TECH mahindra FOUNDATION

TRANSITIONING FROM SCHOOL TO HIGHER EDUCATION

A study of the barriers and enablers to the access and participation of students with hearing impairments

By
Dr Syed Salma Jameel, Rupsha Mitra, Sajid Ali

Disclaimer: This report is based on the data collected by Tech Mahindra Foundation from secondary literature. The data has subsequently been reviewed by the research team at Tech Mahindra Foundation. All recommendations made in this report are presented in good faith and are based on the information available to the research team at the time. It is believed that the information in this report is true, and every attempt has been made to ensure the reliability and validity of the data. However, no representation or warranty is given, whether expressed or implied, as to its accuracy or correctness.

Research Team: Dr Syed Salma Jameel, Rupsha Mitra, Sajid Ali

Design: Kunal Ghosh

TABLE OF CONTENTS

Background

Over the past few decades, there has been an increasing focus on including students with disabilities in education to empower them to make informed decisions and enter the world of work. Education is a critical instrument of change that leads to empowerment and ensures equity. The interventions in the educational system through policy, plans and programs have significantly increased the participation rates of marginalised groups in education. In addition, an increasing number of students with disabilities attend schools, which implies that increased opportunities need to be provided to them when during the transition to another higher level of education.

The need for interventions specific to students with disabilities to complete high school is undeniable. Completing a high school education considerably increases the chances of becoming a successful adult (Kortering & Christenson, 2009). Transition planning at the high school level becomes pertinent to reduce dropout rates and inculcate a sense of belongingness in students with disabilities. These interventions would increase the meaningful participation of students with disabilities, which could help them transition to post-secondary education. Education focused on transition planning leads the way towards constructive adult outcomes (Test et al., 2009).

With the inclusion of diverse disabilities in the legal and policy framework, different interventions and support exist across disabilities. Disability discourse moved from charity and medical approaches to psycho-social and political approaches, including the right to self-determination.

Disability issues vary across disabilities. This study examines the enablers and barriers to access and participation of students with hearing impairment in post-secondary settings. Students and teachers were selected based on two project interventions for students with hearing impairments. Youth from the age of 17 to 25 were selected for this study. Due to a lack of programmatic interventions for youth with disabilities, there is less participation of youth in post-secondary educational and work settings. World Development Report (2007) notes five areas of youth transitions: continuing to learn, starting to work, developing a healthy lifestyle, beginning a family, and exercising citizenship. More attention needs to be paid to the vast array of issues faced by youth with disabilities that largely remain unanswered (World Bank, 2003).

For this study, we have researched the access and participation of students with hearing impairment. Some of the selected students with hearing impairment also have speech impairment.

Transition issues for students with hearing impairment

Young adulthood is usually defined as the period when a person attains individual responsibility. The United Nations defines youth as persons between the ages of 15 and 24, while India defines youth as those aged 15 to 29 in its National Youth Policy (2021). Most young people live in the developing world and are often excluded from most educational, economic, social and cultural opportunities (Groce,2004). The age generally encompasses higher secondary school to college, where students move from a protective environment to attaining responsibility and creating self-identity and political consciousness. While enrolment of students with disabilities is increasing, specific barriers hinder their participation. There are limited choices that are given to youth with disabilities when it comes to pursuing post-secondary education. Students with disabilities do not have access to most academic courses, assuming they do not fit the criteria and would not be able to study fields like science (Shevin et al.,2002). These issues must be addressed in the policies and programmes for youth with disabilities, where they must have a right to make politically conscious decisions with due systemic support. Groce and Kett (2014) argue that the needs of youth with disabilities are similar to those of their non-disabled peers.

Programmatically, youth with disabilities also often fall between the cracks. Mainstream development programmes for youth rarely include young men and women with disabilities. Programmes for disabled populations, where these exist, are often no longer inclusive, concentrating either on children with disabilities in schools or on the employment and social integration of adults with disabilities. Few address youths' unique social, psychological, educational, and economic needs. (Groce and Kett,2014, p.303)

A planned transition pathway is required for students with various disabilities as the needs and issues differ among different disabilities. The support students with hearing impairment receive for transition depends on the educational setting, degree of hearing loss, communication method, academic level, and the experience of those working with them. (Saunders, 2012).

Access and participation for students with hearing impairment in post-secondary education

There is an increasing need to investigate the barriers and enablers for the participation of students with disabilities. With the rising enrolment and pass-out percentages of students with disabilities, there is an increasing relevance of reforms in post-secondary education. Education after school enables the ability to participate in workplace settings. India Census (2011) reported that hearing impairment is the second most prevailing disability (19%). Aich and Mathew (2016) studied the educational concerns of students with hearing impairment in secondary and higher secondary classes in Mumbai. The study argues that creating a barrier-free environment through assistive devices is one way of overcoming language and communication barriers. High fees, difficulties in availing of concessions and facilities, lack of support and cooperation from administrative staff, and difficulty in correspondence were identified as barriers to participation. Majoko (2018) reported that participation in learning was increased when students with disabilities were provided with extra time and separate examination venues. It was further reported that students with disabilities continue to experience attitudinal, environmental and social barriers.

Bowen, S. K., & Probst (2023) acknowledge the growing and diverse populations of students with hearing impairment. The issues with the degree of hearing impairment and the need for communication support are to be catered to by teachers and families of students with hearing impairment. The study by Bowen, S. K., & Probst (2023) reported that the researchers and university teaching training programs need to pay more attention to this population of students with hearing impairment.

Policies and programmes for persons with hearing impairment

India is a signatory to the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD), which ensures and promotes human rights and fundamental freedoms for all persons with disabilities and promotes the training of professionals and staff working with persons with disabilities. India adopted the National Policy for Persons with Disabilities (NPPwD, 2006) before adopting UNCRPD. The policy ensures the right to development by creating an enabling environment, inclusion, health and vocational training access, and specialised rehabilitation services for children with disabilities. The first country report was submitted to the UN in 2015, where the functioning of acts, policies, schemes, and institutions concerning persons with disabilities was documented.

The Central Advisory Board of Education committee report on secondary education (2005) acknowledges the importance of universal access for students with disabilities and emphasises the need to move beyond the medical model of disability. The report also recognises the *"rising levels of democratic consciousness and social aspirations among young people in the age group of 14-18 years, particularly from the deprived sections of society, including girls and the disabled, for a greater share in the nation's political, social and techno-economic life".*

In 2016, the Rights for Persons with Disabilities Act (RPWD) was updated. Only seven disabilities were identified in the Rights for Persons with Disabilities Act of 1995. However, the scope of disabilities in the current legislation, the RPWD Act 2016, is comprehensive and discovers many disabilities and illnesses. Persons with Disabilities Act (2016) is the basic legislation that deals with the rights and empowerment of persons with disabilities. The act ensures the provision of education without discrimination and equal opportunity for sports and recreational activities.

The Government of India National Youth Policy 2021 recognises the importance of engaging with youth with disabilities. The policy enlists the following interventions for youth with disabilities.

Technology will be leveraged to enhance access to education for those who are physically unable to attend school or college due to distance or disability.

Ensures that students have access to counsellors and therapists specific to their disabilities.

Representation of marginalised youth in leadership initiatives.

Creating education materials in tribal languages and customising content to disability-friendly formats. Such resources will be available across secondary and higher levels of education.

Efforts will be made to establish simple, standardised procedures to obtain disability certificates.

National Policy on Disability 2006 ensures access to higher education, establishing Disability Centers in colleges, universities and professional institutions, developing appropriate skills for employability in the private sector, and providing assistive devices.

RPWD Act (2016) defines Hearing Impairment in two categories: "deaf means persons having 70 DB hearing loss in speech frequencies in both ears and "hard of hearing" means a person having 60 DB to 70 DB hearing loss in speech frequencies in both ears;

Assistance to Disabled Persons for purchasing/fitting of aids/appliances ADIP Scheme during the period of Fifteenth Finance Commission 1-04-22 to 31-03-26 Scheme (2022) provisions the following aids and appliances for persons with hearing impairment:

1. Various types of hearing aids, including BTE etc
2. Educational kits
3. Assistive and alarm devices
4. Any suitable aids and assistive devices as recommended by the expert committee from time to time

Table 1

Institutions working for persons with hearing impairment	
1	*Ali Yavar Jung National Institute of Speech and Hearing Disabilities (Divyangjan), AYJNISHD(D)* was established on 9th August 1983. It is an autonomous organisation under the Department of Empowerment of Persons with Disabilities (Divyangjan), Government of India, New Delhi. The Institute is at Bandra (West), Mumbai - 400 050. Regional Centres of the institute have been established in Kolkata (1984), New Delhi (1986), Secunderabad (1986) and Bhubaneshwar (1986- in association with the Government of Orissa). These centres meet local and regional needs regarding human resources development and services. The Regional Centre in New Delhi was shifted to Noida in 2015, and the Regional Centre at Bhubaneswar was shifted to Janla in 2008.

2	*All India sports council for deaf.* The website reports that the first national game for the deaf was played in the year 1972. All India Sports Council of the Deaf is a Sports Organization for the Deaf & Hard-of-Hearing. In 2001, at the Committee International of Silent Sports (CISS) Congress in Rome, by agreement of the International Olympic Committee and CISS, the name Deaflympics replaced the former name Deaf World Games. The Deaflympics were given the same status as the Paralympics Games and Olympic Games.
3	*All India Institute of Speech and Hearing, popularly known as AIISH,* is a pioneer national organisation advancing the causes of human resource development, research, clinical care and public education on communication disorders. The institute was established in 1966 as an autonomous institute fully funded by the Ministry of Health and Family Welfare, Government of India.
4	*The District Disability Rehabilitation Centre (DDRCs)* under Gramin Punarvasan Yojana (GPY), a programme of the Ministry of Social Justice and Empowerment, Government of India, was started in the year 2000. The objective of the programme is to provide total rehabilitation to persons with sensory (hearing and vision), physical and mental disabilities. Under this programme, 24 DDRCs were allotted to AYJNISHD(D). All 24 DDRCs, on completion of successful establishment and running for three years, are handed over to State Governments/District Administration/NGOs.
5	*Composite Regional Center (CRC),* CRC in Bhopal, is another service model for providing services to persons with disabilities under one umbrella, initiated by the Ministry of Social Justice & Empowerment, Govt. of India, established on 14th August 2000. This Center has been functioning under the administrative control of AYJNISHD(D) since February 2006. There is also CRC at Ahmedabad, Gujarat, established on 16th August 2011. In Maharashtra, another CRC was set up at Nagpur in 2020. On 8th April 2023, the CRC- Chhatarpur in Madhya Pradesh was inaugurated. All these CRCs function under the administrative control of AYJNISHD(D).

Note: The information is taken from the official websites of the organisations.

RATIONALE OF THE STUDY

Tech Mahindra Foundation (TMF) has programmes in place for persons with disabilities and intends to explore and understand more, so that research-based practices are followed for smooth implementation. At TMF, disability is the third major intervention area to empower All to Rise. TMF relentlessly ensures that Persons with Disabilities get social inclusion and equal work opportunities for a better future. This is done through the two premier disability programs- **ARISE+** (All Round Improvement in School Education for Children with Disabilities) and **SMART+** (Skills for Market Training for Persons with Disabilities). The Foundation mandates that 10% of all its beneficiaries are Persons with Disabilities. For the present study, we aim to research the population in two major cities of Maharashtra (Mumbai and Pune) where TMF is already working, which includes students from SMART+ centres for youth with disabilities.

For the present research, education would be seen in terms of input (access to resources), process (participation of students with disabilities) and outcome (achievement and self-determination of students with disabilities). India mainly focuses on quantitative data collection methods to assist and formulate policy, plans and programmes. However, there is scant research which takes a qualitative perspective to look into the voices of persons with disabilities as individuals who have their rights and aspirations to be recognised in society. While learning about persons with disabilities primarily, questions are asked to the significant others like parents, teachers or siblings (Singal, 2010). Developing countries often follow practices and research-based evidence from the West, which is often detrimental to their functioning as it does not include local experiences. Harber (2004) calls it "copycat educational ideology" with policy and practice typical of the North, which is introduced into cultures to which it is alien (Thomas, 2013).

Post-covid time has given us a new perspective on teaching and learning. According to research by Orsander et al. (2020) for Save the Children during the pandemic, 82% of parents/caregivers with disabilities reported reduced psycho-social well-being since the COVID-19 outbreak. A higher proportion of parents/caregivers of children with disabilities (28%) reported "no access" to education materials compared to 21% of parents/caregivers of children without disabilities. Parents/caregivers with disabilities reported a higher need for internet access (12%) than those without disabilities (9%). A higher proportion of children with disabilities (71%) reported needing home-schooling/learning materials compared to children without disabilities (51%.). There is a requirement to use diverse pedagogical techniques for online teaching (Dhillon,2022). This research also intends to explore the inclusion of Artificial Intelligence and skill development in mainstream education for students with disabilities.

Disability is a cross-cutting issue, and various ministries and organisations are involved. There is a need for collaboration and communication among all those involved in working for students with disabilities at all levels of education. This will help make outcome-based educational decisions and encourage the immediate support system of siblings, parents, teachers and peers.

Objectives

- To identify policies and State and Central govt plans for students with Hearing impairment
- To identify barriers and facilitators to participation for students with Hearing impairment in higher secondary education
- To evaluate the readiness of selected higher secondary schools for the transition to post-secondary education

Research questions

- What is the nature and extent of support available for students with hearing impairment?
- What technologies and methods are used by the school/centre to facilitate the learning of students with hearing impairments?
- What is the school/centre doing for the skill development and career counselling of students with speech and hearing impairment?

RESEARCH DESIGN AND METHODOLOGY

Sampling:

The convenience sampling technique was used for the present research. Two projects focussing on students' hearing impairments were selected for this study. The criteria for selection were based on the interventions provided in the higher secondary educational settings, which are skill- and market-based and focused on meaningful transition. Tech Mahindra Foundation is supporting these two projects.

The present research explores the nature of support available for students with hearing at the higher secondary level of education in the profiled schools in two major cities of Maharashtra (Pune and Mumbai). This also aims to look into the preparedness of higher education institutes,

This study uses both primary and secondary data for analysis. The policy framework of inclusion and disability in education is analysed by reviewing policy documents and other secondary data sources. A field study was carried out for an experiential understanding of the issues and concerns of students with disabilities in higher secondary classes. Data about access, participation, and learning outcomes was collected through personal interviews and questionnaires with students with disabilities and teachers.

See Annex II for School and Project Profiles

Data collection instruments

1. Questionnaires for students with disabilities

The questionnaire has an information proforma that captures the students' demographic profile, including type of school, name, age, nature of disability, gender, family income, parental education, and occupation. Then, it asks questions on access to infrastructure, learning materials and co-curricular activities. The questionnaire also attempts to evaluate the nature of support available for students with disabilities.

2. Questionnaires for Teachers

The teacher questionnaire looks into the issues related to accommodations for students with hearing impairment, challenges faced in teaching, teacher training, level of interaction with students and support systems required to ensure participation.

3. Interview schedule for students with disabilities

The interview schedule developed for this research contained questions on transition, further improvements, and the student's plans.

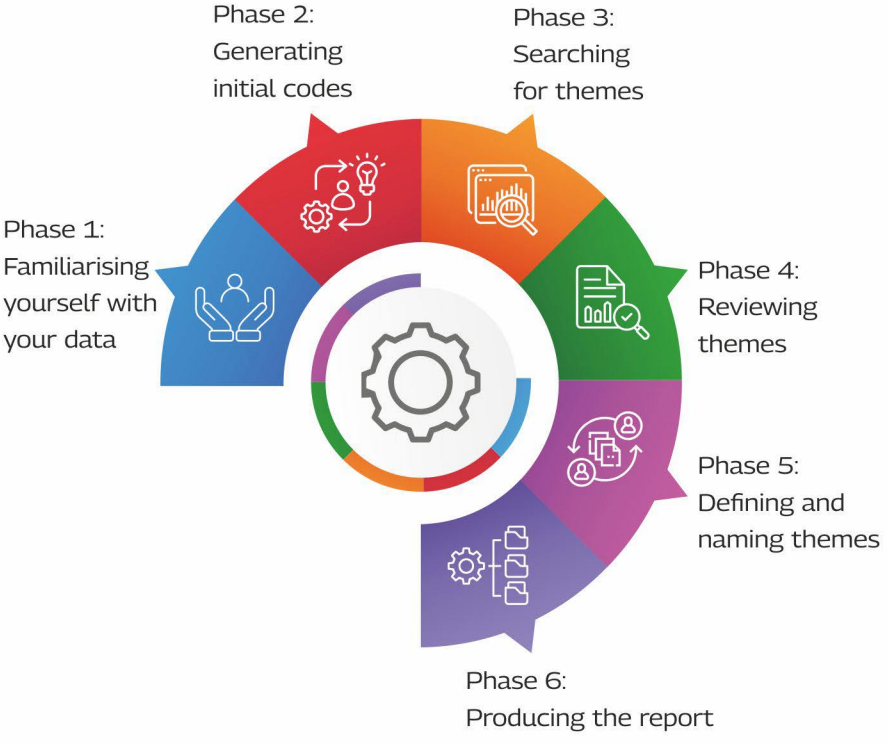
Operational definitions

- *Access* for this research is defined in terms of infrastructural facilities, academic opportunities and support available for students with hearing impairment.
- *Participation* in the study means active and meaningful involvement of students with hearing impairments in school events, interactions with significant others, and availing of facilities.
- *Transition* for this study is an outcome-based process that facilitates the students to find a trajectory for post-school planning.

DATA PRESENTATION AND ANALYSIS

Data was collected using open-ended questionnaires for teachers and students with hearing impairments. The qualitative open-ended questionnaire for teachers was administered to 14 teachers. Sixty-one students with hearing impairment responded to the questionnaire inquiring about the support and access available for students with hearing impairment. Thirty-two students with hearing impairment were interviewed to get more information about their participation in activities and future planning. Qualitative data was also gathered from open-ended questions from teachers and students with hearing impairment.

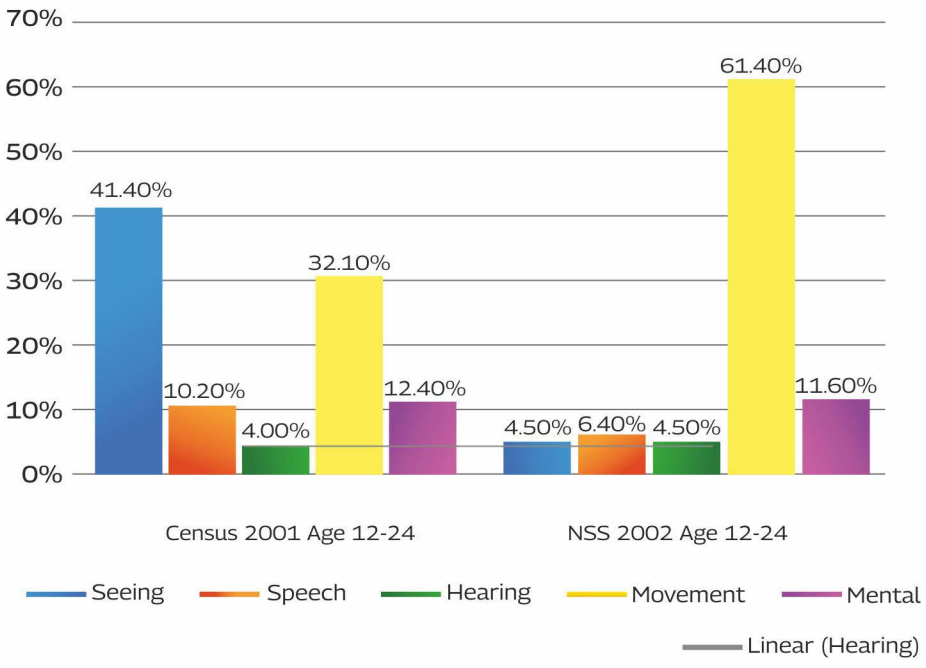
The thematic analysis approach by Nowell et al. (2017) is considered to interpret the multiple data responses received from teachers and students with hearing impairment in two Project intervention sites of TMF. Nowell et al. (2017) present six phases of thematic data analysis in a well-researched article; the phases are:



Secondary data from various sources was also analysed to understand the participation of students with disabilities in India.

Figure 1

Distribution of disability among young people

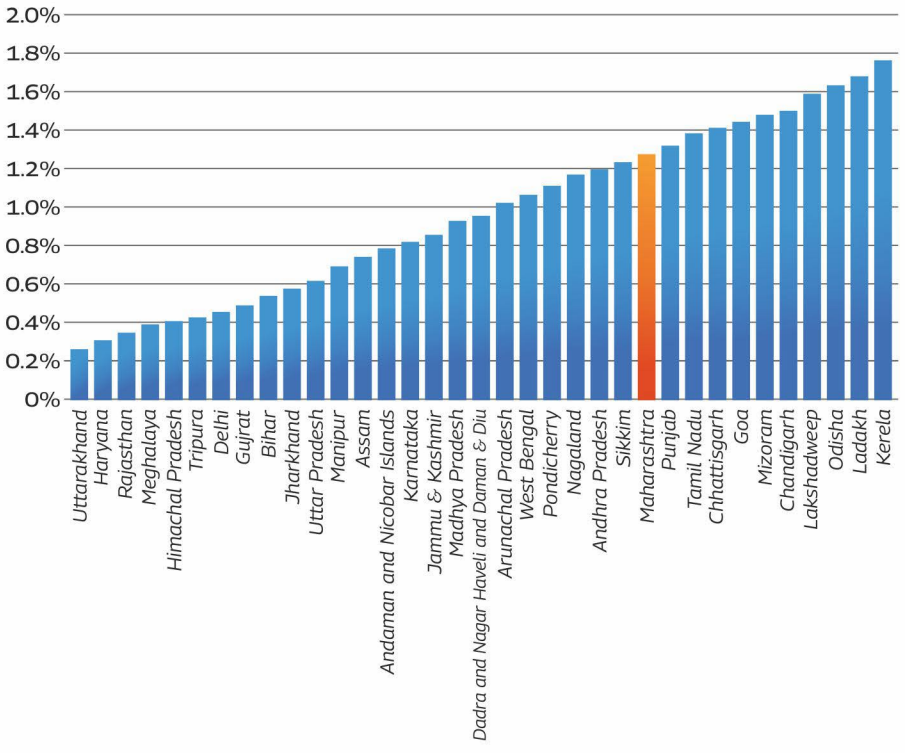


Note. Data from national sample survey (nss) round 58 and 76 and census 2001 as reported by Singal, N., & Jeffery, R. (2009)

Figure 1 presents data about the distribution of disability among young people aged 12 -24 from two nationwide surveys (NSSO and Census 2001) that provide the data for persons with disabilities. The graphs were generated in Excel for comparison and clarity using data from a study on secondary data analysis by Singal and Jeffery (2009). The data shows that hearing impairment is the lowest reported disability in both data sources.

Figure 2

The state & ut-wise enrolment of students with disabilities (from class I - XII) percentage

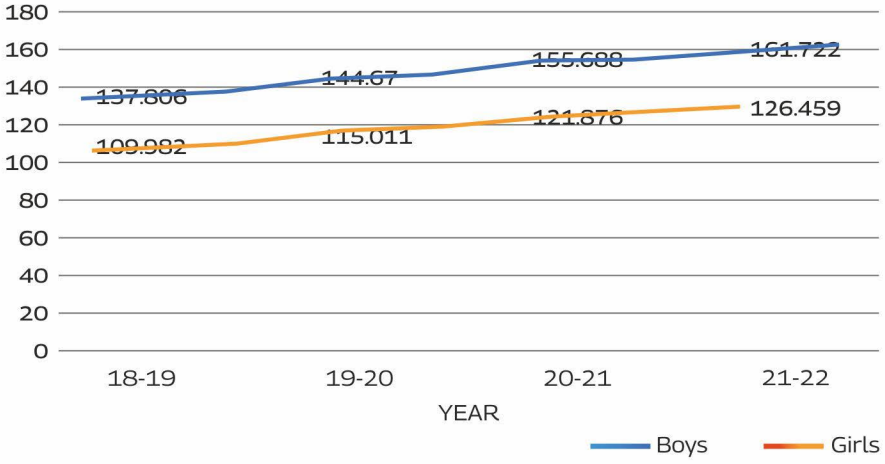


Note. Source - Unified district information system for education (UDISE) 2021-2022

Figure 2 shows the enrolment of students with disabilities from classes I to XII in states and union territories of India. The lowest enrolment was reported in Uttarakhand (0.22%), while the highest enrolment was reported in Kerala (2.36%); for this study, data was collected from two major cities of Maharashtra. The enrolment percentage in Maharashtra is 1.18 %. As per this data, Maharashtra ranks 11th in the enrolment of children with disabilities for grades I to XII.

Figure 3

Enrolment of students with disabilities in secondary schools



Note. Data source: reports from UDISE.

Year-wise enrolment of students with disabilities in secondary schools was taken from the UDISE reports for four years, from 2018-2019 to 2021-2022. The trend shows an increase in the enrolment of students with disabilities in secondary education for both boys and girls. However, the enrolment of girls with disabilities is lower than that of boys with disabilities for all four years. This shows lower rates of access participation of girls with disabilities in secondary education.

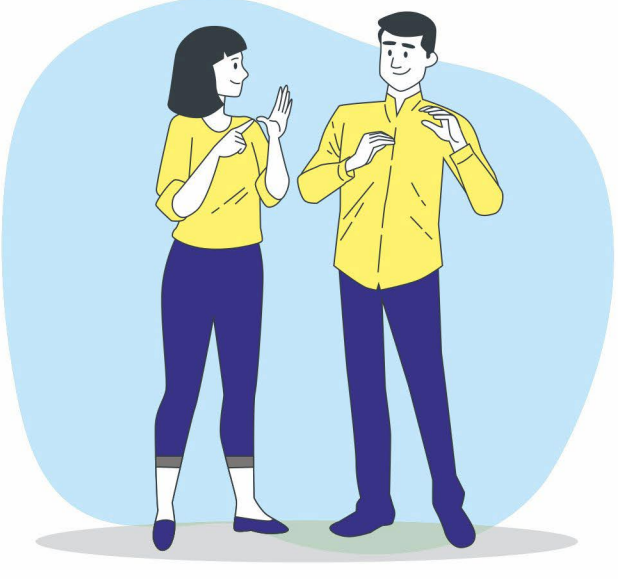
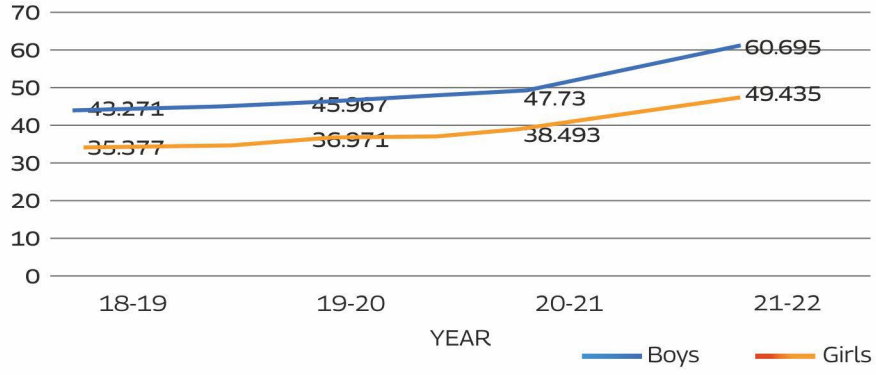


Figure 4

Enrolment of students with disabilities in higher secondary schools



Note. Data source: reports from UDISE.

Year-wise enrolment of students with disabilities in higher secondary schools is presented in Figure 4. The data shows an increase in enrolment for both boys and girls with disabilities in higher secondary education. However, if data is compared with Figure 3, the enrolment of students with disabilities is much lower in higher secondary schools. **This suggests that more planning and interventions are required at the higher secondary level of education.**

Demographic profile of students with disabilities

A total of 61 students responded to the open-ended questionnaire. The first part of the questionnaire contained an information proforma to collect the demographic information of students with hearing impairments from the two project sites.

Table 2

Family income of students with hearing impairment

Family Income	Percentage of Responses
₹ 10,000 - ₹ 20,000	63.93%
Less than ₹ 10,000	21.31%
₹ 20,000 - ₹ 30,000	13.11%
More than ₹ 30,000	4.64%

Table 2 presents the families' monthly income of students with hearing impairment. According to Pradhan Mantri Awas Yojana Scheme guidelines (urban, 2021),) a low-income group household is defined as a household with an annual income between Rupees 3,00,001 and 6,00,000. As per that criteria, 98% of families are low-income.

Figure 5

Percentage of disability among students with hearing impairment

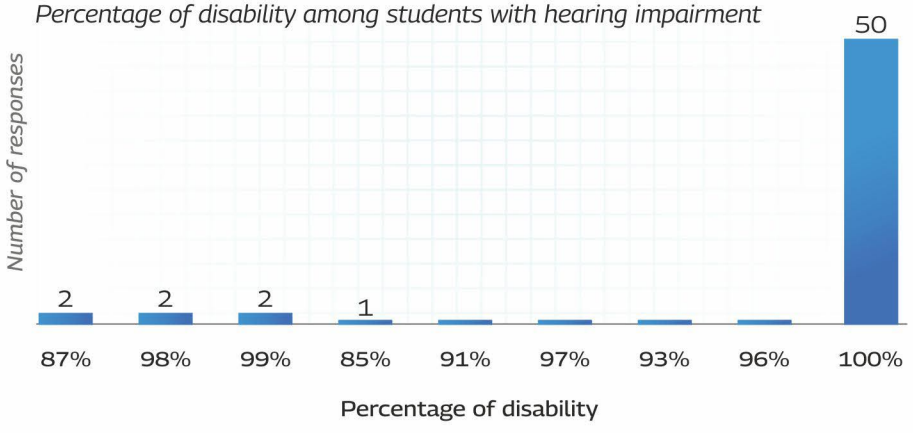


Figure 5 shows that out of 61 students who responded to the questionnaire, 50 students had 100% hearing impairments, and disability ranged from 87% to 96% for the other 11 students.

Table 3

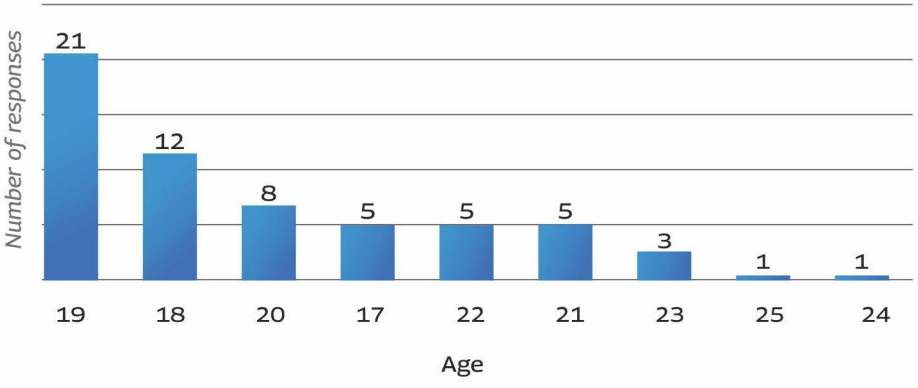
Parental level of education

Level of Education	Mother	Father
No education	14.75	13.11
Primary	16.40	13.12
Secondary	50.82	44.27
Higher secondary	9.83	26.23
Graduation	6.56	3.28
Post-graduation	1.64	0.0

Parental level of education is presented in five categories. Table 3 shows that approximately 50% of mothers and 44 % of fathers have only received secondary education, and 6% of mothers and 3% of fathers are graduates. The highest level of education among mothers was post-graduation, which was significantly low at 1%; the fathers had no degree in post-graduation.

Figure 6

Age of the respondents (students with hearing impairment)



The age of the respondents is displayed in Figure 6; the age ranged from 17 to 25 years. Most of the students were 19 years (21 respondents) and 18 years (12 respondents) of age.

Access to infrastructure and other resources

Access to infrastructure

	Excellent	Good	Average	Fair	Poor
Access to classrooms	4.92%	72.13%	11.48%	11.48%	0%
Access to canteen	1.64%	13.11%	40.98%	13.11%	31.15%
Access to playground	4.92%	13.11%	42.62%	6.56%	32.79%
Access to indoor games	44.26%	32.79%	9.84%	6.56%	6.56%
Access to other co-curricular activities	49.15%	32.20%	15.25%	3.39%	0%
Access to toilets	0%	11.86%	3.39%	64.41%	20.34%
Access to computer equipment	42.62%	9.84%	4.92%	4.92%	22.95%
Access to research/ practical laboratory	1.64%	55.74%	9.84%	3.28%	29.51%
Access to notice boards	8.20%	81.97%	4.92%	3.28%	1.64%

The level of responses for access to infrastructural facilities is reported in Table 4. The majority of students rated availability of access as good to classrooms (72.13%), co-curricular activities (32.2%) and notice boards (81.97%). Most responses for access to the canteen were average (40.98%) and poor (31.15 %). Access to computer equipment was rated excellent by most of the students (42.62%); however, 22.95 % rated it the same as poor. Access to toilets is mainly rated as fair (64.41%) and poor (20.34%). The students added to their choice of responses by stating that indoor games are well organised and reported that there are co-curricular activities every month. Less water supply and dirty water in the toilets were identified as barriers to access. One of the students added, *"Teachers teach very well, but classrooms are need to be more in number. However, the education which college provides is up to the mark."*

Most of the students agreed that they receive updated information from the notice boards displayed on all the floors of the school building. The students said they play chess and cricket and participate in drama and dance.

When asked about the infrastructural facilities and incentives provided to the students with hearing impairments, the teachers also confirmed that the learning is supported with facilities like Smart Boards, Simpler Notes, Indian Sign language trained teachers, Digital Content, Projector and hearing aids. When asked about the availability of the health centre in the school, 90.2 % responded that no health centre is available.

Accommodating students with hearing impairment

Table 5

Responses of students with hearing impairment on accommodations

	Yes	No
Do you use any assistive technology?	96.7%	3.3%
Do you get enough time to complete your paper for the examination?	100%	0%
Does the school/centre provide any career counselling sessions?	96.7%	3.3%
Do you receive any remedial classes?	90.2%	9.8%

Table 5 lists responses to questions asked to students with hearing impairment about the accommodations provided. In the selected project sites, students receive appropriate accommodations. The data also confirms the higher levels of accommodations being provided to the students with hearing impairments, which is also evident from the data as 96.7% of students reported using assistive technology. All the students (100%) agreed they were given enough time to complete the examination paper, 96.7% stated that the schools provide career counselling sessions, and 90.2% reported receiving remedial classes. The students and teachers agreed that Indian Sign Language (ISL) is used to communicate generally and in teaching-learning processes. Teachers were also asked about accommodations provided and challenges faced while teaching students with hearing impairment. One teacher responded, *"All students are treated equally. According to their needs, any educational, mental, social, economic problem is tried to be solved."*

Table 6

Teacher responses on special needs education and challenges

	Yes	No	Don't Know
Are you provided with any training on special needs education?	92.85%	7.14%	0%
Do you face any challenges while teaching students with disabilities?	78.57%	21.40%	0%
Do you have any special needs education teachers at your school/centre?	92.86%	0%	7.14%

As shown in Table 6, special needs education training was provided to 92.8 % of teachers, and 92.8% also agreed that special needs education teachers are available for students with hearing impairments. However, 78.57 % of teachers face challenges while teaching students with hearing impairment.

When questions about challenges were posed to the teachers, they explained the nature of challenges faced while teaching students with hearing impairments. One teacher expressed, *"Teaching is a stressful profession by nature, but it is even more so in the field of special education. Working with special needs students is a challenging situation even for teachers with a lot of academic and real-life preparation."*

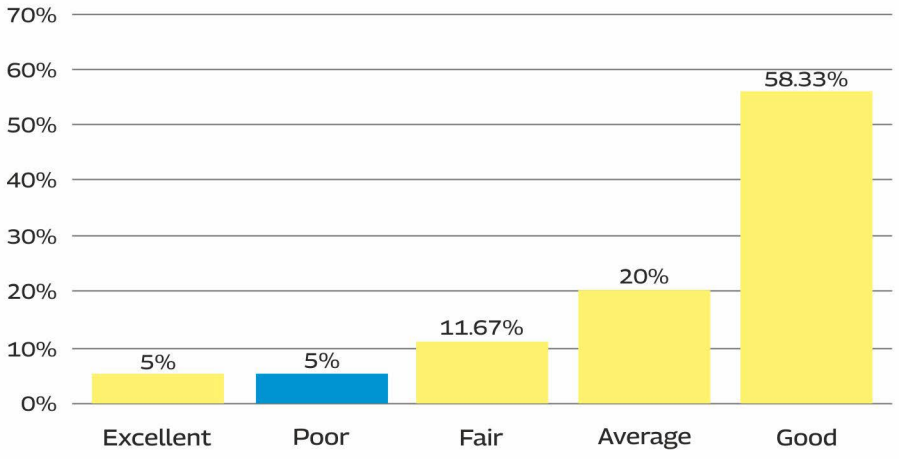
Although teachers are provided with training in special education, and 35% of the teachers had specialisation in teaching students with hearing impairments, they still face several challenges while teaching and dealing with students with hearing impairments. One teacher stated:

"Reasonably, deaf children have to be taught according to their ability to read language. To improve their educational quality, more focus should be placed on their linguistic development including challenges related to students' understanding level, vocabulary level, and grasping power. The study and teaching process is continuous until complete understanding is achieved."

Other challenges listed by the teachers included retention, emotional well-being, unavailability of skilled teachers, and weak language skills.

Figure 7

Level of satisfaction with the mode of lecture delivery



Students with hearing impairments were asked to rate their responses about their satisfaction with the current mode of lecture delivery. Figure 7 presents the responses of students with hearing impairments, where most students (58.33%) rate the delivery mode as good. Responding to the open-ended question, students added that lectures are delivered using ISL and visual aids.

Most teachers were clear on how to address the challenges and the kind of assistance and provisions required by the young students with hearing impairment. Teachers collectively felt that more focus should be on Indian Sign Language training, emotional and social well-being, lecture planning and delivery, and technical skills. Soft skills, Computer Training, Graphic Design, Digital Marketing, business development, self-empowerment and educational technology-related training for teachers and students with hearing impairments. One teacher noted, "*The needs of the students should be identified first. One should know what their capabilities are and continuous efforts should be made to raise their educational, mental, physical, and financial status.*"

Teachers reported using various strategies to assist and support students with hearing impairments within and outside the classroom, as evidenced in the statement by a teacher, "*During discussions with co-teachers, the important question of how to teach is explored, including ideas for activities and planning.*"

Students (as presented in Table 5) and teachers both reported that extra time is given to complete examinations and other tasks. As per the teacher's observations, additional provisions to assist the students with hearing impairments include remedial teaching, visual aids, counselling, and enabler and doubt-solving sessions.

Support received in teaching-learning processes

Students with hearing impairments were asked various questions about the support they receive in teaching and learning processes from the teachers and the school.

Figure 8

Level of support received from teachers

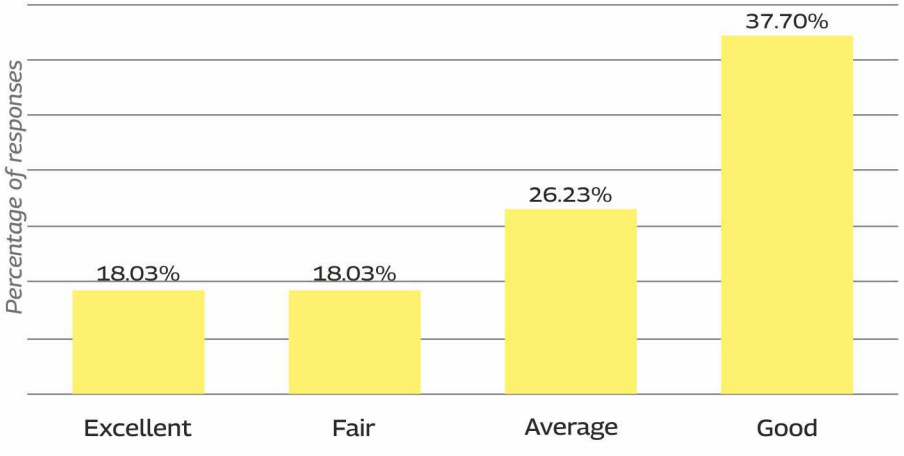
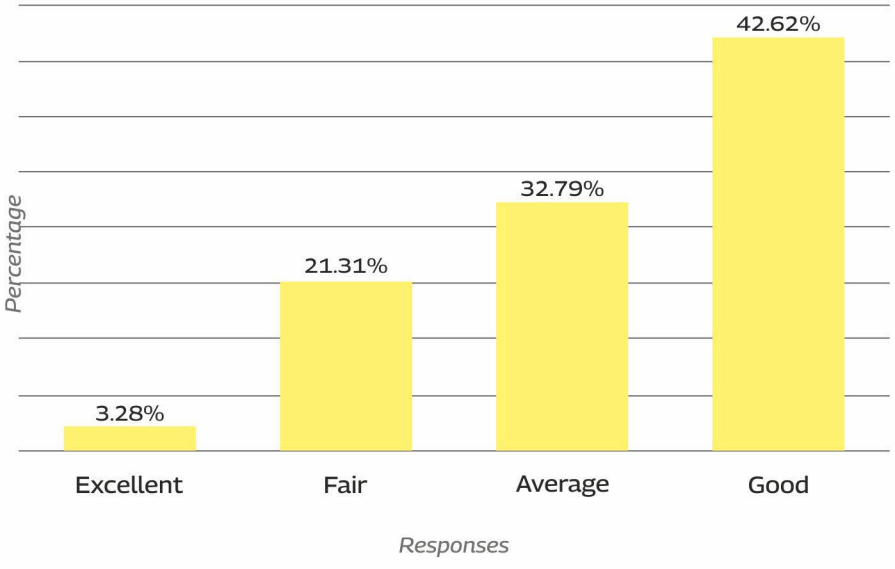


Figure 8 shows the level of support that students receive from the teachers. None of the students rated the support they receive from their teachers as poor. While 37.7 % rated the support as *good*, *average* support was rated by 26.23%, and *fair* and *excellent* support were rated equally at 18.03 %. This implies that the students receive proper assistance from their teachers.

Figure 9

Level of satisfaction with classroom flexibility (for example, flexible test schedule or flexible due dates for assignments)



Most students (42.62%) rated the flexibility in test schedules and other classroom processes as *good*. No student considered the classroom flexibility *poor*; 32.79% revealed it as fair, and 21.31% agreed it was *average*.

Figure 10

Level of support received in note-taking

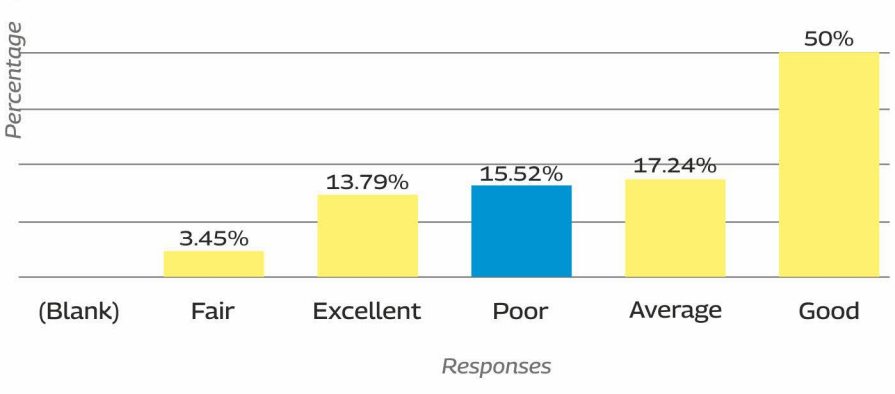
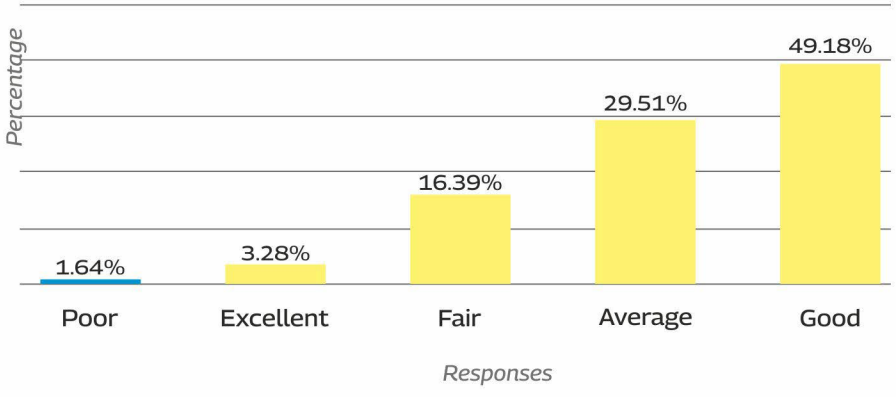


Figure 10 illustrates the responses received from students with hearing impairments about the level of support they receive in note-taking. Overall, the students (50%) term the support as *good*, followed by 17.24% who believe the support to be *average* and 13.79 % who termed the support as excellent. Some students believed the support they received in note-taking was *poor* (15.52 %) and *fair* (3.45%).

Figure 11

Level of support received in personal assistance



The question about the level of personal support in mobility and academic areas was asked in the questionnaire for students with hearing impairments. Figure 11 displays the responses on support received in personal assistance: 49.18 % perceived the support as *average*, 29.51% as *good*, 16.99% as *fair,* 3.28 as *excellent* and only 1.64 as *poor*.

Teachers reported similar responses by elaborating that the school provides students with 'study buddies', which helps the students to work in groups and brainstorm together. One of the teachers also stated that an audiologist is available to look into the needs of students and assist them.

Participation of students with hearing impairments

Questions on participation included using assistive technology, interaction with teachers, students, administrative staff, and other support systems that ensure the participation of students with hearing impairments.

Table 7

Use of assistive technology

Technology Used	Percentage of Responses
ISL App, Google Map	62.30%
Mobile phone	49.19%
No	1.64%
I don't know	1.64%

Students with disabilities widely use assistive technology to access information that helps them academically and socially. For this study, students were asked if they use any assistive technology, what kind of assistive technology they use, and where they get it from. Table 7 presents the percentage of responses that students shared about using assistive devices. Most of the students (62.20%) shared that they use ISL Applications and Google Maps for academics and social mobility, 49.19% reported that they use mobile phones to assist them, 1.64% stated that they do not use any technology, and 1.64% shared that they do not know about assistive technology. Students added that the internet helps them get academic information and emphasized the need for more technology-based teaching and learning facilities in the school.

Table 8

Nature of Interaction with the Administrative Staff

Good	63.34%
Less knowledge of ISL	30.00%
Average	3.33%
I don't know	1.67%
Staff is supportive	1.67%

Table 8 presents the percentage of responses received when students were asked about the nature of interaction with the administrative staff.

Although most of the students (63.34%) responded that they had good interaction with the administrative staff, 30% of students communicated that the administrative staff had less knowledge of Indian sign language, which is their primary means of communication. One of the students stated, *"I can't communicate with the staff because they do not understand what I am saying."*

Table 9

Level of interaction of students with hearing impairment with significant others

	Excellent	Fair	Average	Good	Poor
How do you rate your interaction with the course teachers?	5.08%	64.41%	22.03%	8.47%	0%
How do you get along with other students?	42.37%	32.20%	13.56%	8.47%	3.39%

Data presented in Table 9 illustrates the level of interaction of students with disabilities with their significant others in the school. When asked about their responses on the level of interaction with course teachers, none of the students responded poor to the question. A similar finding is shown in Figure 8.

One student mentioned, *"Teachers are available to talk; they have knowledge of Indian Sign Language and are interactive and supportive".*

64.41% of students rated the interaction with course teachers as *good,* 22.03% as *average*, 8.47% as *fair,* and 5.0% as *average.*

Mixed responses about interaction with peers were received. Generally, interaction with peers was rated positively, where 42.37% of students rated the interaction with peers as *excellent*, 32.20 % rated the interaction as *good*, 13.56% as *average,* 8.47 %as *fair* and 3.39% as *poor.*

Most of the students find their peers supportive; however, one student reported, *"I don't like all the students. I don't want to make new friends because they are against me and sometimes bully me. There is no communication between us; they only gossip and spread negativity.."*

Among a cohort of 61 students, four students expressed experiencing instances of mockery by their peers. Overall, the students found their peers supportive and shared a good level of interaction. Students mainly reported making new friends and having fun with their peers.

Figure 12

Interaction between family and teaching/non-teaching staff

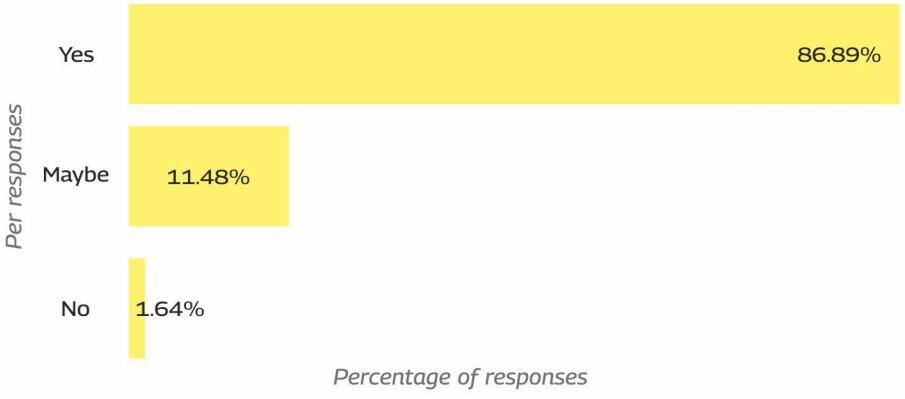


Figure 12 shows the percentage of responses from students with hearing impairments about the interaction between their families and teaching/non-teaching staff. 86.89% of students responded that there is some interaction between their families and teaching/non-teaching staff, 11.48% were unsure and responded 'maybe' to the question, and only 1.64 % reported no such interaction.

When asked how their families support them, all the students agreed that their families help them with mobility, financially, maintaining ties, and making realistic career choices.

Teachers were asked to share their thoughts about the support systems that are required to ensure the participation of students with disabilities. One of the teachers expressed, *"Students with disabilities should receive reasonable accommodation within the classroom. Schools should address each student's academic, social, and life skills needs. If needed, alternative learning methods should be used."*

Another teacher added, *"Teachers need to be flexible, compassionate and proficient in ISL, to teach students with hearing impairments. In addition, the institute should provide disability friendly resources to promote an inclusive environment."*

Transition issues

The interview schedule for students with hearing impairments focused more on the information related to the transition issues of students with hearing impairments, keeping in view their young age. This section also discusses the responses from the students and the teachers' questionnaires.

Table 10

Responses on place of stay

Where are you Staying?	Percentage of Responses
At a rented place	52.46%
With parents	45.90%
Hostel	1.64%

Table 10 shows that 52.46% of students stayed at rented accommodations compared to the 45.90% who stayed with their parents. These findings suggest that students with hearing impairments of the age group studied for the research have gained some individuality and sense of responsibility where they can be on their own. Responses were collected for the question on how the school environment is different from the higher secondary school. One of the Grade 12 student with 100% disability reported:

"During the COVID-19 pandemic, I experienced various issues while attending online lessons at school. My teachers lacked topic knowledge and neglected their students. Since joining TEACH, I am extremely satisfied with the pleasant learning environment and supportive teachers. I feel better attending TEACH than I did attending school."

Another student added, *"The environment here is different, but good. I receive a lot of input for ISL in college. Staying as a PG and attending regular classes have helped me to boost my confidence. The teachers in the college are good, and the environment is conducive to learning."*

Most students identified ISL, teacher support, focus on the English language and a better learning environment as factors different from their high school. When asked if the students have attended any skill development programme, 20 out of the 33 students interviewed responded that they have yet to receive any such training, and seven students shared that they have completed a computer-based training programme. Two female students reported that they are enrolled in beautician courses.

Students' plans for the future were inquired about through the interview schedule, and 85% of students reported that they were excited to join further studies.

When interviewed about their familiarity with the courses they plan to study further, 90% of students replied that they are clear about the courses they will pursue. Others needed clarification or wanted to do jobs immediately after passing higher secondary examinations.

Technology in teaching, big classrooms, outdoor activities, canteen facilities and availability of study materials are listed as general areas of improvement for students with hearing impairments.

Teachers responded to the question about how the school ensures career planning for students with hearing impairments. A teacher shared, *"Students are assisted in their job search, including both government and private positions. Communication tools are used to provide information on available opportunities."*

Another teacher added, *"The school arranges sessions with guest speakers, mentors, and career coaches, as well as career interest tests to understand students' aspirations and provide them with relevant skills.."*

When interviewed about their plans for the future, out of 33 students who participated in the interview, six students shared that they wanted to pursue careers in information technology-related jobs, and three students shared that they wanted to pursue a career in sports-related jobs. Other plans of students with hearing impairments included joining government jobs, fashion designing, teaching, the beauty industry and accounts.

CONCLUSION

Overall, the findings of the study provide valuable insights into facilitating the transition of students with hearing impairments to post-secondary education. This study aimed to investigate the issues related to access and participation, which facilitate the transition to post-secondary education for youth aged 17 to 25 years with hearing impairments. The study included two project sites, both explicitly catering to students with hearing impairments and had basic support systems in place. The study found that the students at these project sites receive appropriate support, with the students rating teaching and learning processes on the higher side. This level of support can be attributed to the project sites being accessible, providing support, and being disability-specific, with qualified teachers who have received training dealing with students with hearing impairments.

However, the study also highlights that the transition issues need to be more researched, with gaps in understanding the challenges faced by students with hearing impairments during the transition to post-secondary education. To facilitate successful transitions, further research is required to identify these challenges and provide trajectories for success.

Findings suggest a need for deliberations on sign language as this is the primary mode of communication for students with hearing impairments. Both teachers and students stressed the improvements in teaching through sign language and knowledge of sign language to their peers and administrative staff. The need to study the perceptions and experiences of peers and administrative staff is pertinent. Additionally, interventions in sign languages are recommended, along with more research into the communication and psycho-social issues of students with hearing impairments.

The study acknowledges that both project sites have inclusive policies and provide appropriate support to students with hearing impairments. However, the study recommends further research to understand the perception levels of students with hearing impairments in general schools and rural settings.

In conclusion, the study provides valuable insights into facilitating the transition of students with hearing impairments to postsecondary education. The study's findings highlight the need for further research to identify and address the challenges faced by these students and to provide appropriate support for their success. The findings from this study may also be compared to similar studies on other disabilities prevalent in educational settings.

REFERENCES

Aich, D. K., & Mathew, S. M. (2016). Educational Concerns of Students with Hearing Impairment in Secondary and Higher Secondary Classes in Mumbai, India. Disability, CBR & Inclusive Development, 27(4), 55-75.

Bowen, S. K., & Probst, K. M. (2023). Deaf and Hard of Hearing Students with Disabilities: An Evolving Landscape. Education Sciences, 13(7), 752.

Gathoo, V. (2006). Higher education for persons with disabilities. National Journal of Education, 10(2), 131-167.

Groce, N. E. (2004). Adolescents and youth with disability: Issues and challenges. Asia Pacific Disability Rehabilitation Journal, 15(2), 13-32.

Groce, N., & Kett, M. (2014). Youth with disabilities. Youth with Disabilities (2014) Working Paper, 23

Majoko, T. (2018). Participation in higher education: Voices of students with disabilities. Cogent Education, 5(1), 1542761.

Mathai, S., & Philip, H. (2020). Parental Involvement And Achievement Motivation Of Hearing Impaired Children At The Secondary Level. Educational Extracts, 106.

Ministry of Education (2022), Education of Divyang Children https://pib.gov.in/PressReleasePage.aspx?PRID=1882766#:~:text=In%20the%20year%202018%2D19,of%20the%20RTE%20Act%2C%202009.

Mishra, A., Nagarkar, A. N., & Nagarkar, N. M. (2018). Challenges in Education and Employment for Hearing Impaired in India. Journal of Disability Management and Special Education, 1(1), 35.

Mishra, A., Nagarkar, A. N., & Nagarkar, N. M. (2019). Education, Employment and Life of Individuals with Hearing Impairment. Journal of Disability Management and Special Education, 1(1), 38-43.

Mitra, S., & Sambamoorthi, U. (2006). Employment of persons with disabilities: Evidence from the National Sample Survey. Economic and political Weekly, 199-203.

Mitra, S., & Sambamoorthi, U. (2006). Disability estimates in India: What the census and NSS tell us. Economic and political weekly, 4022-4026.

Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017). Thematic analysis: Striving to meet the trustworthiness criteria. International journal of qualitative methods, 16(1).

Pradhan Mantri Awas Yojana, Housing for All (Urban) Scheme Guidelines 2021 https://pmay-urban.gov.in/uploads/guidelines/62381c744c188-Updated-guidelines-of-PMAY-U.pdf

Prakash, S. S. (2012). Inclusion of children with hearing impairment in schools: A survey on teachers' attitudes. Disability, CBR & Inclusive Development, 23(3), 90-111.

Rehabilitation Council of India. (2020). List of Approved Institutions. Available from: http://www.rehabcouncil.nic.in/writereaddata/ approved_inst.pdf.

Saunders, J. (2012). The support of deaf students in the transition between further education and school into higher education. Deafness & Education International, 14(4), 199-216.Chicago.

Singal, N., & Jeffery, R. (2009). Transitions to adulthood for young people with disabilities in India: Current status and emerging prospects. Asia Pacific Disability Rehabilitation Journal, 20(1), 15-40.

Shevlin, M., Kenny, M., McNeela, E. 2002. Curriculum Access for pupils with Disabilities: An Irish Experience. Disability and Society. 17(2):159-169.

World Bank. (2006). World development report 2007: Development and the next generation. The World Bank.

World Bank (2011). People with disabilities in India: From commitments to outcomes. Washington, DC: World Bank.

ANNEXURE I

Abbreviations

ADIP	Assistance to Disabled Persons for Purchase / Fitting of Aids and Appliances (Scheme)
BTE	Behind the Ear (hearing aid)
CABE	Central Advisory Board of Education
DB	Decibel
ISL	Indian Sign Language
NPPwD	National Policy for Persons with Disabilities
NSSO	National Sample Survey Office
PwD	Persons with Disabilities
TMF	Tech Mahindra Foundation
UDISE	The Unified District Information System for Education or
UNCRPD	United Nations Convention on the Rights of Persons with Disabilities

ANNEXURE II

School profiles

Profile school 1: TEACHEDU

TEACH was started in 2016 with the vision to *"build an equitable ecosystem for students with speech and hearing impairment"*. TEACHEDU supports SHI students who aspire to pursue higher education in the commerce stream. Additionally, academic support is provided to SHI students who succeeded in their SSC exams but need to improve in English and Maths. Beneficiaries for further education come from private and semi-government schools with minimal knowledge of English and Math, and this program enhances not only their academic skills but also their general development, encouraging them to pursue higher education and become work-ready.

TMF has been working with the TEACHEDU organisation in Mumbai for the past three years. TMF supports SHI students from the preparatory year to the HSC and final year B Com students. The intervention with these students is as follows.

1) TMF supports faculty who teach students core academic subjects such as bookkeeping, English, mathematics, accounting, and economics from the preparatory year to HSC.

2) TMF supports Psychologists who conduct individual and group sessions with SHI students and their parents who are dealing with psycho-social and emotional concerns. TMF provides psychological support to all students enrolled in the TEACH program and their parents.

3) TMF also provides advanced employability skills and placement assistance to SHI students who successfully completed their B Com graduation.

Profile school 2: Ranganathan Residential School

Pune-based Shri Sadguru Saibaba Seva Trust was established in 1990, and the trust started C R Ranganathan Residential School in 1993. The school aims to cater to speech and hearing-impaired students across Maharashtra. This is a co-ed school, and initially, the school got permission from pre-primary till 4th grade, then 8th grade. Eventually, they got an extension till 10th grade in 2010, to 12th grade in 2014, and then till the Third year of college. Currently, this institution supports early childhood development, pre-primary, primary, secondary, higher secondary and college.

Tech Mahindra Foundation's ARISE+ Project:

TMF started working with the school and college in 2019. That was the first year when they started with the college. Scope for ARISE+:

Supporting C R Ranganathan school (5th to 10th graders) with the science lab: TMF provided infrastructure, lab equipment, a science teacher, and a lab attendant.

Supporting competitive exam (UPSC, MPSC) preparation centre (for college-going students from 11th onwards): TMF supported salaries for a few part-time and full-time teachers and guest lecturers.

TMF supported the above for two years (i.e. till 2021)

During 2022-23, CRR College linked a few TY passed-out students to the DGS SMART centre. Where they went through the training and got placements. Also, the scope of competitive exams (banking, SSC MTS: Staff Selection Commission Multi-Tasking Staff Exam, SSC CHSL: Staff Selection Commission Combined Higher Secondary Level Exam, Other regulatory body exams, Railway, etc.) centre has expanded to other competitive exams along with UPSC MPSC. The CRR team proactively started linkages with organisations like YUNIKEE, MITCON - SIDBI, and Idea Foundation. It started with skills-based courses like Graphic designing, Mehndi & Beautician, advanced photography, Digital Marketing, Stock Market, Basic Computer courses, Essay writing, English, etc.

In 2023-24, TMF stopped supporting the science lab, as the lab is now entirely operational. TMF started supporting computer training for all the students from 5th grade onwards (till final year). Connecting interested students to the SMART centre is also ongoing.

The present research explores the nature of support available for students with speech and hearing at the higher secondary level of education in the profiled schools in two major cities of Maharashtra (Pune and Mumbai). This also aims to look into the preparedness of the schools for post-secondary transition.

ANNEXURE III

Questionnaire for students with hearing impairment

Dear Respondent,

We are studying the access and participation of students with disabilities in selected higher secondary schools. You are requested to fill in the required details of the Questionnaire. Kindly provide your background information first. Then read the questions and answer them in the space provided. Your answers are of immense value. The researcher will explain the questions.

Your effort to fill out this questionnaire is much appreciated. Thank you for contributing by taking the time to answer the following questions. Your opinions and experiences are critical to the development of this study.

The information provided will be kept confidential and only used for research purposes.

Name of the School/Centre _____

Type of School/Centre Govt. ☐ Private ☐

Other, please Specify _____

Name of the Student _____

Age _____ Class _____

Nature of Disability _____

Percentage of Disability _____

Year of Onset _____ Gender _____

Family Income _____

Fathers Education _____

Fathers Occupation _____

Mothers Education _____

Mothers Occupation _____

Below are some questions in the table; you are requested to read each question carefully. Rate your answer according to the options you find appropriate. There are five alternatives for each statement, please put the number of the alternative/response that you think is most applicable. In your response, write the numbers below the response, e.g. if one of your answers is 'Good' then write '4' for it. You are also requested to give reasons for your answer in the column provided for statements.

	1 Poor	2 Fair	3 Average	4 Good	5 Excellent	Please support your answers with relevant statements
How do you find access to classrooms?						
How do you find access to canteen?						
How do you find access to play ground?						
How do you find access to indoor games?						
How do you find access to other co-curricular activities?						
How do you find access to toilets?						
How do you find access to computer equipment?						
How do you find access to resea-rch/practical laboratory?						

How do you find access to notice boards?						
How do you find the access to other buildings (e.g. administrative offices)?						
How satisfied are you with current pattern of the delivery mode of your teachers?						
How satisfied are you with Classroom Flexibility (for example, flexible test schedule or flexible due dates for assignments)						
How do you rate the support you receive from the teachers?						
What is the level of support you receive in note taking,						
What is the level of support you receive in personal assistance e.g. note taking or helping with mobility?						
What is the level of support you receive in tutoring?						

Does the school/ centre have a health centre Yes/no If yes, then how do you find the access to the health centre?						
How do you rate your interaction with the course teachers?						
How do you rate the support you receive from the teachers?						
How do you get along with other students?						
How do you rate your interaction with the administrative staff?						

Where are you staying

a. Hostel ☐

b. With parents ☐

c. At a rented place ☐

How do you commute daily to your place of study?

Do you use any assistive technology?

Yes/No

If yes, please specify the kind of assistive technology and where did you get it from.

Do you get enough time to complete your paper for the examination?

Yes/No

What extracurricular activities do you participate in at your school/centre?

How do you feel your family assists you? *Yes/No*

a. Financially *Yes/No*

b. In maintaining ties *Yes/No*

c. Cleaning *Yes/No*

d. Mobility *Yes/No*

e. Making realistic career choices *Yes/No*

Please substantiate your answer with relevant statements

Is there any interaction between your family and teaching/ non-teaching staff? *Yes/No*

Does the school /centre provide any career counselling sessions? *Yes/No*
If yes, please share your experiences about the session/s

Do you receive any remedial classes? *Yes/No*
If yes, in what areas do you receive remedial classes

Questionnaire for teachers

Dear Respondent,

We are studying the access and participation of students with disabilities in selected high-er secondary schools and vocational training centres. You are requested to fill in the re-quired details of the Questionnaire. Kindly provide your background information first. Then, please read the questions and answer them in the space provided. Your answers are of immense value. The researcher will explain the questions to you.

Your effort to fill out this questionnaire is much appreciated. Thank you for contrib-uting by taking the time to answer the questions. Your opinions and experiences are crit-ical to the development of this study.

The information provided will be kept confidential and only used for research purposes.

School/Centre _____

Name of the teacher _____

Years of teaching experience _____

Highest educational qualification _____

Category: General ☐ SC ☐ ST ☐ OBC ☐

PWD ☐ Others ☐

Gender _____

Subjects teaching _____

Are there any students with disability/ies in your class/course? *Yes/No*

If yes, please provide the number of students and the nature of their disability/ies.

How do you accommodate students with disabilities in your class?

Do you face any challenges while teaching students with disabilities? *Yes/No*

If yes, what are they?

What infrastructural facilities and incentives are being provided to the students with disabilities in your school/centre?

What should be done to overcome teachers' challenges in teaching students with disabilities?

What level of interaction is there between students with and without disabilities?

Are you provided with any training on special needs education? *Yes/No*

If yes, please explain the nature of the training being provided.

Do you have any special needs education teachers at your school/centre? *Yes/No*

If yes, how do they assist in dealing with students with disabilities?

How often do you interact with parents of students with disabilities?

What does the school/centre do to ensure career planning for students with disabilities?

What do you think are the support systems that are required to ensure the participation of students with disabilities?

Interview schedule for SWDs in schools

Interview schedule for SWDs in schools

1. Is the higher secondary school environment different from your high school?
2. Do you discuss your educational needs with someone at the school?
3. Have you attended any skill development programmes at high school? If yes, please specify the nature of the programme?
4. What are your plans after you complete your higher secondary education?
5. How do you enjoy life at school?
6. Are you excited to join college?
7. Are you familiar with the courses you are planning to study further?
8. Do you have medical needs that require assistance? If yes, how do you address these needs?
9. Whom do you contact if you need any technical assistance?
10. Is a counsellor/ special educator available when you require any help?
11. What should be done to improve the quality of education?
12. What general areas need improvement? (e.g. doors, lighting, technology, admission policy, etc.)
13. What are your plans for the future?

TECH MAHINDRA FOUNDATION

Harijan Sevak Sangh Campus, Gandhi Ashram Kingsway Camp
New Delhi - 110009

Registered Office: Oberoi Gardens Estate, Chandivali,
Off Saki Vihar Road, Andheri (East), Mumbai - 400072

info@techmahindrafoundation.org

www.techmahindrafoundation.org, www.smart-academy.in