuigbo, L., Osadebe, N. E., & Achebe, N. E. (2017). Classroom environment required for meeting the information needs of students with hearing impairment in Nigerian universities. *International Journal of Inclusive Education*, 24(3), 266-278.
- Safdar, G. Khan, A.W., Abbasi, A. (2018). Role of Social Media for Promotion of Education in Southern Punjab. *Journal of Education Research*, 21(1), 73-85.

- Safdar, G., Javed, M.N., Amin, S. (2020). Use of Internet for Educational Learning among Female University Students of Punjab, Pakistan. *Universal Journal of Educational Research*, 8(8), 3371-3380. DOI: 10.13189/ujer.2020.080809
- Safdar, G., Khan, A.W. (2020). E-Learning: Current Scenario of Internet and Educational Learning among University Students of Punjab, Pakistan. *Journal of Educational Research*, 23(1), 171-185.
- Safdar, G., Rauf, A., Ullah, R., Rehman, A.U. (2020). Exploring Factors Leading to Quality Online Learning in the Era of Covid-19: A Correlation Model Study. *Universal Journal of Educational Research*, 8(12A), 7324-7329. DOI: 10.13189/ujer.2020.082515
- Schley, S., Trussell, J. (2019). *Deaf Students with Disabilities: A Functional Approach for Parents and Teachers*. <https://eric.ed.gov/?q=Deaf+Students+with+Disabilities%3a+A+Functional+Approach+for+Parents+and+Teachers&id=EJ1216082>.
- Ugwuanyi, L. T., Ubah, J. C. (2017). Using Total Communication Technique in Teaching Students with Hearing Impairment in Inclusive Classrooms in Enugu State - Nigeria: Teachers' Perspectives and Difficulties. *Australian Journal of Basic and Applied Sciences*, 11(5). 100-107.
- Watson, S. (2020). *Recognizing Characteristics of Deafness and Hearing Loss in Students*. ThoughtCo, <https://www.thoughtco.com/recognizing-characteristics-of-deafness-3110771>.
- Wessel, R. D. (2017). Educating children with deafness. *Journal of Postsecondary Education and Disability*, 30(2).
- Williams, C. (2012). Promoting vocabulary learning in young children who are deaf and hard of hearing: Translating research into practice. *American Annals of the Deaf*, 156, 501– 508. doi: 10.1353/aad.2012.1597.
- Wolbers, K.A. (2008). Improve the Higher Order and Lower Order Writing Skills of Deaf Students. *Journal of Deaf Studies and Deaf Education*, 13(2), 45-60.
- Wood, T.D. (2009). Teacher perceptions of gender-based differences among elementary school teachers of students with hearing impairment. Doctoral thesis: Saint Louis University, United States. <https://pqdtopen.proquest.com/doc/220000637.html?FMT=ABS>