

INCLUSIVE ENVIRONMENTS DEDICATED TO PEOPLE WITH AUTISM SPECTRUM DISORDERS

AMBIENTI INCLUSIVI DEDICATI ALLE PERSONE CON DISTURBI DELLO SPETTRO AUTISTICO

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ABSTRACT

The theoretical approaches related to autism spectrum disorders have increased over the years. Although it is still difficult to determine the exact cause of the condition, the types of treatments to be used are clearer. Special importance is given to the organization of spaces and outdoor activities, which allow individuals with autism to use their own bodies to act and convey emotions, limiting stereotypes and establishing effective relationships.

Gli approcci teorici relativi ai Disturbi dello Spettro Autistico sono incrementati nel corso degli anni. Nonostante risulti ancora difficile individuare con certezza la causa della patologia, sono più chiare le tipologie di trattamenti da utilizzare. Particolare importanza rivestono l'organizzazione degli spazi in ottica inclusiva e le pratiche outdoor, i quali consentono al soggetto, attraverso il proprio corpo, di comunicare, limitando le stereotipie e stabilendo relazioni efficaci.

KEYWORDS

Autism, TEACCH, outdoor space, embodiment.
Autismo, TEACCH, spazi outdoor, corporeità.

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Introduction¹

Since the investigations of Maria Montessori in 1921, pedagogical research has recognised the importance of designing learning environments that are tailored to the needs of students, thereby establishing conditions favourable to learning and overall growth.

The theories that emerged in the context of pedagogical activism and the research of Cèlestin Freinet (1977) helped to rethink the purpose and function of educational spaces, transforming them primarily into locations for activity, play, research, and gathering.

In line with this notion, Franco Frabboni (1980) and Loris Malaguzzi (1970) confirmed that spaces serve an educational and formative function, constituting a resource that is applicable beyond the confines of the school environment.

From the aforementioned factors, it is possible to identify certain pivotal points concerning the pedagogical, didactic, and social aspects of educational space design.

The first concept, inclusion, refers to the ability of a space to be universally accessible, devoid of any barriers that impede learning and participation in diverse educational activities. Spaces should not only guarantee the removal of barriers but also function as effective resources and facilitators, according to the WHO bio-psycho-social perspective. This perspective has established the concept of well-being and enables the identification of descriptors and classifiers of people's living conditions (WHO, 2007).

Additionally crucial are physical spaces and living environments, which can function as barriers or facilitators. In the initial scenario, the physical surroundings may impede an individual's functional mobility within it. This can manifest as architectural obstructions or insufficient signage, which hinder the ability of visually impaired individuals to move independently throughout educational spaces. Likewise, environments have the potential to function as facilitators, promoting overall well-being and enabling individuals to maximise their capabilities and functional capacities. Designing inclusive educational spaces means taking into account the well-being of all those who use them, with the goal of facilitating orientation, connection, and encounter with others, as well as the performance of various activities.

Working on the context to make the entire space accessible, functional, and free of obstacles is what inclusive design entails. It is not a matter of designing separate spaces for different types of people, but of creating an environment that allows everyone to see the world from different perspectives, using multiple codes and languages, including body language. The designed space must be adaptable, flexible, and moldable, allowing it to grow and transform alongside the people who inhabit it.

Another equally important aspect in the design of educational spaces is the ability to facilitate socialisation processes through the creation of an educational environment that encourages participatory growth, confrontation and dialogue, and the sharing of sensory, cultural, and playful experiences in which everyone can participate.

1. The relationship between autism spectrum disorders and the environment

Since its inception with Kanner's (1943) initial research, the concept of autism has experienced a gradual evolution and expansion of its definition, leading to ongoing adaptations and revisions of diagnostic criteria.

¹ The contribution is the result of joint work, paragraphs 2,3,4 of which are attributed to Dr. Pasqualetto, the introduction, Ch. 1 and conclusions to Prof. Lo Piccolo

After the DSM-5 was published in 2013, the term "autism" was redefined and reclassified as "Autism Spectrum Disorder," a more inclusive concept that incorporated previous subtypes and classifications such as Asperger's syndrome into a single group. This new viewpoint emphasises the dimensional character of autism, in which the traits and qualities of the affected individual constitute the dimensions. Consequently, every characteristic, symptom, or deficit is classified along a dimensional continuum, where its severity and intensity must be assessed.

As a result, the diagnosis of autism is no longer perceived as a list of symptoms, but as a set of dimensions whose severity can be quantified. This implies that we include people with heterogeneous clinical features in social impairment, the presence of repetitive behaviours, and narrow interests within the dimensions, or symptoms, of autism (APA, 2013).

The incorporation of sensory relationships into the diagnostic criteria represents an additional significant shift in the approach to autism; it now emphasises the unique responses of children to sensory stimuli, which were previously acknowledged as symptoms but lacked true diagnostic value. As a result, autism appears to be characterised by a subject's unique and subjective perception of the environment, which is shaped by their individual sensory experiences. The interpretation of the fundamental symptoms of autism is significantly influenced by the peculiar sensory experiences, which may induce increased anxiety and promote compulsive or obsessive behaviours (Bogdashina, 2003).

Autism is defined by a different perception of one's surroundings, a unique understanding of the world that can be difficult to decipher and describe at times, as each individual with autism has his or her own peculiar sensory pattern (Rosen, 2021).

Psychology has historically placed an excessive amount of emphasis on internal and individual factors, such as personality analysis and personal history analysis while neglecting to consider the behaviour of the human mind in relation to its environment. Numerous studies have demonstrated over the years that human well-being is significantly impacted by the quality of the built environment and surroundings, while simultaneously transforming the environment to suit human needs. Environmental psychology investigates the reciprocal relationship between the environment and human behaviour and thought, as well as how human beings modify their surroundings through their thoughts and actions. This observation highlights the significant influence that our location and identity have on our thoughts and actions.

2. Indoor Spaces: the TEACCH Program.

A diagnostic criterion included in the DSM-5 is "insistence on sameness" (Vivanti, 2010). This criterion denotes the propensity for repetitive behaviour that is observed in people diagnosed with autism. This tendency manifests itself in the form of inflexible routines and habits, as individuals with autism frequently struggle to modify their conduct in response to changing conditions. Due to this resistance to change, they adhere rigidly to a routine and favour familiar situations and contexts. While there is currently no definitive cure for autism due to the lack of understanding regarding the genetic, neural, and cognitive mechanisms that underlie the disorder, effective interventions that promote autonomy and facilitate learning can be implemented to assist individuals with autism. Designed and implemented by Eric Schopler in the 1960s in North Carolina, the TEACCH (Treatment and Education of Autistic and Communication Handicapped Children) Program (Figure 1), not only signifies an intervention approach but also a program that fundamentally transforms the structure of services for individuals diagnosed with autism spectrum disorder by providing holistic support, both vertically and horizontally (in all living environments and at all hours of the day and throughout the day). The program gained traction in Europe and Italy subsequent to its official adoption by the state of North Carolina, owing to the

contributions of Peeters (1997) and Micheli and Zacchini (2002). The TEACCH Programme targets the development of oculo-manual integration, motor skills, perceptual functions, and imitation, in addition to behaviour management, which includes the acquisition of social and behavioural competencies and fundamental autonomy. Adapting the environment to the requirements of individuals with autism through the organisation of space, time, and tasks in a way that promotes predictability, learning, and problem behaviour management is its guiding principle.

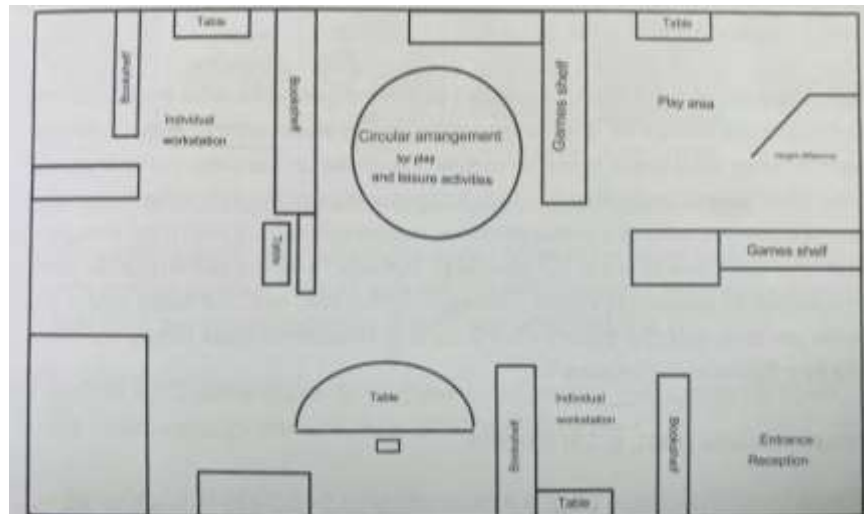


Figure 1

The TEACCH program's main educational goal is to promote the individual development, social inclusion, and autonomy of people with autism while taking into consideration the specific challenges associated with autism spectrum disorder. Educational approaches that enhance the capabilities of individuals diagnosed with autism spectrum disorder are utilised to maximise autonomy in the personal, social, and professional spheres. Due to the considerable variation in developmental level and symptomatology among individuals with autism, it is imperative that educational programs be tailored to each student's specific needs and reevaluated frequently. The program's active engagement of parents, who are regarded as the most trustworthy sources of information regarding their children and are thus active participants in the treatment and relationship with professionals, is a unique and innovative aspect. In fact, the program's creator, Schopler (1997), asserts that family member involvement has a substantial impact on the program's success. The active participation of family members is critical for individuals with autism to generalize newly acquired skills and maintain a consistent approach to daily activities.

While the TEACCH approach does incorporate behavioural techniques like reinforcement, it distinguishes itself from the behavioural approach by emphasising environment modification to promote learning rather than coercing change via positive or negative reinforcement and repetition. The TEACCH approach is based on the principle that individual diversity is respected by adjusting the environment to suit the individual and introducing behavioural challenges gradually.

From a pragmatic standpoint, the TEACCH programme involves partitioning the area into distinct and easily identifiable zones, wherein each zone is allocated a particular purpose, such as a work area, play area, or reception. By providing people with autism a clear expectation of the activities in each area, this form of organisation satisfies their need for routine. Delineated spaces are provided for designated special activities, while the

arrangement of children's work is designed to foster independence and profit on their inclination towards routine. While individual instruction is employed to facilitate the acquisition of new skills, the TEACCH program primarily revolves around group work. This approach aids children diagnosed with autism spectrum disorder in engaging with their peers and cultivating social competencies. The arrangement of time and space in the TEACCH program is flexible to the developmental level and needs of each child. Without the absolute rigidity of the space-time structure, this flexibility increases as the child's ability to cope with change is better understood.

3. Outdoor spaces: sensory gardens and the role of the body in understanding autism.

The benefits of access to green spaces on the general well-being of people with disabilities have been scientifically documented. Additionally, these spaces may serve a therapeutic purpose (Gaudion & McGinley, 2012), providing remedies for coping with the stress that arises from daily challenges and for recovering from sensory overload. As the outdoor garden at Kingwood College in England, which serves to the White Barn autism residence (Figure 2), exemplifies, "Healing Gardens" or sensory gardens are purposefully designed and organized to enhance the overall welfare of people with autism. To ensure a positive sensory experience, these gardens incorporate targeted solutions and adaptations. It is impossible to completely eliminate unpredictability and reduce sensory stimulation below a certain limit in outdoor spaces, as they are inherently less controllable than indoor environments and the TEACCH educational program. Nevertheless, a set of design criteria can be established on the basis of the most recent research and experiments, which have predominantly examined green spaces linked to educational institutions and care facilities.



Figure 2

The spatial organization of sensory gardens, like that of indoor spaces, should be easy to use. A circular layout is particularly suitable due to its capacity to provide a complete 360-degree view of the surrounding area. In consideration of diverse individual preferences, the space ought to provide opportunities for multiple activities to be performed concurrently and provide opportunities for different levels of sensory stimulation. It is critical to designate small but clearly visible refuge zones in less frequented areas of the gardens to allow users to isolate themselves and deal with sensory overload situations.

The use of picture sequences can significantly improve users' interaction with the space by facilitating orientation and promoting independence. For example, sequential visual

instructions can be provided to assist with performing gardening activities independently. In line with indoor environments, colour can be employed as an aid to orienting in sensory gardens; nevertheless, it is recommended to employ muted colours for the main paths and designate brightly coloured areas that indicate access to specific activities. This approach will facilitate orientation and enhance the autonomy of the experience associated with utilising specific spaces.

It is crucial to underscore that the arrangement of spaces should not be equated with inflexibility; rather, flexibility is an intrinsic quality of sensory gardens, which are constructed based on the requirements and developmental stage of each user and are susceptible to modification at any moment. The arrangement of these spaces ought not to be an end in itself, but rather a mechanism accessible to individuals who are challenged by their inability to communicate.

Sensory gardens play an essential role in the improvement of autism awareness and the well-being of those who are affected (Gaudion & McGinley, 2012). Autism is a neurological disorder that primarily effects social interactions, communication, and behavior. Nevertheless, a considerable number of individuals with the syndrome exhibit heightened sensitivity to sensory stimuli and engage in physical exploration and interaction with their surroundings (DSM-5 2013). Therefore, sensory gardens offer a safe and stimulating setting in which individuals with autism spectrum disorders can employ their physical senses to perceive the tactile qualities of the soil, perceive the aromatic fragrances of flowers, and observe the vibrant colours present in nature. In addition to promoting a sense of calm and relaxation, these outdoor areas facilitate the growth of motor abilities, enhance coordination, and foster a deeper connection with the natural environment.

Furthermore, outdoor spaces provide a natural setting for people to learn, experience, and develop social skills such as interacting with others and sharing experiences. In sensory gardens, the use of the body becomes an important tool for exploration and dialogue with the environment, creating alternative communication channels to the verbal one that help overcome communication challenges. Sensory activity evolves from a simple playful activity to a means of acquiring knowledge, learning, exploring space in relation to one's body, and developing awareness of one's actions and reactions. Outdoor sensory activity assumes critical importance in this particular context as it facilitates the identification of psychological and behavioural aspects of children with autism spectrum disorder, fosters self-expression, and stimulates their creativity. Through organising activities and time, the redefinition of the environment additionally facilitates the child's development of a greater understanding of space, encompassing both physical and conceptual dimensions (Wilson, 2006). Sensory gardens are thus a valuable tool for understanding autism and provide an inclusive and stimulating environment in which students and visitors can freely express themselves and fully enjoy the opportunities provided by nature (Le Boulch, 1971).

4. The pedagogical contribution of Embodiment in the design of educational spaces

When considering the holistic and harmonious growth of a person, it becomes crucial to give due attention to the sensory, psychomotor, and body-relational dynamics of the human body. An increasing amount of pedagogical reflection is being devoted to the body and the movement sciences' associated care (Lo Piccolo, 2012). The most recent academics in the field agree that corporeality plays a crucial role in the processes of a person's growth and development in the new pedagogy, as Maria Montessori recognized at the beginning of the last century. There is an increasing recognition of the significance of taking into consideration an individual's physical complexity as a foundational element of health and balance, with consciousness being understood as a process directed towards the formation of one's corporeality.

The Embodiment paradigm fosters interdisciplinary multi-level exchange by emphasising the body's central role in knowledge acquisition (Lo Piccolo & Passaniti, 2020). Within the domain of architectural design, the complete body emerges as a fundamental component. However, while architectural models have recognised a high demand for understanding and configuration of space, they have not yet entered the merits of reading its interactions with the body, except in specialised fields. While researchers in the field of neuroscience investigate the phenomenological significance of the corporeal basis of mind, architecture runs the risk of stifling its heuristic innovation by completely disregarding the worth of the body and its emotional component of being.

The aforementioned assertions highlight the importance of redefining established educational spaces and practises by implementing methodologies and strategies that centre on the body in order to implement an educational intervention that is genuinely effective and meaningful. This need becomes even more apparent when it comes to providing assistance to people with autism spectrum disorder, whose body is a fundamental dimension that must be promoted and cared for in terms of educational and learning pathways. By designing environments that prioritise the corporeal, the body becomes an active participant in the learning process, serving as the main vehicle for the transmission and acquisition of disciplinary, sensory, emotional, and social knowledge. Corporeality recognises that the body is a vital component of human experience, action, and perception, and not merely a physical shell. Through movement, an individual with a disability can overcome his or her deficiencies and gain the knowledge and skills necessary to maximise his or her capabilities. This fosters new relationships with the body, which were previously perceived as a source of frustration and inadequacy, and are now regarded as a valuable asset that can be trained and enhanced.

When considering innovative architectural contexts that encompass unbuilt spaces, natural elements, and sensory gardens, it is imperative to integrate emotional meanings and experiences in a harmonious manner with technical-constructive typologies. This integration should occur through a unified design process that maintains a continuity between nature and architecture. (2020, Gomez et al.).

The new paradigmatic branch of Embodied Cognition Design (ECD) is also increasingly debating the need to rethink living environments, including with regard to the specific needs of atypically functioning groups of people who are currently unable to autonomously and fully experience spaces due to a mismatch between the organisation of the environment and the specific needs of their bodies (Gomez et al., 2017). However, much remains to be done on the operational level.

Conclusions

Experiments and studies in the field have progressively contributed to a greater understanding and knowledge of autism spectrum disorders. Previous beliefs held that autistic children were incapable of expressing their emotions and desires, and that an unstructured environment would be conducive to their full development. However, recent research has demonstrated that providing structure to the environment is a crucial factor in mitigating the anxiety and frustration that can arise from communication deficits (National Institutes of Health, 2012).

The first step in educational intervention for an individual with autism spectrum disorder is to design a spatially and temporally organised environment, adhering to either an indoor or outdoor mode (as in the Sensory Gardens or TEACCH programmes, respectively).

In conclusion, it should be emphasised that a structured environment should not be interpreted as an isolated environment specifically designed for a child with autism

spectrum disorder, but rather the implementation of organisational strategies and predictability in daily activities.

In regards to the quality of life of individuals with autism spectrum disorder, the family and social environment are crucial. The well-being and capacity for social and communication skill development of such individuals may be significantly influenced by factors such as environmental sensitivity, accessibility to support services, and social inclusion. Furthermore, when applied to architecture and education, the "Embodiment approach" acknowledges that physical environments can significantly impact individuals' cognitive abilities and physical and mental well-being (Mostafa, 2008).

It is our belief that conducting further comprehensive research in this domain may yield enhanced support and treatment approaches for individuals diagnosed with autism spectrum disorder, thereby fostering increased social integration and an overall improvement in their standard of living. Underlying these considerations is the necessity to increase cultural consciousness at the grassroots level regarding the necessity to reconfigure educational realities at the architectural and physical levels in accordance with modern models of learning, education, training, and well-being.

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