

# Infrastructural facilities for differently abled students in higher education

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## ABSTRACT

A study on different infrastructural facilities for differently abled students in higher education was carried out in Jorhat district of Assam. To ensure education of the differently able students it is important to make the environment accessible for them. To bring the students to the mainstream, we need more barrier-free environments in schools and colleges and public places too because higher education enhances employment participation and at the same time meets economic and social goals. The goal of barrier-free design is to provide an environment that supports independent functioning of individuals so that they can participate in all activities without assistance. To explore the. The students who are studying in different colleges in Jorhat area expressed that they face some difficulties with regard to infrastructural facilities like entrance gate with cattle bridge, no alternative entrance for differently abled students, lack of ramps, classroom at upper floor, slippery floor finishes and lack of accessible toilets which also hinder them in their education. Steps need to be taken to provide equal access to education to every category of disabled persons as an integral part of the education system. Lack of proper infrastructural facilities for differently abled students in institutions of higher education make it inconvenient to access the available facilities. Many students discontinue their study because of problems they face with regard to infrastructure. Convenient infrastructural facilities in institutions will help them acquiring higher education that leads to empowerment which, in turn, will lead to better employment opportunities.

## INTRODUCTION

Accessibility for all is recognized as a basic necessity and there are attempts all over the world to ensure this. Barrier free environment in an academic institution helps in enhancing the performance and also helps in making a person independent. Differently able persons requirement for a barrier free environment in terms of infrastructure

will be exclusive of making them comfortable, safe and independent.

One of the greatest drawbacks for the inclusive design of the built-environment is professional mindset and assumptions, encapsulated in the peculiarity between general and special needs. An important outcome for inclusive design should, therefore, be to both ease architectural disability and realize a greater measure of

social equity and justice.

Inclusive education demands great attention in the form of the infrastructure of the premises where buildings for edifying the children with special needs is built. Physical access to education is the most important aspect that requires to be barrier free. The first big problem that children with special needs face is when the school/college building requires them to go upstairs for attending classes. many of them require assistance, thus classroom for them need to be located on ground floor so as to help them move easily.

The government needs to be more pro-active and look into the various issues to allow differently-abled children better education, says Swapna Mukherjee (2012). Despite the efforts of the management of the University to establish a conducive environment for participation of persons with disabilities in all spheres of life on campus, PWDs still face worries in terms of accessing the physical infrastructure. Most buildings on campus do not have facilities such as ramps, lifts and so on. Some of the existing accessibility facilities are not designed according to the required Standards and that persons with disabilities continue to face difficulties in accessing them. The responsibility lies on us as students, staff and the general university community to help build a better environment for all.

All may seem well in the education scenario with RTE (Right to Education) ACT putting rest to scuffles but a major area that needs attention is the special education to come under umbrella of an empathic society and a conducive government. There is a lacuna, but the courage of the students and the support of teachers make special education a battle won but certainly more needs to be done to cement the crevices that can later develop into cracks.

Another problem with many educational institutes is that the toilets don't have facilities for the differently-abled. These buildings need to be well equipped. The are students with wheel-chairs and those who require special wash basins, handles etc. Naturally washrooms without facilities can be cumbersome for students. Adding to these worries can be narrow doors. Doors need to be wide enough to accommodate differently-abled children moving in their wheel chairs. Clutches and handles are also required on the walls so as not to let these children fall. Few are very sensitive to the environment around them and need to be guarded in a way so that they don't leave the school premises on their own.

## MATERIAL AND METHODS

To explore the infrastructural facilities available for the differently abled students in the institution of higher education, all the Government /Govt-aided colleges of higher education were considered. There are total of 15 Government /Govt-aided colleges in Jorhat town out of which 11 colleges have their own building and remaining 4 colleges are running in temporary arrangement which were not considered for the study. As such number of samples for this part of the study was 11.

## OBSERVATIONS AND ANALYSIS

Physical barriers existing in educational institutions are a great impediment in the way of education of the disabled. Section 45 and 46 of the persons with disability Act 1995 deal with the question of removal of barriers on roads and public places. To understand the status of accessibility provision in institutions of higher education data was collected on type of building, entrance, steps and stairways, doors and corridors, classrooms, toilets, signages and other facilities and are presented as follows:

Table 1 shows that cent per cent of the colleges were with clear landing space outside entrance and were with easy to open gates, large number of the colleges (75 %) had smooth and even path from gate to building and in 16.66 per cent college had resting place at their entrances.

Because entrances also serve as exits, some being particularly important in case of an emergency and because the proximity of such exits to all parts of buildings and facilities, in accordance with their design and function, is essential, it is preferable that all or most entrances (exits) should be accessible to, and usable by, everyone including those on wheelchairs and individuals with other forms of physical disability herein applicable.

Table 1 also depicted that all the colleges (100%) had steps. 45.45 per cent had handrail on one side and 27.27 per cent on both sides. Only (18.18%) had handrail height not less than 93 cm. In equal per cent of colleges (81.81%) steps were found uniform and with standard riser and tread, 18.18 per cent were found with tactile marking on the floor at every landing level, at start and end of steps and 36.36 per cent had slip resistant finish.

It is important that all steps should be uniform with standard riser and tread. Warning tactile marking were also important since all steps and landing level have same

color tiles then persons with visual difficulties may get confused which may cause accidents. Slip resistant finish is necessary because if steps are wet due to rain or other reasons then there is risk of slip and fall, even leading to life risk.

Table 1 reveals that 18.18 per cent college had ramp with standard width, another 18.18 per cent had ramp with standard slope, 9.09 per cent had one side and 18.18 per cent had side hand rail for support and 18.18 per cent have clear and barrier free landing space, in 36.36 per cent of the college buildings ramps were under construction.

Ramps are necessary to make a building disability accessible. Ramps allow persons with mobility problem in to move from one floor level to another. Data shows that only few of the colleges had ramps with standard width (not less than 1800mm) to enable to pass a wider range of building users including wheelchair users. The slope of a ramp as per standard laid down by CPWD

(Central Public Works Department, 2014) is 1 in 12 gradients and should have clear and barrier free landing space. This enable a person on wheelchair to use it easily and without assistance. 800mm high hand rail on both sides extending 300mm beyond top and bottom are also requirements of a ramp to provide safety and support to the physically disabled. These are necessary to prevent both sides of the wheelchair from slipping over the edge. It was revealed that 54.54 per cent of the institutions had ramp in their buildings and one of them was found with a ramp only in the entrance to the building, not to the upper floors. Rest were found with standard width and slope.

Table 2 shows that cent per cent of the colleges have doors without threshold, 90.90 per cent had doors with standard width including classroom doors which is not less than 900 mm between the open door and opposite jamb or the other leaf, 90.90 per cent were found outside swing of doors, in more than half (54.54%) of the institutional buildings doors were found with lever handles.

<b>Table 1: Percentage distribution of institutions according to physical accessibility with regard to entrance, steps and ramp (n=11)</b>			
Sr. No.	Physical facilities	Frequency	Per centage
<b>Entrance</b>			
1.	Gates (easy to open)	11	100.00
2.	Clear landing space outside entrance	11	100.00
3.	Smooth and even path from gate to building	9	75.00
4.	Resting place at entrance	2	16.66
5.	Cattle bridge	7	67.00
<b>Steps</b>			
1.	Steps and stairs	11	100.00
2.	Handrails on -one side	5	45.45
	both side	3	27.27
3.	Handrail height not less than 93 cm	2	18.18
4.	All steps are uniform	9	81.81
5.	Standard step riser and tread	9	81.81
6.	Tactile marking on the floor at every landing level, at start and at the end of steps	2	18.18
7.	Slip resistant finish	4	36.36
<b>Ramps</b>			
1.	Ramps in college building	6	54.54
2.	Ramp with standard width	2	18.18
3.	Ramp with standard slope	2	18.18
4.	Ramp with one side handrail	1	9.09
	Both side handrail	2	18.18
5.	Clear and barrier free landing space	2	18.18
6.	Building with ramps under construction	4	36.36

Table 2 shows that highest (90.90%) number of college building were found to have corridors with standard clear width, 9.09 per cent had resting place in long corridors. 81.81 per cent have contrast colour between doors and walls, 63.63 per cent have slip resistant floor finish.

Above data shows that highest number of college building had corridors with standard clear width which means it clearly had enough passage for wheelchair user. The width of a wheelchair body itself is about 650 mm wide. Allowing for the use of hands and arms outside the wheelchair, the passage must be as wide as 900 mm or more (central public works department). Only few had resting place in between for long corridors. There is also contrast colour between doors and walls of the corridor which help to distinguish between door and wall to help those with visual problem. Slip resistant floor which is recommended for safety was found in majority of the buildings.

An examination of the data on classroom depicted

that only 9.09 per cent of the institutions had class rooms only on ground floor, 63.63 per cent had furniture arranged in class rooms using equal spacing and right angle, 36.36 per cent had space for wheelchair turning, 100 per cent were found to have satisfactory number of doors in classrooms *i.e.*, at least two doors in each classroom, floors were with slip resistant finish in 45.45 per cent of the institutional buildings.

When the classrooms are at upper floors it is important to ensure easy accessibility for the persons with disability. But the findings of the present study revealed that there are only few institutions with ramp to reach every floor of the buildings. This can be supported by the study of Suleman and Hussain, (2014) who concluded that classroom favourable environment has a significant positive effect on the academic achievement students. They also recommended that classroom physical environment should be well-organized, equipped and facilitated.

Accessible toilets are a fundamental component of

Table 2 : Percentage distribution of institutions according to physical facilities with regard to doors, corridors, classrooms and toilets (n=11)			
Sr. No.	Physical facilities	Frequency	Percentage
<b>Doors</b>			
1.	Standard door width	10	90.90
2.	Outside swing of door	10	90.90
3.	Doors with lever handle	6	54.54
4.	Door without threshold	11	100.00
<b>Corridors</b>			
1.	Standard clear width	10	90.90
2.	Resting place for long corridors.	1	9.09
3.	Contrast colour between doors and walls	9	81.81
4.	Slip resistant floor finish	7	63.63
<b>Classroom</b>			
1.	Class rooms only at ground floor	1	9.09
2.	Furniture arrangement using equal spacing and right angle	7	63.63
3.	Wheelchair turning space	4	36.36
4.	Satisfactory number of doors in classroom	11	100.00
5.	Slip resistant floor finish	5	45.45
<b>Toilets</b>			
1.	Toilet facilities at each floor of multi-storey building	5	45.45
2.	Outward swing door direction	9	81.81
3.	Slip resistant floor	9	81.81
4.	Running water facility	9	81.81
5.	Flushing cisterns	2	18.18
6.	Knee space below basin	8	72.72

everyone lives, their availability can affect everyday activities of differently abled students. Data on toilet reveals that there were lack of accessible toilets in all the college buildings which became barrier for differently abled students. However, general toilets were available separately for girls and boys in all the selected institutions. But these may not be accessible for all the persons with various types of disability.

Table shows that 45.45 per cent of the colleges had general type of toilet facilities at each floor of multi-storied buildings. Majority of these toilets were found with outward swing door direction, slip resistant floor finish and running water facility (81.81). Very few toilets had flushing cisterns. 72.72 per cent of these toilets were found with wall hung basin with knee space.

Regarding toilet facilities data pointed out that none of the colleges had special toilet for students with special needs. Further, it was found that toilet facility was not available in each floor of the multi-storey buildings. This may be a barrier to the differently abled students. Most of these toilets had doors that swings in outward direction which was recommended by Opening doors to everyone (Information, Guidance and Training on the Americans with Disabilities Act), 2017 because it can be opened from outside during emergency. It can be noted that slip resistant floor finish was observed in majority of the cases, which help in preventing accidents like slip and fall. Flushing cisterns were available in only a few toilets but running water was available in majority of the toilets of

the colleges. Knee space below basin is a requirement for a toilet to be made accessible for wheelchair users. Large number of the toilets for students were found with knee space below basin. This may be because it is a common trend and also economical

Table 3 shows that all the colleges (100%) had signage with bold, legible letter in contrast colour and texture and at convenient height, 90.90 per cent of these signage were clearly visible from distance. However, standard symbol was observed only in 36.36 per cent of the colleges and only 18.18 per cent had audible signage like loud speaker and bell.

According to CPWD,1998. The main purpose of signs should be to provide a clear designation of places, warnings and routing information. It is good to observe that all the colleges used some signages for routing information and designation of places. But out of these only a few of them used standard symbols. Standard symbols are self-explanatory, easy to understand and internationally accepted. It is worth mentioning that audible signage like loud speaker and bell were in use in some of the sample colleges. This is helpful for those with sight disability. A person who is partially sighted needs contrasting texture alongside walkways and audible signs for dangerous areas. Signs in contrasting colours and embossed is distinct relief to allow visually impaired persons to obtain the information they contain by touching them. Signages observed in the colleges were in contrasting colour but none were found embossed. Signs

Table 3: Percentage distribution of colleges as per signages and other facilities available (n=11)			
Sr. No.	Signage	Frequency	Percentage
1.	Bold and legible lettering	11	100.00
2.	Standard symbols	4	36.36
3.	Contrast colour, texture.	11	100.00
4.	Signage are at convenient height.	11	100.00
5.	Signage clearly visible from distance	10	90.90
6.	Audible signage (announcements, bell)	2	18.18
	<b>Other facilities</b>	Availability of facilities	Percentage
1.	Drinking water facilities	11	100.00
2.	Common room	9	81.81
3.	Library	11	100.00
4.	Canteen	11	100.00
5.	Auditorium	11	100.00
6.	Conference room	11	100.00
7.	Indoor playground	3	27.27
8.	Placement cell	3	27.27

should be useful to everyone, easily seen from eye level, readable by moving the fingers and well lighted (Armah and Barima, 2016; Cherian, 2013 and Hemmingssons and Borell, 2000).

Table 3 shows in cent per cent of selected colleges were found to have all facilities like drinking water, library, auditorium, conference room and canteen facilities within the college campus which is followed by 81.81 per cent were found to had common room facilities whereas only 27.27 per cent were found other facilities indoor playground, placement cell etc. After observation we came to know that within these facilities only few colleges had indoor playground and common room facilities which is accessible for everyone whereas most of facilities within these college building lack accessibilities. Sharma and Kohli (2018) states that, inaccessible educational environment which includes library facilities, drinking water facility, lightening pose threat in the path of education of disabled children. Inadequate provision of facilities and materials to mainstreamed educational institutes would lead to poor academic performances of students with special educational need (Fareo and Olakunbi, 2012; Armah and Barima, 2016; Cherian, 2013 and Hemmingssons and Borell, 2000).

### Conclusion:

Institution of higher education with proper infrastructure for differently abled are very few. Providing only a ramp is not enough to help such a student to access the available facilities for higher education. Many students discontinue their study because of problems they face with regard to infrastructure. The goal of barrier-free design is to provide an environment that supports independent functioning of individuals so that they can participate in all activities without assistance. This will help them acquiring higher education that leads to empowerment which, in turn, will lead to better employment opportunities.

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