

## Perceptions of HI Students about the Effectiveness of Hearing Assistive Devices

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### **Abstract**

This study examined "Perceptions of HI Students about the Effectiveness of Hearing Assistive Devices". The ability to speak and converse with others and to understand them is one of humanity's most valuable gifts. However, the silent world of the hearing-impaired deprives them of these abilities unless they are provided with the opportunity to use assistive devices to develop speech using their residual hearing. Providing guidance and assistance regarding assistive devices enables parents and teachers to give hearing-impaired children the opportunity to learn to communicate effectively. People with hearing loss now have access to a variety of assistive technologies. The goal of this descriptive research was to investigate the effectiveness of Assistive Devices (AD) in facilitating the learning of hearing-impaired students. The significant role of assistive devices was prominently highlighted. The motive of this research was to explore students' perceptions of the effectiveness of Assistive Devices for Hearing-Impaired Students. The research adopted a quantitative and descriptive approach. The research population comprised all hearing-impaired students enrolled in various institutions in the Bahawalpur District. A sample of 176 hearing-impaired students was selected from different government and private institutes using a multi-staged sampling technique. The questionnaire was developed based on extensive

literature review and validated by experts in the field. Data were collected personally and analyzed using SPSS, applying frequency, percentage, mean value, and standard deviation. The reliability calculated using Cronbach's alpha was 0.801. The results indicate that Assistive Devices play a crucial role in students' personal, social, and academic development. It was found that hearing aids are essential for all hearing-impaired children with any residual hearing, and their early use significantly contributes to their personal, social, and academic development. The findings of this research provide guidelines for stakeholders to take steps towards providing assistive devices for hearing-impaired students.

**Keywords:** perception, hearing impaired, students, effectiveness, assistive devices

## Introduction

All students, including those who have hearing impairments, have a fundamental right to an education (UNESCO, 2009). Agomoh & Kanu (2011) assert that a person's hearing condition has a significant impact on their capacity for interaction and communication with their surroundings. An individual may have trouble in communicating, adjusting, and gaining knowledge if they lose their hearing. The World Health Organization (WHO) (2006) estimates that people with hearing impairments make about 10% of the worldwide population. Assistive Technology refers to the tools and technologies that help impaired persons improve their functioning abilities. According to UNESCO (2006), assistive technology (AT) helps people with impairments use adapted technologies. There is an incredible variety of assistive technology available, ranging from high-tech to low-tech gadgets and tools. It provides assistance to people with impairments to the point that it lowers hospitalized costs (Posse & Mann, 2005).

Over the past several years, assistive technology has been increasingly popular among people with disabilities for usage in leisure, work, and educational settings. Once adequate screening of individual requirements and technological specifications for individuals who have disabilities has been completed, specialists are providing a variety of accessible equipment and services to people with special needs (Cook & Hussey, 1995, p. 24). Many factors, such as how technologies will affect the body and how the body will affect information technology, are considered seriously when selecting assistive equipment (Hersh & Johnson, 2003). According to Yi-Lin (2005), assistive gadgets are more beneficial as they provide the intended sound straight to the listener's ears while improving the sound's signal to noise background ratio and lessening the impact of dispersed noises and poorly designed rooms. Learners with hearing impairments can get assistive equipment at a lower rate if they choose it (Wald, 2009).

The importance of assistive devices and equipment to a person with disabilities is enormous. There are many kinds of assistive devices are introduced for the hearing-impaired pupil in the world (e.g., Hearing Aids, Auditory training unit,

etc.). But In Pakistan, for their education and daily living activity, mainly hearing aid is used as an assistive device. This assistive device is a piece of equipment that enables the Hearing-Impaired to participate in daily life including family, Social, professional, and community life. Many times, for the limitation and lack of hearing, the hearing impaired can't hear most of the quietest sounds. They face a lot of problems in the discrimination of various sounds; they cannot locate the sound source. They also find trouble in noise. So, hearing Aid is essential, as hearing aids help them to overcome these situations. The success of an assistive device is measured by whether its users use the device in an effective and liberating way, and are satisfied with the device in the long run (Rahaman,2008).

According to Hameed and Bano (2009), assistive technologies enable people to live independent lives. Children, especially those with impairments, now have more educational opportunities because to technology. The physical, sensory in nature and intellectual impairments are being accommodated in numerous ways by alternate approaches based on technologies (Dede, 1998, p.73). Suitable and well-chosen solutions have been modified to meet the specific demands of people with impairments. In order to assist people with impairments, user-centered design techniques have been adapted (Penaud, Mokhtari & Abdulrazak, 2004).

Purchasing assistive gadgets for their children who are deaf is a challenge for several families in Pakistan. To support their kids, all they have to do is hope. By providing assistive listening to their disabled pupils, Special Education instructors in Pakistan are benefiting from assistive technology. Study has been done on how assistive technology is used, how it affects learning, and how it affects kids with special needs. The goal of this research is to demonstrate how effective assistive technology is in helping kids with impairments. This research investigated how children with hearing impairments could use assistive technology (Shahid & Aasma, 2015).

A hearing loss is a hearing-related incapacity that ranges in severity from mild to profound. Any departures from the norm or problems with the generally mentioned ear component are included in the category of hearing deficit. It refers to anomalies in the discussion framework and hearing hardship on all scales. It's geared towards people who are deaf. A person having problem in hearing is one who, while using listening aids or intensifiers, has residual hearing sufficient to enable efficient processing of phonetic data through experimentation. A person who experiences remarkable discussion misfortune to the extent that they are unable to benefit from routine management of phonic information through trial, with or without expansion, is considered Deaf (Abang, 2005).

Hearing impairment includes all types of hearing issues that obstruct communication, according to the American School for the Deaf (2008). It may be considered moderate or rather severe. Therefore, those who have modest to severe hearing impairments to the point where communication is hampered are considered people with hearing loss. Baker (2006) asserts that the everyday process of acquiring knowledge is continuously impacted by hearing loss. For many kids, getting special education assistance is necessary in order to give their hard of hearing child a suitable education. According to Ojile (2006), the commencement of the hearing loss can also

be used to characterize hearing impairment. Both pre-lingual and post-lingual deafness are included in this. According to the Disabilities Education Improvement Act (2004), a hearing impairment is defined as a condition or an inability that impacts the academic performance of an individual who has hearing loss, regardless of the severity of their loss.

### **Statement of the problem**

Problem of the study was “Perceptions of HI Students about the Effectiveness of Hearing Assistive Devices” For the difficulties in hearing, the development of hearing-Impaired becomes slower. However, various studies show that hearing-Impaired children suffer from certain problems of balance and general coordination in the later year (Lewis; Holle) we can overcome this problem by giving them hearing- aids early in childhood. For lack of hearing the social interaction of the hearing-impaired maybe not is appropriate, maybe delayed & deviant. Their personal and social development may be delayed for not hearing the sounds. Considering the need of educating disabled children a different educational approach, Special Education has been developed. Special Education concepts have allowed getting education for disabled people to some context. The hearing-Impaired children can go to special education even not by the support of Assistive devices. In this case, they must need a substitute mode of communication likewise gestures. Otherwise, the students with hearing-impaired require adaptive devices such as hearing aid.

So, in this study, Researcher will try to find out the role of hearing aids or Assistive Devices (AD) for the hearing-impaired students in their development. Still, there is a fundamental question that is not answered yet by any research findings in Pakistan whether assistive devices have any effectiveness in the social, personal, and academic development of Hearing-Impaired. Moreover, it's a big question of which aspect of the hearing aid is working successfully – academically or socially. So, it is necessary to research effectiveness of Assistive Devices for hearing-impaired pupils in their social, personal, and Academic Development.

This study's primary goal was to investigate; the usage of Assistive Devices and their effectiveness on the social, personal, and Academic development of Students with Hearing-Impairment. Understanding the use of hearing aid for hearing-impaired students. To understand the effect of an assistive device on their development.

The objective of the study was as follows:

1. To determine the personal development of Hearing-Impaired Students.
2. To trace the social development of Hearing-Impaired students.
3. To find out the academic development of Hearing-Impaired students.
4. To suggest improvement steps taken by the government for Hearing-Impaired Students.

### **Review of related literature**

Husain (2008), a deaf woman herself, criticized Pakistan for its treatment of the deaf community by calling them dumb and deaf. She said that the term "deaf and dumb" is interpreted by hearing individuals as "not being able to hear and being stupid." Husain feels that as a result, the term "deaf and dumb" should be abandoned. This term originally meant "not able to hear and not able to speak," but its incorrect understanding feeds into prejudice towards those who are deaf. This expression is

commonly used since there are a lot of deaf children's schools in Pakistan that have been referred to as "deaf and dumb" institutions.

Husain (2008) also critiques the way Pakistani society treats deaf people in general, which supports her claim that calling deaf Pakistanis "deaf and dumb" has a detrimental effect on them.

According to each person with a disability's needs and surroundings, assistive gadgets are the facilitators. When used to enable activities at any cognitive level, assistive technology may be a person's lifetime companion and defender (Bouck, Shurr, Tom, Jasper, Bassette, Miller & Flanagan, 2012). Regardless of their impairment, people using assistive technology (AT) are able to embrace the obstacles in life and are striving towards increasing their level of independence in all facets of living a productive life (Bouck, et.al 2012). The following factors are taken into account while implementing AT: expenses, accessibility, investment, schooling, and other relevant matters. It is stated that in order to increase training results, AT selections should be financially efficient, that is, based on the demands of the learner and his or her environment (Seok & DaCosta, 2013). To ensure that everyone receives treatment equally, AT must exceed the number of people with impairments. When supplying special needs people with assistive devices, there should be no discrimination based on their gender or age (Borg, Larsson & Ostergren, 2011).

### Assistive Devices

Assistive equipment (AD) or Assistive technology (AT) is any equipment that helps someone with a hearing impairment or a voice, speech, or language problem communicate. These expressions are commonly employed to characterize instruments that facilitate auditory and visual perception of discourse or verbal exchange of concepts. As electronic and wireless technologies advance, an increasing number of tools are made accessible to support individuals with sound, spoken word, and hearing impairments in meaningful communication and everyday life participation (Anam, Nirafat & Tariq, 2000).

### Assistive devices for hearing impaired

According to the types and aspect of using assistive devices for hearing-impaired, assistive devices can be divided in to following categories (Anam and Tareq, 2000).

#### *Aspects and types of using assistive devices for Hearing-Impaired*

Aspects of Classification	
(i) Assistive Devices for using in Daily Living: <b>Types</b> a) Conventional Hearing Aid b) Bone Conduction Hearing Aid c) Bone - Encored Hearing Aid d) Vibrative Hearing Aid	(ii) Assistive Devices for Educational Settings: <b>Types</b> a) Auditory Training Unit (ATU) b) Group Hearing Aid c) Radio Hearing Aid d) Intradoss System
(iii) Assistive Devices for Communication: <b>Types</b> a) Carrying Hearing Aid b) Telephone Amplifier c) Micro Processor/ FAX Device	(iv) Assistive Devices for Employment Situation: <b>Types</b> a) Amplifier Esthetic scope b) <i>Conference Microphone</i>

<p>(v) Assistive Devices in Recreation:  <b>Types</b>                  a) Induction Loop System                  b) Direct Input System</p>	<p>(vi) Others Assistive Devices:  <b>Types</b>                  a) Vibrative Watch</p>
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**Aspects of Classification**

**(i) Types of Assistive Devices for using in Daily Living:**

Conventional Hearing-Aid



Bone-Conduction Hearing-Aid



Bone-Encored Hearing-Aid



Vibrative Hearing-Aid



**(ii) Types of Assistive Devices for Educational Settings:**

Auditory-Training Unit



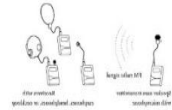
Group Hearing Aid



Radio Hearing-Aid



Intrads-System



**(iii) Types of Assistive Devices for Communication:**

Carrying Hearing Aids



Telephone Amplifier

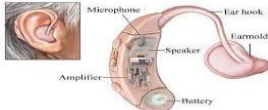


Micro Processor / FAX



**(iv) Types of Assistive Devices for Employment Situation:**

Amplifier Estheticscop



Conference Microphone



**(v) Types of Assistive Devices in Recreation:**

Induction Loop System



Direct Input System



**(vi) Other types of Assistive Devices:**

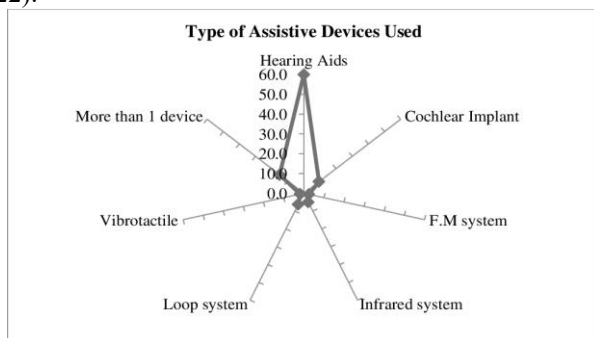


### Classification of Assistive Devices for Hearing-Impaired Students

**ALDs (Assistive Listening Devices)**, are useful for amplifying sounds that you wish to perceive particularly in noisy environments. When combined with an implanted cochlear device or hearing aid, ALDs can improve the wearer's ability to recognize sounds that are specific (Chambers, 2022).

**AAC (Alternative and Augmentative Communication)** devices facilitate self-expression for those with communication impairments. These tools might be as basic as a graphic- boards or as sophisticated as a computer program that generates voice from content (Chambers, 2022).

**Alerting Devices** for alerting people with hearing loss are connected to doorbells, phones, and alarms that make loud noises or flash lights when an event occurs (Chambers, 2022).



It illustrates that of the sample students with hearing impairments, 60% used hearing aids, 10% had cochlear implants, and just a small percentage used other assistive devices. Students that are hard of hearing need special instruments called assistive devices. This study set out to assess how well assistive technology supports academic goals for children with hearing loss. It is shown that students are more self-directed learners and high achievers regardless of the kind and form of assistive technology they use. The majority of children with hearing problems use vibrotactile, loop, infrared, F.M. systems, cochlear implants, hearing aids, and other high- and low-tech assistive technology. In Pakistan, children with hearing impairments most preferable and reasonably priced devices are hearing aids (Shahid & Aasma, 2015).

### Need for Assistive Devices

For people who are hard of hearing or deaf, there are numerous tools and technologies that can help them interact with their surroundings. While some gadgets improve aural information, others use visuals to transmit information. People of all ages may utilize these devices in a range of settings, such as the home, workplace, school, social events, meetings, hospitals, churches, and theaters. The most often used assistive listening technologies include Systems for audio induction loops, FM (frequency modulation), infrared, and other accessories that link hearing aids to media like computers, tablets, phones, and music players. Pupils who are hard of hearing have three options: cochlear implants, hearing aids, or FM systems, which consist of a student-worn receiver and a teacher-worn microphone/transmitter. It is imperative that all audio-visual videos utilized in the classroom have real-time captioning.

## **Assistive Devices for Hearing-Impaired that are Available in Pakistan**

According to the Rehabilitation Center (2020), there are hearing aids accessible in Pakistan for all types of hearing issues. To ensure that everyone may afford the aids, there are numerous varieties that are developed to match a variety of budgets. Although there is no known treatment for hearing loss, a large number of people experience it. Some folks are just too deaf to be fortunate enough to be able to have conversations with others or listen to music. For some persons, determining their degree of hearing impairment necessitates taking hearing tests on a regular basis. All kinds of people in Pakistan have access to hearing aids. They are useful for those with hearing loss. Deaf people don't have to worry about seeming foolish when they listen to music or even conversation on the phone. The hearing aids are highly beneficial in assisting the deafened to stop their continuous ringing in addition to letting them hear.

Getting the greatest deal on used hearing aids doesn't need any extra effort on the part of the buyer. In Pakistan, used hearing aids are available in much of the same locations as new ones. The alternatives available for hearing aids are incredibly diverse. Before deciding which ones will be most effective for an individual, that person should look at all of them. Anyone who need a hearing aid has the ability to do so. After using the device for a few years, the user's costs will begin to mount, at which point they may search for other devices in Pakistan.

For those who experience hearing loss, hearing aids are accessible in Pakistan. These devices are designed to enhance the person's hearing and help them hear better. These issues can be resolved with the use of these hearing aids. The person can find it challenging to adjust to wearing hearing aids in Pakistan. It may take some getting used to because they will be wearing a device that needs to be handled every day.

In Pakistan, attending lessons is the most effective technique to begin acclimating to wearing hearing aids. It will be simpler to obtain the correct size and fit as a result. Finding out how much the device will cost is crucial, especially if the wearer is at ease with it. Knowing the price ahead of time is preferable to spending money on malfunctioning equipment.

One should make sure they deal with a reliable provider while buying hearing aids in Pakistan. The individual will find it simpler to obtain the gadget they require and to feel secure in the knowledge that the buy they make will be efficient and safe as a result. It will be crucial for many Pakistani consumers of hearing aids to obtain greater knowledge about fitting them for their ears. There is no other method to guarantee that the gadget is the appropriate fit for the user. They can experience discomfort when wearing the gadget or worry that it won't fit them correctly.

## **Personal Development of Hearing-Impaired Students**

In essence, personal growth is the belief that one may use one's own initiative to attain a desirable state of affairs. Four informational sources—performance achievements, indirect experience, persuasive language, and emotional stimulation—are the foundation for feelings of self-efficacy. Efficacy in the particular context of assistive technology could be defined as imparting or enhancing the functional capabilities of students with impairments. Think habits and performance in a wide



range of tasks have been found to be significantly influenced by the sense of one's own talents or self-efficacy.

Perceptions of personal development affect the activities chosen, the amount of work put in, the persistence of the task, and, in the end, the level of success attained. In addition to aptitude and skills, students with disabilities require a sense of efficacy to make effective use of them and to control their learning (Onojah, Alaka, & Aderogba, 2020).

### **Social Development of Hearing-Impaired Students**

The evolution of personality traits is a component of social development. A person's behavior and personality traits should evolve in a way that is socially acceptable and in line with societal norms. According to Sawyer et al. (2012) and Pin quart & Pfeiffer (2014), these expectations are known as developmental tasks and include gaining autonomy, establishing emotional independence, forming strong relationships with peers, acting in a socially responsible manner, and reaching emotional stability. It is often known that young children's social development is greatly influenced by the social interactions they have. Deficits in oral or sign language, which occur before social skills do, cause disruptions in the developing system in hearing-impaired infants that could lead to social competence delays (Barnett, Gustafsson, Deng, Mills-Koonce, & Cox, 2012).

### **Academic Development of Hearing-Impaired Students**

Assistive Technology refers to the tools and technologies that help impaired persons improve their functioning abilities. According to UNESCO (2006), assistive technology (AT) helps people with impairments use adapted technology. There is an incredible amount of assistive technology available, both high-tech and low-tech devices and equipment. While Low-Tech Assistive Devices are operated manually, High-Tech Assistive Devices are operated Electronically (Dede, 1998, p. 75). Low tech is found to be a beneficial aid for people with disabilities in various forms of assistive technology. Low tech is inexpensive to purchase and use. Insofar as it lowers hospitalization costs, it assists people with disabilities (Posse & Mann, 2005).

### **Research methodology**

The current study was descriptive in nature since it required data collecting to investigate the Hearing-Impaired student's perceptions of Assistive Devices for their personal, social, and academic development. Participants in the research included secondary and higher school students from both public and private educational institutions. Multiple Sampling techniques were used. At stage first, Institutions were selected by random sampling. At stage two students were selected by purposive technique for the collection of data. In this study, 176 students made up the sample.

### **Instrumentation**

In this study, after reviewing relevant literature, a questionnaire was developed based on 24 closed-ended statements and consisted of basic particulars of the student response questions. The basic particulars include gender, locality, age group, institute name, and class, beside these, some Questions were on the child's personal development, and others were concerned with the child's social and academic development to investigate the effectiveness of hearing Assistive Devices among

students at higher secondary level in district Bahawalpur. Cronbach's Alpha was used to calculate the Tool's Reliability, and the result was 0.801.

**Data Collection & Analysis**

The researcher personally visits to collect data from respondents. (176) one hundred and seventy-six filled questionnaires were filled by the respondents. The rate for return for this was a hundred percent. To examine the gathered data, Descriptive and Inferential Statistics was used. Frequency(F), Mean, median and Standard Deviation was used to analyze opinion of the Hearing-Impaired Students about effectiveness of the Assistive Technology in their personal, social and academic development. The collected data through mentioned research instrument were analyzed, tabulated, and interpreted by using the relevant statistical of frequency, percentage, and mean scores calculated by SPSS version 20.

**A) Personal Development of Hearing-Impaired Students**

Sr #	Statements	SDA	DA	N	A	SA
1	I can use hearing Assistive Devices when I cannot perform the activity at my own.	5(2%)	7(4%)	14(8.0%)	106(19%)	44(2.0%)
2	With the use of hearing Assistive Devices, I can do things independently.	038(2%)	065(1%)	129(16.5%)	024(13.6%)	420(1.4%)
3	If I use my Assistive Devices every day, I could develop many new skills.	7(04.0%)	4(02.3%)	16(9.1%)	199(56.3%)	450(28.4%)
4	I can continue to use the hearing Assistive Devices, even if it is tiring and difficult.	13(7.4%)	20(11.4%)	186(48.9%)	138(21.6%)	419(0.6%)
5	I enjoy the lessons and ready to learn it by using Assistive Devices.	0(0%)	8(4.51%)	123(13.1%)	176(43.2%)	469(39.2%)
6	I can perform better while using hearing Assistive Device for learning.	3(1.71%)	5(2.81%)	119(0.8%)	174(42.0%)	475(2.6%)
7	If I have hearing assistive devices, I can learn more efficiently.	1(00.6%)	10(5.7%)	115(08.5%)	169(39.2%)	481(6.0%)
8	I feel handicap when I use hearing assistive devices.	40(22.7%)	59(33.5%)	137(21.0%)	119(10.8%)	421(1.9%)

**B) Social Development of Hearing-Impaired Students**

Sr #	Statements	SDA	DA	N	A	S SA
9	Assistive Devices helps in acquiring skills and ability to work as a team.	4(2.3 %)	6(3.4 %)	18(10.2%)	65(36.9%)	83(47.2%)
10	The use of hearing assistive technology would make someone less dependent on my social assistance.	1(0.6 %)	7(4.0 %)	138(2.6%)	117(6.5%)	413(7.4%)
11	Hearing assistive devices are a good solution to certain problems.	0(0%)	5(2.8 %)	32(18.2%)	173(4.1%)	466(37.5%)
12	Use of hearing assistive devices will enhance my effective communication with family, friends and teachers.	0(0%)	7(4.0 %)	118(1.0%)	173(4.1%)	478(4.3%)
13	Use of Assistive Devices enables me to gain confidence and social credibility.	5(2.8 %)	2(1.1 %)	110(5.7%)	193(5.2%)	466(37.5%)
14	Assistive Devices helps me to accomplish task more effectively.	3(1.7 %)	3(1.7 %)	139(2.2%)	156(3.1%)	475(4.6%)
15	Assistive Devices makes me more interactive and involved in community.	0(0%)	5(2.8 %)	129(1.6%)	196(5.4%)	446(26.1%)
16	Assistive Devices helps me to fulfill my duties toward society.	1(0.6 %)	12(6.8%)	147(2.6%)	166(3.7%)	450(28.4%)

**C) Academic Development of Hearing-Impaired Students**

Sr #	Statements	SDA	DA	N	A	SA
17	I am willing to use hearing Assistive Devices for learning.	0(0.0 %)	1(0.6 %)	18(4.5 %)	667(3.8%)	810(5.8%)
18	I believe that I can promote my academic performance by using hearing Assistive Devices.	0(0.0 %)	0(0%)	14(2.3 %)	610(2.5%)	870(39.8%)
19	I can compete with my normal peers by using hearing Assistive Devices.	9(5.1 %)	44(2.5%)	154(3.0%)	646(2.6%)	23(1.3%)
20	Assistive Devices expands educational (learning) opportunities for me.	0(0.0 %)	7(4.0 %)	135(1.9%)	96(5.4%)	838(21.6%)
21	Assistive Devices improve my independent access to education.	50(28.4%)	49(2.7%)	1 (0.0%)	6 (0.0%)	8 (0.0%)

22	I can achieve the greatest degree of self-reliance in my academic performance by using Assistive Devices.	1(6.0%)	5(2.8%)	128(15.9%)	689(50.6%)	853(30.1%)
23	The use of Assistive Devices will improve my academic well-being.	0(0.0%)	1(0.6%)	119(10.8%)	682(46.6%)	874(42.0%)
24	Assistive Devices makes me more involved in classroom/learning environment.	0(0.0%)	4(2.3%)	128(15.9%)	656(31.8%)	888(55.0%)

**TableNo.1 Comparison of Opinions of Respondent Depend on Gender Classification (T - Test)**

Factors	Male Female	N	Mean	Std. Deviation	Degree of Freedom	t-statistics	Sig. (2-tailed)
Student Personal Development	Male	121	28.5	3.467	174	-2.326	.021
	Female	55	29.8	3.519	103.109	-2.313	.023
Student Social Development	Male	121	32.1	3.368	174	-3.408	.001
	Female	55	33.7	2.123	156.206	-4.015	.000
Student Academic Development	Male	121	30.9	2.700	174	-2.661	.009
	Female	55	32.1	3.078	93.243	-2.533	.013

A statistically Significant disparity in the Analysis of the data displayed in the table, Perceptions of HI Students about the Effectiveness of Hearing Assistive Devices based on the male/female gender factor. Furthermore, the table indicates that male involvement is higher than female engagement in students personal, social and academic development.

**TableNo.2 Comparison of Opinions of Respondent depend on Localities (T - Test)**

Factors	Rural-Urban	N	Mean	Std. Deviation	Degree of Freedom	t-statistics	Sig. (2-tailed)
Student Personal Development	Rural	53	29.5	3.603	174	1.435	.153
	Urban	123	28.7	3.478	95.566	1.415	.160
Student Social Development	Rural	53	31.9	3.642	174	-1.967	.051
	Urban	123	32.9	2.840	80.477	-1.783	.078
Student Academic Development	Rural	53	31.0	3.228	174	-.982	.326
	Urban	123	31.4	2.705	84.902	-.916	.362

A statistically Significant disparity in the Analysis of the data displayed in the table, indicates that there is a significant difference of respondents about the Perceptions of HI Students about the Effectiveness of Hearing Assistive Devices.

**TableNo.3 Comparison of Opinions of Respondent depend on Class (ANOVA)**

Factors	Class	Sum of Squares	Degree of Freedom	Mean Square	F- Test	Significant
Student Personal Development	Between Groups	573.649	5	114.73	12.168	.000
	Within Groups	1602.891	170	9.429		
	Total	2176.540	175			
Student Social Development	Between Groups	254.710	5	50.942	5.946	.000
	Within Groups	1456.540	170	8.568		
	Total	1711.250	175			
Student Academic Development	Between Groups	452.707	5	90.541	15.550	.000
	Within Groups	989.833	170	5.823		
	Total	1442.540	175			

\*P < .05 Significance Level

The table shows that actual Data of student’s personal development in the between groups (sum-square = 573.649, Degree of Freedom = 5, MS=114.730) or within groups (sum-square = 1602.891 Degree of Freedom = 170, MS=9.429), actual Data of student’s social development in the between groups (sum-square = 254.710, Degree of Freedom = 5, MS=50.942) or within groups (sum-square = 1456.540 Degree of Freedom = 170, MS=8.568) and actual Data of student’s academic development in the between groups (sum-square = 452.707, Degree of Freedom = 5, MS=90.541) or within groups (sum-square = 989.833 Degree of Freedom = 170, MS=5.823). ANOVA indicates a significant difference (F (175), P < .05).

**TableNo.4 Comparison of Opinions of Respondent depend on Institute (ANOVA)**

Factors	Institute	Sum of Squares	Degree of Freedom	Mean Square	F-Test	Significant
Student Personal Development	Between Groups	452.281	3	150.760	15.03 9	.000
	Within Groups	1724.259	172	10.025		
	Total	2176.540	175			
Student Social Development	Between Groups	668.394	3	222.798	36.74 6	.000
	Within Groups	1042.856	172	6.063		
	Total	1711.250	175			
Student Academic	Between Groups	14.717	3	4.906	.591	.622

Development	Within Groups	1427.822	172	8.301
	Total	1442.540	175	

\*P < .05 Significance Level

The table shows that actual Data of student’s personal development in the between groups (sum-square = 452.281, Degree of Freedom = 3, MS=150.760) or within groups (sum-square = 1724.259 Degree of Freedom = 172, MS=10.025), actual Data of student’s social development in the between groups (sum-square = 668.394, Degree of Freedom = 3, MS=222.798) or within groups (sum-square = 1042.856 Degree of Freedom = 172, MS=6.063) and actual Data of student’s academic development in the between groups (sum-square = 14.717, Degree of Freedom = 3, MS=4.906) or within groups (sum-square = 1427.822 Degree of Freedom = 172, MS=8.301). ANOVA indicates a significant difference (F (175), P < .05).

**TableNo.5 Comparison of Opinions of Respondent depend on Factors (ANOVA)**

Factors	Correlation	Student Personal Development	Student Social Development	Student Academic Development
Student Personal Development	Pearson Correlation	1	.372**	.394**
	Sig. (2-tailed)		.000	.000
	N	176	176	176
Student Social Development	Pearson Correlation	.372**	1	.260**
	Sig. (2-tailed)	.000		.000
	N	176	176	176
Student Academic Development	Pearson Correlation	.394**	.260**	1
	Sig. (2-tailed)	.000	.000	
	N	176	176	176

\*\* . Correlation is significant at the 0.01 level (2-tailed).

**Conclusion**

These conclusions were made in light of the data analysis and research findings. For personal development, this study concludes that assistive devices are effective for students to perform activities on their own, everyday use of assistive devices could develop many new skills in them, even though it is tiring and difficult students can continue use of hearing assistive devices, they would enjoy the lesson and be ready to learn it by using assistive devices, if they had assistive devices that could do things more efficiently and helps to perform better. Whereas the use of assistive devices has been a slightly effective in enabling them to do tasks independently and the use of hearing assistive devices does not make them feel handicapped. For social development, this study concludes that assistive devices are effective in acquiring skills and the capacity for group collaboration , use of hearing assistive devices would make them less dependent on their social assistance and would be a good solution to certain problems, by utilizing hearing assistive devices,

they can enhance their effective communication with family, friends and teachers, it enables them to gain confidence and social credibility, which helps them accomplish tasks more effectively, assistive devices help them fulfill their duties toward society and make them more interactive and involved in their community. For academic development, this study concludes that assistive devices are effective in promoting students' academic performance; enhancing their willingness to learn; allowing them to compete with their typical peers by using assistive devices; expanding educational (learning) opportunities for them; assisting in achieving the greatest degree of self-reliance in their academic performance; and improving their academic well-being and that assistive devices make them more involved in the classroom/learning environment. Whereas the use of assistive devices has been bit effective for hearing-impaired students in allowing their independent access to education.

### **Recommendations**

The recommendations that follow are derived from the study's findings:

Education, in general, is known to all that it changes the behavior of an individual in the desired manner, however education of the hearing-impaired students changes the impaired students' perspective in society and develops personal, social, and academic awareness.

1. It is recommended that hearing assistive devices should be used for effective teaching and learning activities for overcoming the limitation in the classrooms.
2. Parents should be made aware by the instructions of professional counselors about how to teach hearing-impaired children and supply them with adequate information on how to handle and maintain the hearing aid. At the same time, parents & professionals should work co-operation and the school authority should consider parental needs.
3. There should be introduced an orientation training course for the school teacher on assistive devices.
4. For the healthy development of hearing-impaired children, using assistive devices should be started without making delay.
5. There should be an option for maintaining and ensuring the Quality of imported hearing aid.
6. The necessary step should be taken to produce the hearing aid locally and for making it available for every hearing-impaired child.

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