

Autism Boarding School in Sirakol, West Bengal, India

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ABSTRACT

Autism Spectrum Disorder (ASD) is a complex neurological disorder. It is usually detected early in 2-year-olds but some cases might go undetected for a long time. Since it is a neurological disorder, it doesn't affect intelligence of the child but rather hinders its development. With the help of therapy, an autistic child can live a full normal life and hence a proper school is required. There is no cure for it and it is a life-time disorder. An estimated three million people live with autistic spectrum disorder (ASD) on the Indian subcontinent according to the 'Autism Spectrum Disorder-An Indian Perspective' research published in 2018. In a country where non-visible disorders are considered fake or mental, without proper therapy, training and education, an autistic person can find it very hard to deal with the normal world. Autistic children require one-to-one attention. Boarding schools can provide a safe and rich environment for these children. While autistic children can very well attend and excel in a normal school, the schools and teachers are not equipped to handle the students. The main aim of this research is to develop a design for a residential school for autistic children to provide them with a safe environment to grow and nurture themselves.

BACKGROUND

In the early 1980's, there began a slow growth of 'awareness' of autism among few professionals, such that they were acknowledging the existence of this condition. However, it was widely believed that it is a kind of mental illness. This confusion between mental illness and autism and psychiatric illnesses and autism hindered individuals with autism from getting treatment that was appropriate to their needs.

Till 1980, there was not much awareness about Autism in India. Very little to no information was available. Anyone with autism or its symptoms was given a diagnosis of mental retardation. Remaining were diagnosed as having 'Minimal Brain Dysfunction', were called slow learners or regarded to have behaviour problems. If attended school, children with autism mostly were put in facilities for the mentally retarded, where the same intervention methods were provided to all children. Unlike in many western countries, there was no law mandating that child with special needs receive services. In many cases, children with autism were simply not allowed in special schools at all because of challenging behaviours that teachers felt ill equipped to handle.

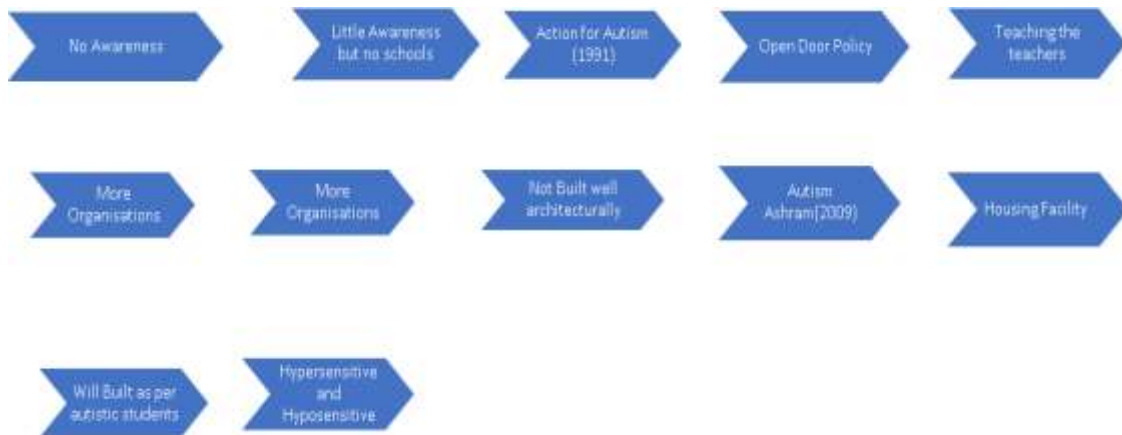
Started in 1991, Action for Autism (AFA) provided support and services to individuals with autism and their families. With just one teacher and two students, in March 1994, a special school for autistic children was started on an experimental basis called Open Door. AFA also started a Teacher Training Programme due to the shortage of trained professionals to educate children with autism and to serve the increasing demand for its services.

By the late nineties a few autism only organisations had initiated in different parts of the country, and schools as well, main among them was Asha in Bangalore, Ashiana Institute for Autism in Mumbai, Communication DEALL in Bangalore, Development Centre for Children with Autism (DCCA) in Hyderabad, Priyanj in Mumbai, and We Can in Chennai. 'Forum for Autism,' a parent support group started in Mumbai.

At present, there are more than 40 organisations, special schools, parent support groups, and speech as well as behavioural therapy centres to help people affected with autism. Most of them are well staffed and have achieved good results. But most of them located in either apartment buildings or just have small ground surrounding the small structure. Though there has been a huge progress in treatment as well as facilities provided for autism, there are still many regions in the country where we are lacking.

awareness. Due to a lack of awareness, there is a huge data gap in the actual cases of ASD and the number which is reported.

With growing awareness and need, schools will be developed as per certain guidelines and not just interiors, but the exterior area of school such as landscape, outdoor therapy area, etc. Also, the school will not only accommodate autistic children but rather than its prominent two types of students – hypersensitive and hyposensitive.



INTRODUCTION

What is Autism?



Image 1-Autism (<https://fordhamobserver.com>)

Autism is a non-curable developmental disability. Just like other disabilities like blindness or deafness, a person with autism lives a different life with different needs as compared to normal humans. Just like other disabilities, they too have full right to attend a normal school in cases of mild autism. But with medium to severe cases of autism, they might require a full time one on one care taker which other schools cannot provide since the care taker needs to be thoroughly trained for their own as well as the child's safety reason. Therapy, interaction and care can help them to function as normal individuals in their later life. Some might still require one to one care, but improvements are seen due to therapy and care in childhood.

Schools For Autism.



Image 2 -Student Teacher (<https://parenting.firstcry.com>)

The need for certain type of mute interiors and one on one care takers calls for a special school for autistic children. Meltdowns are another common aspect which comes with autism. Without trained care takers or teachers it can be dangerous for the autistic child as well as others near him. It usually occurs when their senses are overwhelmed by their surroundings such as huge crowd, constant noise, too much light. But like all beings in the world, autistic students have to face the outside world at some point or the other, hence schools are important as it will not only protect them from outside world while studying but also introduce them to the outside world slowly without having to cause meltdowns. Children on the autism spectrum tend to thrive on repetition and routine. Teachers can help make a student's educational life as stress-free as possible by understanding the child's routine and sticking to it as much as possible. Doing so could very well prevent a tantrum, meltdown, and unnecessary stress. Consider scheduling each classroom day the same way to form your own classroom routine, as studies have shown that consistent routine benefits all children, not just those on the autism spectrum.

Boarding Schools for Autism

Autistic students are very particular about their routine and people with whom they interact. There can be a lot of disturbance of traffic, construction, market which might act as triggers for meltdowns, barriers for going to school and returning, etc. These disturbances are beyond one's control. But in a boarding school, the whole environment can be controlled. Architecturally well-built boarding school can help students learn in environment aimed specially for the well-being of the autistic children. It can also eliminate any other possibilities such as sudden interaction with new people, changes in their normal route, etc. As compared to normal schools, the surrounding objects, noise, people stay controlled and constant in boarding schools. Thus, the students can learn better with ease and safely to become independent in life.

Autism boarding schools are programs that provide a home-like therapeutic environment for teens on the spectrum to grow and learn new independent living skills. By functioning on different areas of their lives – academic, social, and vocational – students are ready to create positive and lasting change. Skilled coaches and therapists provide in-the-moment feedback and encouragement to guide students toward their specific treatment goals. A child who is dropped off in the morning and picked up at three o'clock by Mom isn't challenged to develop the same peer skills as a kid who lives with other students 24 hours a day on campus. Residential school is a transformative experience in learning to speak with others

CASE STUDY CONCLUSIOS

Case Study Findings

School and Parameters	Advance School	Hazelwood School	Development learning center	Northern School
Location	Cairo, Egypt	Glasgow, UK	USA	Australia
Architect	Magda Mostafa	Alan Dunlop	USA Architects	Hede Architects
Area	3600 sq.m	2810 sq.m	1507 sqm	7000 sqm
Climate	Arid Dessert	Temperate Oceanic	Humid Subtropical	Mediterranean
Total Students	70	60	250	144
Student: Teacher	3:1	5:1	3:1	3:1
School Type	Resi. School	Resi. School	School	School
Design Type	Behaviour	Behaviour	Neuro-Typical	Behaviour
Outdoor Area	Sensory Garden and enclosed swimming pool	Enclosed swimming pool	Mock restaurants, enclosed swimming pool	Bike trails and sand pits
Transition space	External	Internal	Internal	Internal
Color Tones	Muted	muted	Muted and Normal	Muted
Internal environment	Behaviour wise	Behaviour wise	Neurotypical	Behaviour wise
Circulation	Normal	Mixed	Curved	Curved
Sensitivity Division	Clearly Organised	Clearly Organised	Not Clearly Organised	Clearly Organised
Green Spaces	Courtyard	External	External	Courtyard
Ambience	Garden School	Street View	Neurotypical Street View	Street View

Case Study Conclusion

Advance School in Cairo, compartmentalised every space keeping it clean and easy to access for the autistic students. It gives them space to explored while going from one space to another without havingto leave their comfort of sensitivity.

Hazelwood School in Glasgow is built with single street view design with treated acoustics. The closed planning compacts the spaces making them easier to find and used whenever needed.

Development Learning Center in USA takes a neurotypical approach in teaching the children with autism with the idea that early introduction to neurotypical environment can help them in future.

Northern School in Australia is built in connected street pattern giving students ample of space to explore internally. The classrooms coded by colours and escape spaces help the children to be calm and ready to educate themselves.

LITERATURE REVIEWS

1. Autism Spectrum Disorder - An Indian Perspective

Published in March 2018, it says Socio-cultural factors play a major role in early identification, diagnosis and management of Autism Spectrum Disorder. There is a need to increase awareness of ASD

and its effects on families in order to accommodate early detection and intervention. Also, the need of the hour is to expand appropriate evidence-based services in health, educational and social sector. Strong policy initiatives can help people with autism reach their maximum level of potential and dignity, as well as reduce the gap between their normal and 'normal' normal.

It gives brief idea about the condition of Autism in India such as historical perspective, diagnosis, tools such as Modified Checklist for Autism in Toddlers (M-CHAT), Autism Spectrum Quotient (ASQ), Social Communication Questionnaire (SCQ), Social Responsiveness Scale (SRS), Autism Behaviour Checklist (ABC) and Social Communication Disorder Checklist (SCDC). It also talks about the treatment considerations, challenges faced by parents as well as the individual itself.

2. Space Matters: Classroom acoustics and repetitive behaviours in preschool children with autism

Published in September 2018, the research has observations of four classrooms, two classrooms from each of the two schools. These classrooms were separated into quiet and noisy according to dB guidelines defined by WHO. They were considering behaviour such as repetitive movement, repetitive speech, covering the ears, hitting response, produce loud sounds, complaining and blinking of eyes.

When the data for all four classrooms was combined, a significant positive connection was found between the decibel levels and complaining, repetitive speech, hitting, producing loud sound, repetitive motor movement, blinking eyes and covering ears. As the levels of decibel increased, the occurrence of the behaviours also increased. There were also differences in behaviours expressed depending the classification of the classroom into either quiet or loud. The loud classrooms had notably more occurrence of complaining, repetitive speech, producing loud sounds, repetitive motor movement, and covering ears than the quiet classrooms.

Overall, the findings suggest that attention given to acoustic design and few changes to existing environments are beneficial to provide a supportive educational environment.

3. The impact of biophilic learning spaces on student success

Published in October 2019, the research presents findings of data collected from a biophilic classroom and a control classroom, where the physical design of each space varies—one is a traditional classroom while the biophilic classroom is enriched with views to nature, dynamic and diffuse daylight and biomorphic patterns. They used by measure of stress, comparing academic performance, student surveys, and student and instructor interviews.

Biophilic classroom teacher was asked to refrain from posting excessive teaching aids on the classroom walls to give students some visual relief. They took in considerations of three points – view to nature, diffused lighting, biomorphic forms and patterns.

Controlled classroom was kept as it is except for the removal of sound absorbing carpets. No restrictions were made on teachers or the content or the walls.

The surveys were of stress faced by children, interest in learning and maths test result. The average test score gain was 3.3 times higher in the biophilic classroom. The teacher also from colleagues about the aggressive behaviour of these students in classes before and after her class, but didn't see that behaviour in the biophilic classroom. Through their responses in surveys, interviews and biometric testing, students in the biophilic classroom were less stressed than students in a control classroom.

4. The Influence of Sensory Gardens on the Behaviour of Children with Special Educational Needs

Published in January 2011, it talks that the number of individual features, the number of activities undertaken and the time spent engaged in this activity by the users is not dependent on the total area of the zone, nor did it relate to the median time spent there per user, but rather on what enabled the usage was the functioning of the individual features and access to them. Good pathway design and planning that connect school buildings to the sensory garden, as well as having the ability to move around the garden, promote educational development and social skills. This finding shows that users, especially

students, enjoy having a functional and a variety of individual features positioned, bordering on an accessible and continuous pathway.

It shows that students with special needs do not appear to care about the aesthetics of a garden as they use the features the way they want to use them. It gives a major change of perspective for landscape designers to design the sensory gardens as per the activity rather than the senses separately.

ARCHITECTURAL INTERVENTIONS

Biophilic Architecture



Image 3 – Biophilic center in a school (<https://associateddevelopmentsolutions.com>)

Along with healing properties, nature also helps in growth of human beings. Biophilic architecture helps to bring the same nature closer to the user within the comfort of architectural interiors.

Abundant light and space, direct contact with outer vegetation and landscape, building nature-human relationship are all parts of biophilic architecture.

In today's period where concrete jungles are more than natural jungles, biophilic architecture can help autistic children get closer to nature and learn within by allowing them to feel close to nature first. Anxiety, meltdowns, concentration, etc can all be improved due to being closer to the natural environment

Acoustics



Image 4- Acoustic Panels(<https://soundzipper.com>)

Acoustics can help children focus on learning and concentration. Studies have proven that students study better in acoustically treated classroom than normal classroom.

ASD students are very sensitive to sound intensities. Hence acoustics need to be considered in all the places of school. Constant noise, loud sounds of vehicles, construction noise can affect negatively on autistic students. It may not only increase their anxiety and frustration but also give rise to new reactive behaviour which might not be safe for them. Reducing the reflection of sound, increasing absorption of sound can benefit them greatly. Sound absorbing materials, sound barriers, avoiding echoing can greatly help in their day-to-day life. But places should be provided where they can experience these sound to be able to fit in the normal world when they get out of school.

Landscape



Image 5 - Sensory Garden (<https://dg2design.com>)

Exterior grounds of school can be helpful for students when treated with landscape such as pauses and patterns. Sensory gardens, gardening, break places can aid to calm the students. It will also encourage children to go and explore the outside environment.

A sensory garden is a 'self-contained area that concentrates a wide range of sensory experiences. Its main aim is the overall develop of senses and calming those in need. Children are encouraged to be independent at schools. Therapy and basic education are provided in all autism schools. A sensory garden is a garden environment that's designed with the aim of stimulating the senses. This stimulation occurs courtesy of plants and also the use of materials that engage one's senses of sight, smell, touch, taste, and sound. These styles of gardens are popular with and beneficial to both children and adults, especially those who have sensory processing issues, including autism and other disabilities. To get the maximum use from a sensory garden, it is important to take into account for whom the garden is primarily intended which is in this case is 'autistic children'.

Interiors



Image 6 - Muted and textured interiors (<https://www.archdaily.com>)

Autistic students can be easily distracted. Meltdowns can be triggered due to bright colours. Bright colours, too much light can pose as a problem for autistic students. Safety is also a concern for these students. Soft floors, crash pads, material of furniture can help in safety. Tactile walls can stimulate touch and visual sense. Colours can help them associate the place with its identity. Instead of using bright street bulbs to light the passages, dimmable batten lights can be used to light pathways without over stimulating the autistic children.

Circulation

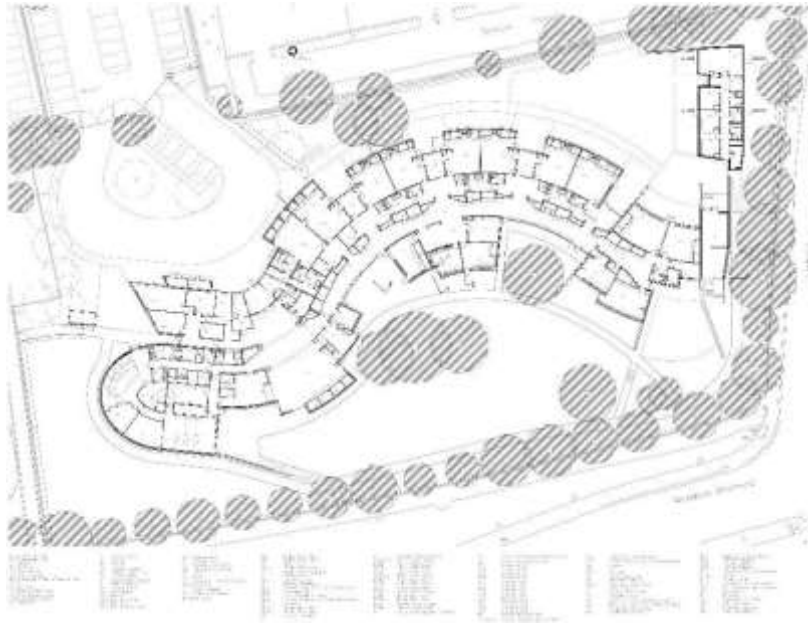


Image 7 - Curved circulation (<https://architizer.com>)

Sudden surprise can cause meltdowns in the students. They easily tend to feel claustrophobic when crowded. Hence simple circulation is needed with multiple entry and exits. Wider corridors can help to reduce crowd as well as stress along with help of curves instead of corners. Creating a pattern-based design can help them since many autistic children tend to create and follow specific routine for their behaviour therapy. Numerical and alphabetical pathways can insert study in play encouraging the children to learn in fun way. Durable non-toxic paints or mosaic tiles can be used to create such pathways

Escape Spaces



Image 8 - Escape Space under staircase (<https://www.archdaily.com>)

Autistic children at times can feel very overwhelmed by the surrounding activities. At such times, escape spaces can help them calm down. They can be anywhere in garden to corridors and can be of any scale such as partitions, half walls, etc. The escape spaces should be very neutral to make the autistic children feel protected. Also, they should have view point to see if the outside environment has cleared. These spaces should not be too small to feel suffocated nor too big to attract all the people in one area. Escape spaces are required in classrooms, corridors and outdoor area. Though the classrooms for autistic students are designed to accommodate lesser number of children than normal classroom, an escape space will help not only the panicked student but will also make sure that rest others are not affected by him/her.

Sensory Rooms



Image 9 - Sensory Classroom (<https://www.parentingspecialneeds.org>)

Other than normal classrooms, autistic children need help to develop their senses. This can be done with the help of sensory classrooms. These are specially designed classrooms which stimulate different senses of the child. It is as essential as any other therapy for autistic children. The classrooms are built in such a way that each child can strengthen their own senses without having to wait for other child to finish playing, i.e., the classrooms are loaded with different sensory activities that each child can play till their hearts content. The number of activities also help them to learn socialism, communication, sharing, etc. In simple words it can be said that the sensory classrooms help children in life skills other than studying.

Sensory Zoning

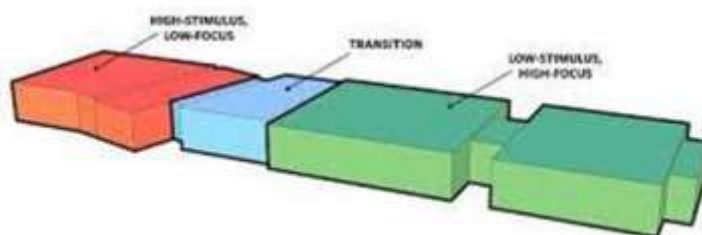


Image 10 - Sensory zoning and transition (<http://ed-spaces.blogspot.com/>)

The students with autism are varied from high level to low level. They are further divided into two major categories – hypersensitive and hyposensitive. Meaning they can be either too sensitive to the surrounding where a slightest change can set them in panic mode or very less or late sensitive to their surrounding where they are unable to detect things apart from each other like speed, size etc. To help, zoning which separates stimuli can be designed. It will allow hypersensitive students to calm themselves and hyposensitive students to get more sensitive and interested in the surrounding.

Sensory Transition

The main aim of the transition space is to mentally prepare the students that they are going to feel difference in the spaces, energy, use etc.

These are patches or pathways which connects different zones of place built specially for autistic children. But care should be taken that they don't become element of surprise for the children at any given point. For this curved or straight ways should be used so that they can see who is coming from the front. This will avoid confusion, startling and chaos

Lighting and Ventilation



Image 11 - Light and ventilation (<https://www.thechaosandtheclutter.com>)

For normal people, bright lights during day as well as night is preferred for proper sight. However squinting eyes due to bright lights, blubs, being able to notice their flickering is not good for autistic students. At such times, dimmable and non-flickering lights are preferred

Natural ventilation is encouraged but at greater height so that the students don't get affected and distracted by the outside sight.

Bibliography

- [Autism in India: Why we need awareness - Health Issues India](#)
- [Community project for autistic people to be ready by 2023 | Business Standard News](#)
- [Four keys to designing autistic-friendly spaces | Building Design + Construction](#)
- [An Interview with Magda Mostafa: Pioneer in Autism Design | ArchDaily](#)
- [Autism Awareness Day: How is autism perceived in India?, South Asia News | wionews.com](#)
- [Nature as a healer for autistic children - ScienceDirect](#)
- [Autism Diagnosis Criteria: DSM-5 | Autism Speaks](#)
- [Children and adults to receive training at India's first autism township in Kolkata: Allabout it - Education Today News](#)
- <https://architectureforautism.wordpress.com>
- <https://hedearchitects.com.au/Northern-School-for-Autism>
- <https://aasarchitecture.com>
- <https://architectureforautism.wordpress.com>
- https://www.nkdamar.org/File/Planning_Building_Rule.pdf
- <http://www.solaripedia.com>
- <https://www.archinomy.com>
- <https://www.sunearthtools.com>