

# ASSESSING AND REDESIGNING OF SELECTED AUTISM CENTER FROM THE LOCALE OF AHMEDABAD

**Ms. Alefiya S. Lokhandwala<sup>1</sup>, Mr. Nehaal N. Kinariwala<sup>2</sup>,**  
Visiting Faculty, Department of Family and Community Resource Management<sup>1</sup>,  
The Maharaja Sayajirao University of Baroda, Gujarat, India  
Principal Interior Designer, Studio Anecdote, Ahmedabad<sup>2</sup>.

## ABSTRACT

In India, Autism Spectrum Disorder (ASD) affects increasing number of people, and is being gradually recognized as an important issue. It has gained much attention as an important characteristic that affects the way people experience modern learning environments. Autism is a broad condition which is characterized by challenges with repetitive behaviors, social skills, speech and non-verbal communication. People suffering from ASD go through various sensitive issues with the surrounding environment. Symptoms for the subject vary from mild to extreme. Autistic children are often highly intelligent, but many suffer from sensory processing difficulties, which leads to stress, anxiety and confusions. Sensory difficulties ranges from fragmented and distorted vision – rendering bright colours and patterns disorienting to an inability to filter out background noises. Children with autism are a significant group of the population, which requires attention and awareness in society. Education for them is the foremost important part as it plays a vital role in framing their behaviors and health growth. Amidst the autistic children the spaces especially the classrooms which they spend the early stages of their life needs the proper space planning, along with the appropriate and functional interiors which help them in stimulation of brain and overall development. With the main agenda of creating a good autism friendly design a descriptive research design was deployed to collect the data from the two autism centers located in the locale of Ahmedabad, regarding the existing interior space considerations through an Interview schedule and observation sheet.

The spaces were incorporating children up to twenty one years. The comparative analysis of the selected centers were drawn through the findings which showcased the loop holes which were needed to be addressed with designing aspect. Moreover, it narrowed down to the major agenda of the study which was to design a space for autistic children providing an organized planned space, along with appropriate application of materials, colours, textures, lighting and sound check. Through the analysis drawn it would aid in designing spaces with the inevitable interior considerations and the sensitive needs will help in promoting the development of Autistic children.

**Keywords:** *Autism, Autistic children, Autism centers, Sensory processing difficulties, Interior design*

## INTRODUCTION

“If you are disabled, it is probably not your fault, but it is no good blaming the world or expecting it to take pity on you. One has to have a positive attitude and must make the best of the situation that one finds oneself in; if one is physically disabled, one cannot afford to be psychologically disabled as well”.

Hawking, (1984)

“Only the person wearing the shoe knows where it pinches”. A simple saying with a lot of wisdom. Indeed, unless one has gone through a certain situation, it is very hard to understand what situation feels like. This may perhaps be why many do not understand the struggles faced by people living with physical and mental disability. Different and varied factors can lead to disability in children which may leave them on crutches or a wheel chair for the rest of their lives. From that point onwards they are sentenced to a life of constant dependence. They can do little on their own and have to look to others for assistance (Geraldine, 2009).

Defining disability with precision and uniformity is considered to be difficult, because different states follow different criteria to define disability each with a purpose to it. They range from very narrow to broad, from medical to social, cultural to local, and integration to segregation (Ali and Sharma, 1997).

In India, Section 2(1) of Person with Disabilities (Equal Opportunities, Protection of Rights and full Participation) Act 1995, defines disability as,

“Disability as meaning blindness, low vision, leprosy-cured, hearing impairment, locomotor disability, mental retardation and mental illness”

As per Census 2011, in India, out of 121 crore population, about 2.68 crore person were found to be ‘disabled’ which is nearly 2.2 percent of the total population. <sup>(1)</sup> The status of disability in India, particularly in the provision of education and employment for persons with mental retardation, as a matter of need and above all, as a matter of right, had its recognition only in recent times, almost after the enactment of Person with Disability Act (PWD) 1995 (Rehabilitation Council of India).

According to Cohen et al., (1987)

“Autism, is a poorly understood condition which is now considered a pervasive developmental disorder because children who are autistic are challenged by a range of impairments in the normal development of communication”.

The root of the word Autism is “auto”, which means “self-contained, self-directed, or self-motivated”. Many people with Autism Spectrum Disorder would be quite content to remain “self-contained” and not attempt to connect with the world around them (Wildes, 2013). Autism have different diagnosis and their relation with the physical space is also different. These people require immense space consideration, light and colour preference, etc. hence designing space for these people is necessary. Language and communication problems are one of the defining characteristics of Autism (Coupe et al., 1998).

Autism Spectrum Disorder (ASD) is a term that covers the subgroups within the spectrum of autism. Autism can be termed as a lifelong complex developmental disorder. It is characterized by a triad of qualitative impairments in social communication, social interaction and social imagination (Wing and Gould, 1979). In addition to these problems, those with ASD often struggle with sensory sensitivity to visual, auditory, tactile, proprioceptive, gustatory and olfactory stimuli (Hinder, 2004).

A relative emphasis on child effects in autism may also have been developed because child behavioral problems are thought to originate primarily from the child’s developmental condition. Behavior disruption is common in autism (McClintock et al., 2003) and behavior problems may stem largely from autism-related rigidity and/or frustration from autism-related disorders (Whitman & Ekes, 2008).

The severity of impairment varies from individual to individual. Autism can be categorized into three levels i.e. mild autism, moderate autism and severe autism. Autism of each level leads to various behaviors and different levels of sensory perception impairment (Noiprawat & Sahachaiseri, 2010). Children with autism use non-verbal behaviors such as eye-contact, gestures, body postures and facial expressions less often than typically developing children. One of the most important findings in the recent years has been the observation that two-year olds with autism fail to orient towards biological motion, human bodies in motion (Klin et al., 2009), and they do not preferentially look to the eyes of approaching adults (Jones et al., 2008).

The connection between the living environment and human health is the focus of the scientific research in many different research fields viz medicine, epidemiology, ecology, and sociology as well as those dealing with the built environment such as architecture, urban planning and design. The environment influences the human behavior and well being in the long term interaction (Kotradyova et al., 2013). Mentally retarded cases have a difference between their retarded intelligence and their real age physical abilities. Particular considerations for people are those related to safety and comfort in designing interior spaces along with structural elements like stairways, ramps, railings, bathrooms, doors, windows, walls and ceiling (Abdelhafee, 2006).

According to Dickinson et al., (2004), obstacles that derive from design of the Interior of the facility exist in addition to barriers that may be part of the actual building. Studies have found that interior design hazards lead to one-third to one-half of all falls. The growing emphasis on an inclusive approach to make the internal and external features of the physical and cultural environment accessible to disabled people has resulted in the elevation of debates about the importance of accessibility and universal design (Imre, 1996).

Healthcare architects, Interior designers, and researchers have identified four key factors which, if applied in the design of healthcare environment, can measurably improve people's outcome, they are 'Reduction or elimination environmental stressors', 'provide positive distractions', 'enable social support, and 'give a sense of control' (Smith, 2016). This could be seen as the environment causing a 'direct and indirect effect' in influencing the behavior of a person. People often react differently in different situations, or in different settings due to the basis on which they perceive the place. Further more people interpreted these meanings differently an these interpretations play a critical role in environmental interaction (Rappoport, 1990).

From a historical viewpoint, architecture and treatment of mental health are connected, either by design or lack of thereof. The trends have come and gone, but each has contributed to an understanding of treatment, and can be viewed as an ongoing database of evidence on which designers can draw the interface for the upcoming design solutions (Sheahan, 2014). According to Laurens (2005), Architecture should have humane purpose. Although mental disabled human being, similar to normal people should be acquainted with special architectural and interior facilities to address the differences in their ability and intellect.

In the realm of Interior design, very few studies have been conducted reading sensory stimulation in Interior spaces and how it can affect the behavior of those on the spectrum. While there are many architecture and interior design projects claiming to have been designed for people with Autism Spectrum Disorder, there are only a few truly research based projects in existence (Schafer, 2014). We are amidst the urgent need of designing spaces for people suffering from Autism to create an environment appropriate to their social needs. The space needs to be coherent and predictable with appropriate design principles that allow them to be coherent and predictable with appropriate design principles that allow them to be safe for their well-being. Consequently the current research was taken up to assess and propose the design for the classrooms of an Autism school from the locale of Ahmedabad, as classroom plays a vital role in any institution, which can be made more productive through its proper and comfortable space planning and designing.

## OBJECTIVES OF THE STUDY

- To assess the existing interior spaces of the selected center working with children suffering from Autism.
- To collect information from the caregiver of the center about the sensory profile of children suffering from Autism.
- To propose the designing of the interior spaces of selected center working with children suffering from Autism.

## METHODOLOGY

The research design for the present study was descriptive in nature. Fifteen care-givers from purposively selected two autism centers were interviewed. The information was facilitated with the help of Modified Standardized tool as given by Dunn, (2014) to assess the Sensory Profile of the children. The sensory Profile of children was modified in order to obtain information on processing events occur in the behavior of Autistic children which helped in designing the classrooms. The caregivers were interviewed on the Sensory Profile of the children to collect information regarding frequency of a child's responses to certain sensory processing events. The sensory events were categorized as "Auditory Processing", "Visual Processing", "Vestibular Processing", "Touch Processing", "Multisensory Processing", "Modulation of Body Position and Movement", "Modulation of sensory Input affecting emotional responses". The responses were recorded on five point continuum scale Always, Frequently, Occasionally, Seldom, and Never where the scores were ascribed from 1 through 5. Higher the scores represents less problem of the Sensory Processing events among the students.

The other half of the study was to undertake the live case study in the same locale and remote study of the purposively selected Autism centers and to study the existing conditions and draw the inferences, which would help in proposing the design for the areas in the selected Autistic school from the locale of Ahmedabad.

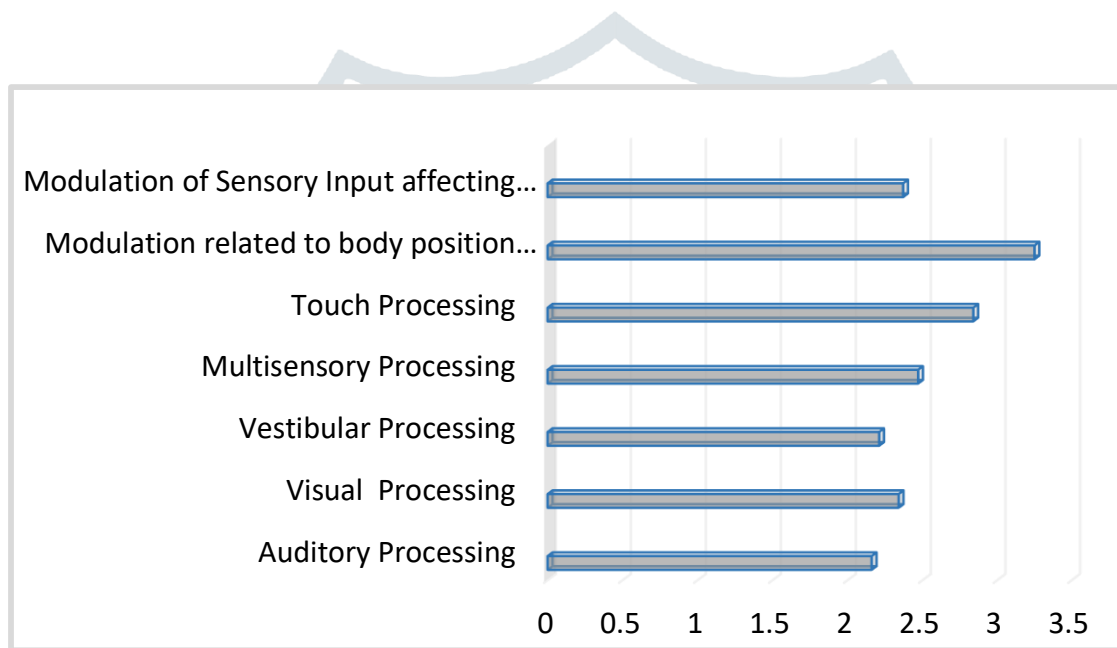
## MAJOR FINDINGS

The major findings cited from the study are grouped as under:

- a. Findings related to the processing events of Sensory Profile of children of the Autism centers selected
- b. Inferences among the local Autism center (Live case study)
- c. Inferences among the various Autism center (Remote case study)
- d. Design development of the interior space for selected Autism center

- **Findings related to the processing events of Sensory Profile of children of the Autism centers selected**

The graph presented (Fig.: 01) showcases the weighted mean for the processing events of sensory profile of children of selected Autism center. The computed weighted mean for “modulation related to body position and movement event” was found to be highest i.e. 3.25 as it was found that the children were more defenseless physically and emotionally and were not able to perceive body language or interpret the facial expressions. Moreover the “Auditory Processing” was one of the sensory event which was found to be scoring low on the weighted mean scale.



**Figure**

**01: Weighted mean of processing events of sensory profile of children of selected Autism center**

The second half of the study reflects upon the inferences which were derived amidst the various autistic centers which were selected under the case study. To begin with the inferences of the live study conducted on 02 centers from Ahmedabad namely; Pearl Special Needs Foundation and New way Special School.

- **Inferences among the local Autism center (Live case study)**

The Pearl Special Needs Foundation was located at Paldi, which had approx. 50 students of 03-18 years out of which 12 to 13 of them were diagnosed with mild autism. The structure of the center was adaptive reuse of the residential building which was facing west. The facilities provided were sensory room, outdoor play area, therapy space, kitchen, and a computer room. The second center, New way special school was also located at Paldi, which had approx. 60 students of 03-33 years out of which 18 to 20 of them were diagnosed with mild autism. The structure of the center was

adaptive reuse of the residential building which was facing east. The facilities provided were sensory room, kitchen, and a computer room (Table 01).

ASPECT	PEARL SPECIAL NEEDS FOUNDATION	NEW WAY SPECIAL SCHOOL
LOCATION	PALDI, AHMEDABAD	PALDI, AHMEDABAD
CONTEXT	ADAPTIVE REUSE OF RESIDENTIAL HOUSE (2010)	ADAPTIVE REUSE OF RESIDENTIAL HOUSE (2006)
NO. OF STUDENTS	50 APPROX.	60 APPROX.
AGE GROUP	03-18 YEAR OLD	03-33 YEAR OLD
TOTAL NO. OF AUTISTIC CHILDREN	12 TO 13	18 TO 20
FACILITIES	SENSORY ROOM, OUTDOOR PLAY AREA, THERAPY SPACE, KITCHEN, COMPUTER ROOM	SENSORY ROOM, KITCHEN, COMPUTER ROOM
BUILDING ORIENTATION	WEST FACING	EAST FACING

**Table 01: Basic information regarding live case studies conducted**

In Table 02, the information regarding the existing interior specification has been provided for both the centers which states that at Pearl Special Foundation the space was not planned and designed following any particular theme or concept. Mosaic chip ceramic tile of white and beige colour was used for flooring, the walls were finished with the normal paints of different colours such as pink, green and yellow. The furnitures didn't follow any particular typology needed addressing to the special need and were made up from plywood and metal with laminate and paint finish. The space was well ventilated with enough windows for cross ventilation and ceiling fans. The ceiling were left exposed without any treatment.

ASPECT	PEARL SPECIAL NEEDS FOUNDATION	NEW WAY SPECIAL SCHOOL
FLOORING	Mosaic chip ceramic tile (300mm x 300mm)	Ceramic tile (450mm x 450mm)
COLOUR OF TILE	White and Beige	Beige
LIGHTING	No false ceiling, Exposed ceiling	No false ceiling, Exposed ceiling
VENTILATION	Ceiling fans with enough windows	Ceiling fans with enough windows
WALL FINISH	Defined with different colours – Pink, Green, Yellow	Oil paint with Graffiti
TPOLOGY OF FURNITURE	No special furniture made, normal wooden desk with chair. Ready made furniture	No special furniture made, plastic tables and chairs, wooden tables
MATERIAL OF FURNITURE	Plywood and mild steel with fixtures	Plywood and plastic
FINISH OF FURNITURE	Laminate and paint	Laminate
THEME OR DESIGN CONCEPT	Colour based rooms, No particular design concept	Colour based rooms, No particular design concept

**Table 02: Information regarding existing interiors for the live studies conducted**

New way Special school at Paldi had again the similar lines where the space was not planned and designed following any theme or concept. Although the space was well ventilated with enough windows for cross ventilation and ceiling fans. The ceiling were left exposed without any treatment. For flooring beige coloured ceramic tiles were used. The walls were finished with oil paint graffiti. Here also no particular typology of furniture was deployed to meet the needs of the children.

- **Inferences among the various Autism center (Remote case study)**

ASPECT	NETLEY SCHOOL FOR AUTISTIC	WHITTON GATEWAY UNIT FOR ASD	NEW STRUAN-A CENTER FOR AUTISM
LOCATION	LONDON, UNITED KINGDOM	TWICKENHAM, UNITED KINGDOM	ALLOA, SCOTLAND
CONTEXT	INDEPENDENT 'L' SHAPED BUILDING	INDEPENDENT UNIT BEHIND THE SCHOOL BUILDING	INDEPENDENT 'T' SHAPED BUILDING
NO. OF STUDENTS	50 APPROX.	80 APPROX.	75 APPROX.
AGE GROUP	03-18 YEAR OLD	03-18 YEAR OLD	03 – 25 YEARS OLD
TOTAL NO. OF AUTISTIC CHILDREN	15 TO 25	20 TO 25	20 TO 25
FACILITIES	TWO INDIVIDUAL TEACHING SPACES, A MULTI PURPOSE THERAPY ROOM, STAFF OFFICE, TOILETS AND STORAGE AREAS	FOUR CLASSROOM, SOCIAL AREA, A LIBRARY, STORAGE SPACE, STAFF AREA, CIRCULATION SPACE, RECEPTION AND TOILETS	RECEPTION, CAFÉ, TRAINING ROOMS, DIAGNOSIS AND ASSESSMENT ROOMS, EXTERNAL PLAY AREAS, CLASS ROOMS AND TOILETS

**Table 03: Basic information regarding the remote case study taken**

In the information reflected in Table 03, the inferences were derived amidst the various autistic centers selected under the remote case study. To begin with the basic inferences the Netley school for autistic located at London catered 50 students approx. ageing between 03-18 years. The facilities provided there are two individual teaching spaces, a multipurpose therapy room, staff office, toilets and storage areas.

Secondly Witton Gateway unit for ASD, at Twickhem, UK., is an independent unit behind the school functioning for approx. 80 students catering them with the facilities namely; four classrooms, social area, a library, storage space, staff area, circulation space, reception and toilets.



ASPECT	NETLEY SCHOOL FOR AUTISTIC	WHITTON GATEWAY UNIT FOR ASD	NEW STRUAN-A CENTER FOR AUTISM
<b>LIGHTING SPECIFICATION</b>	Roof lightings, French windows, use of natural daylight by incorporating sun pipes	French windows, clerestory windows, artificial lighting with dimming control	Clerestory windows with louvers, roof lighting, artificial lighting with dimmers
<b>VENTILATION</b>	Good ventilation through windows on one side	Good cross ventilation	Sill-roof windows for proper ventilation
<b>VISUAL COMFORT</b>	High ceiling, simple and clean surface, proper visual cues	Numerous pin board areas, visual connectivity with private and external courtyard	Numerous pin board areas, visual connectivity with private and external courtyard
<b>TRANSITION SPACE</b>	L-shaped courtyard connecting all the areas in the school	Circular social space with wind catcher roofing system which connects all classrooms	T-shaped atrium connecting all the area in the school with proper roof lighting
<b>COLOURS AND TEXTURES</b>	Circulation space – Mild lilac and classrooms - White	Muted colour scheme with green and blue walls	Muted “Earthy” tones
<b>CONSTRUCTION TECHNOLOGY</b>	No sustainable method, high insulation, natural daylighting techniques.	Cement block plastered walls, hard cord carpets as flooring	150mm thick concrete wall with 19mm internal and external plaster

**Table 04: Information regarding existing interiors for the remote studies taken**

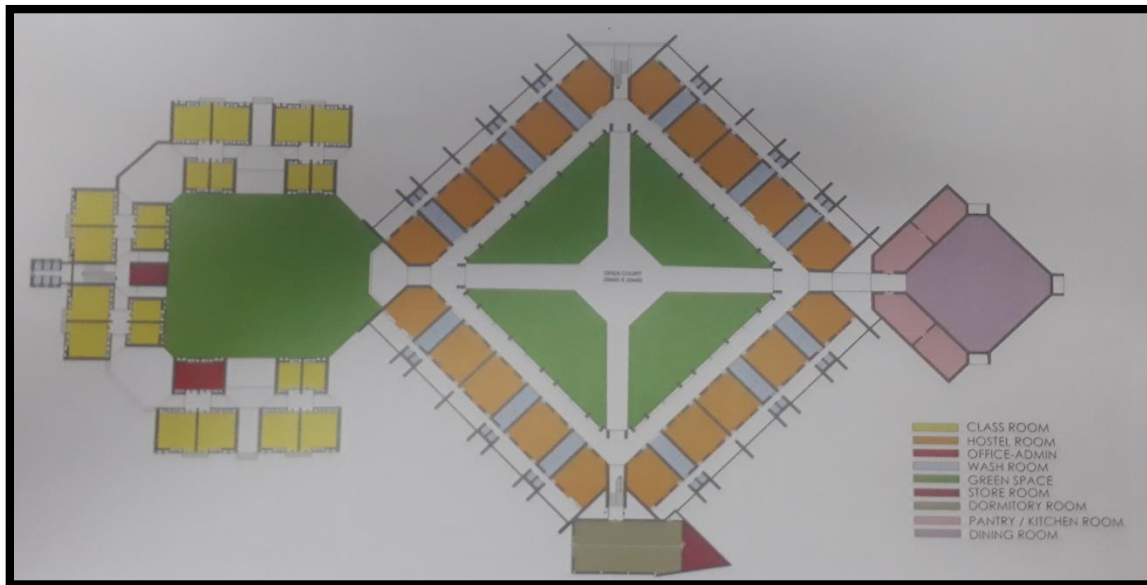
New Straun a center for Autism situated at Scotland featured a full-fledged independent building serving 75 students approximately. The building was equipped with a reception, café, training rooms, diagnosis and assessment rooms, external play areas, class rooms and toilets.

Drawing further more inferences (Table 04) related to interiors of the space amidst the remote case studies brought us down to the conclusions that the centers were well planned focusing on proper space planning with connectivity and inclusion of the aspects related to proper lighting solutions, visual comfort, acoustics, and transition spaces.

By viewing the positive effects of well-planned interiors of autism centers in the remote case studies, it governed us to produce a design for selected autism center in the locale of Ahmedabad itself to cater the same kind with better spaces.

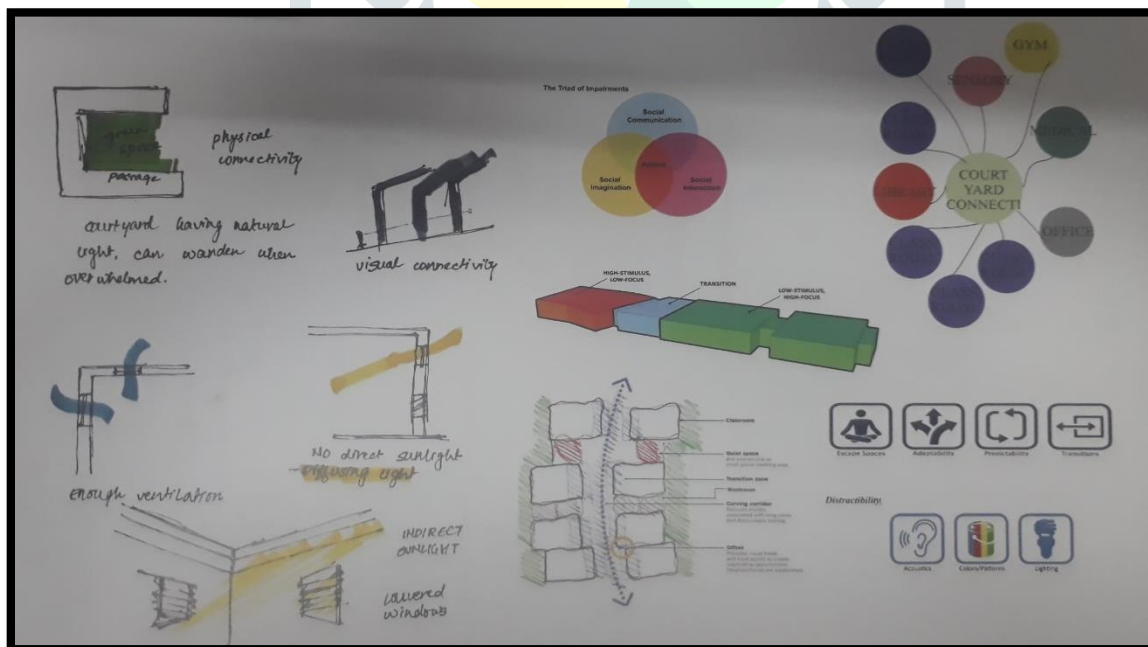
- **Design development of the interior space for selected Autism center**

For the design development the Andh Kanya Prakash Gruh, Ahmedabad was selected purposively which has a vast span of 23,950 square feet, posing facilities to approx. 200 visually impaired girls. The Gruh is currently having 15 in house education rooms, 40 in house residential rooms, 09 training centers, staff room, principal room, administration room one each, own temple, 02 computer labs, 01 science laboratory, huge mobility park, dining room, TV room, Reading room, Music room and store room which were to be designed.



**Plate 01: Pictorial bifurcation of different areas in selected Autism center**

While redesigning the given space, the main focus was to create the space which would be easily accessible to meet the needs of the children residing over there. The design concept revolved around the major sensory responses namely; **SIGHT, TOUCH, SMELL**, and **HEAR**. Moreover, The passive design approach was also kept in mind while planning the artificial lighting along with them the colour and patterns were selected very meticulously as if high contrast would lead toward distraction.



**Plate 02: Basic concept developed through sketches in initial stages of design development**

In the initial stage the basic design concept was sketched down (Plate 02) keeping in mind the major sensory responses and the furniture typology was developed keeping in mind every basic

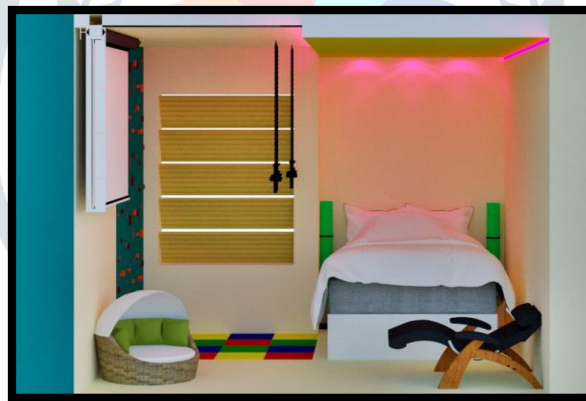
aspect which would help in appropriate space planning. The designing concept revolved around the basic sensory responses. The finishes for all the areas were done which would not create the visual fatigue as well as would serve for better acoustics. Furthermore the complexity in the design was also avoided by eliminating designs with sharp edges. The care was also taken to plan the spaces with appropriate ventilations along with placing the learning areas away from the kitchens or washrooms where the children would get affected by the odour. Moreover, the acoustics were also taken care off by application of heavy furnishings hence making the noise free environment.



**Plate 03: 3D view for Reception area**



**Plate 04: 3D view for Classroom**



**Plate 05: 3D view for Bedroom**

Plate no.: 03, 04, and 05 are showcasing 3d views which were made of the proposed design for the center, which is depicting the reception area, classroom, sensory room and play area. The basic concept was followed throughout to achieve the functionality of the space.

### CONCLUSIONS AND IMPLICATIONS

In India, Autism Spectrum Disorder (ASD), affects around 3 million people in a year, and is being increasingly recognized as an important issue. Autism is a broad condition which is characterized by challenges with repetitive behaviors, social skills, speech and non-verbal communication.

Children with Autism are significant group of population, which requires attention and awareness in the society.

Designing spaces for those with the Sensory Integration Disorders, such as Autism is a relatively new niche in the Interior Design community. As the final outcome of the study the selected institute was given a specific design consideration with respect to interiors and space planning for the children with autism. Moreover, the findings for the present study would aid various institutes of Interior design to mitigate the knowledge regarding designing spaces for children having special needs. Furthermore, the inferences found out would be of great help to the Government and Non-Government Organization, Architects and Interior designers which would all in all make the spaces better for the children affected with Autism.

All the centers taken under the study had provided nurturing and education for the children with autism. Their main aim is to inspire the children with best academic development and provide all the required therapies they need. It was also observed that the centers had not considered designing space as per the needs for the autistic children. Hence, a need was felt to assess and redesign the space of the selected institution.

In the study undertaken the profound results were obtained regarding the sensory profile of the children with mild autism and were assessed to gain an insight about the behavioral input of sensory events occurring in autistic children. On the similar ground the selected center was redesigned and offered a justifying designed interior space for autistic children to make their living better.

## REFERENCES

- Abdelhafee, H., & Samre (2006). *The Interior Architecture of Care Centers for the mentally retarded in Egypt*. Environment, Health and Sustainable Development, Egypt.
- Ali & Sharma (1997). *Disability: Definition and Magnitude*. Retrieved from [http://shodganga.inflibnet.ac.in/bitstream/10603/119884/8/08\\_chapter%203.pdf](http://shodganga.inflibnet.ac.in/bitstream/10603/119884/8/08_chapter%203.pdf) accessed on 12.09.2019
- Cohen, S., (1987). Retrived from <https://onlinelibrary.wiley.com/doi/abs/10.1111/j.2044-835X.1987.tb01049.x> accessed on 02.09.2019
- Coupe, K., et.al., (1998). *Communication before speech*. London.
- Dunn, W. (2014). *Sensory Profile 2, Pearson Clinical Assessment*, retrived from <https://www.pearsonclinical.co.uk/> accessed on 28.08.2019
- Dickson, J., Shroyer, J., Elias, J.,Cook, C., (2004). *Preventing falls with Interior design*. Journal of Family and Consumer Sciences.
- Geraldine, (2009). *Caring for Physically and Mentally Challenged Children: A Case study of Missionaries of Charity Mother Teresa's Home*.
- Hawking, S., (1984). Retrieved from <http://mentalfloss.com/article/32149/11-incredible-stephen-hawking-quotes> Accessed on 14.07.2019.
- Hinder, S., (2004). *Keynote address to Good Autism Practice Conference, Oxford*.

- Imrie, R., (1996). *Disability and the city: International Perspective*. Paul Champan Publishing, London and St. Martin Press, New York.
- Jones, W., Carr, K., and Klin, A. (2008). *Absence of preferential looking to the eyes of approaching adults in 2-years old with Autism Spectrum Disorder*. Archives of General Psychiatry.
- Klin, A., Lin, D., and Gorrindo, P., (2009). *Two-year olds with Autism orient to non-social contingencies rather than biological motion*.
- Kotradyova, V., (2013). *Civilization Diseases and their relation to Interior Design of Working Spaces*. Human resource Management and Ergonomics.
- Laurens, J., (2005). Behavior Architecture. Surabaya, Irasindo.
- McClintok, Karen, Hall, Scott, Oliver, and Chris (2003). Risk markers associated with challenging behaviors in people with intellectual disabilities.
- Noiprawat, N., and Sahachaiseri, N. (2010). *The Model of environments enhancing autistic children's development*. Procedia Social and Behavioral Sciences 5 (2010) pp. 1257-1261 doi.: 10.1016/j.sbspro.201007.271.
- Rappoport, A., (1990). *The meaning of built environment: A non-verbal communication approach*. The University of Arizona Press.
- Schafer, C., (2014). *A population Excluded: Interior design for Autism in University Dining Facilities*. Savannah, Georgia.
- Sheahan (2014). *Future directions in design for Mental Health Facilities*. Hassell.
- Smith, R., (2016). Therapeutic Environments, AIA Academy of Architecture for Health Retrieved from <http://www.wbdg.org/resources/therapeutic-environments> accessed on 12.08.2019
- Whitman, T., and Ekas, N. (2008). *Theory and research on Autism: Do we need a new approach to thinking about and studying this disorder*. International Review of Research in Mental Retardation.
- Wildes, P., (2013). *Interior design for Autism from Childhood to Adolescence*. Wiley.
- Wing, L., and Gould, J., (1979). *Severe impairments of Social interaction and associated abnormalities in children: Epidemiology and classification*. Journal of Autism and Developmental Disorders, 9, pp.: 11-19.

## WEBLIOGRAPHY

- (1) Central Government, Disability Census (2011). Disabled population in India. Retrieved from <https://en.abled.in/wp/disabled-population-in-india-as-per-census-2011-2016-updated/> accessed on 27.03.2019.