



The teachers' and students' perceptions about inclusion through innovative learning environments

Patrizia Sandri¹ and Mariagrazia Marcarini²

1. *University of Bologna | Italy*

2. *University of Bergamo | Italy*

Abstract

The objective of our ongoing exploratory research is to understand whether the organisation of learning spaces is beneficial for the inclusion of all students, especially those with severe learning disabilities. The research has been conducted in six different schools, which range from primary to secondary schools, four of them are in Italy and two in Denmark. Several techniques have been used for data collection: maps and documents; videos and photographs; geometric and photographic surveys; direct observation of the school premises, objects and interactions; group and individual interviews with principals, teachers and students. The research has highlighted that teachers in inclusive schools are more aware of the organisation of the learning spaces and the flexible and changeable setting enables inclusion, multiple teaching strategies, learning individualisation and an educational community.

Keywords

INCLUSIVE EDUCATION | DESIGN FOR ALL | DISABILITY | AUTISM | INCLUSIVE LEARNING SPACES

Introduction

The continuous evolution of didactic models, for different educational needs emerging from society, has highlighted how the current spaces of the majority of schools are now obsolete. New paradigms and a new vision of the learning environments are necessary for allowing all the students, no one excluded, to improve their learning and consequently their skills.

Each educational space should be designed to encourage positive learning for all students, including those with impairments, that are often turned away from the class and their classmates. In an inclusive vision of the school, each student must be guided to learn as widely as possible in class (Gaines, Bourne, Pearson & Kleibrink, 2016).

The challenge is to be able to design and implement flexible solutions that make it possible to adapt spaces according to the different educational solutions and to the special needs in existing schools, with restructuring measures having a low economic impact. An interdisciplinary work is necessary to face this, supported by an inclusive commitment shared by the professionals of the different areas of intervention.

In designing learning environments, architects, designers and facility managers must consider the needs of all students and plan together with the members of the school community. Often it is necessary to refer to many perspectives to find suitable solutions (Marcarini, 2016). Many designers refer to: the Field Theory (Lewin, 1936), that relates the surrounding environment to behavior; the Environmental Preference Theory (Kaplan, Kaplan, Kaplan, & Brown, 1989) that values the environmental qualities on the bases of some characteristics such as consistency and complexity in order to create environments that increase the comfort of the people who live there; the Theory of Legibility (Lynch, 1960) that allows to identify spatial solutions that help people with difficulty of orientation to identify a path; the Prospect and Refuge Theory (Appleton, 1975) which explains

the ways used by man to organise the environment around him; the Sensory Integration Theory developed by Fisher, Murray, & Bundy (1991) starting from the research work by Jean Ayres, which studies the use of sensory information to help people interact with the environment; the Gestalt Theory used to understand how individuals organise their perception in interacting with environments (Bogdashina, 2003) and also the Theory of Mind, the Additional Theoretical Work, the Theory of Executive Function and the Therapeutic Environment Theory (Gaines et al., 2016).

The different contributions should however be integrated within a theoretically coherent framework that has, as its cardinal principles, the enhancement of the potential of each person, even if with severe impairment, and the construction of an inclusive context based on mutual respect and co-evolution (Canevaro, 1999; Sandri, 2014).

Most of the existing literature about inclusive architecture focuses on sensory and spatial issues and presents some recommendations on what the most significant aspects of spatial layout are for helping architects to design environments appropriate to disabled people (Mostafa, 2008).

The research that has been carried out gives indications to design new schools with adequate spaces, for the needs of people with disabilities in general and with autism in particular, evidencing a very close relationship between educational spaces and performance (Khare & Mullick, 2009). However, the inclusion “for all” is a complex process to be implemented and can be conceived as a regulatory instance of utopian value that owes its effectiveness to being continually optimised (IO2 Training Tools, 2018).

Italy has a forty-year tradition of inclusion of all students with disabilities in regular classes, but in case of necessity, in many schools, “support rooms” are used only for students with impairments. It is necessary to reflect on this situation, that marginalises some students, to find adequate solutions, in new but also in old schools, to improve the educational environments with low cost investments and to make them more inclusive, so that nobody is excluded.

The furniture and the spatial organisation should be a support to democratic (Dewey, 1916) and inclusive schools in which an active teaching methodology is implemented and aimed at increasing each student’s responsibility, autonomy and communication, using differentiated teaching strategies (from direct education, to apprenticeships, to social constructivism) and according to the different learning characteristics of each one (Mitchell, 2014).

Research methodology

Based on previous reflections and starting from the analysis of the most recent literature, the following questions, that address this research, have been asked:

- How can inclusive spaces in schools be designed?
- Is it possible to organise a classroom so that all students can stay in class and learn in the best conditions?
- Can the creation of spaces ad hoc (soft or relaxed corner) inside the classroom guarantee and improve the inclusion of all children?
- Can open-plan schools guarantee and improve the inclusion of all children?
- Does the organisation of spaces and activities of the schools involved in the research (for instance “subject classrooms”) promote autonomy, responsibility and well-being according to the definition of the International Classification of functioning, disability and health – International Classification of Function, Disability and Health (ICF) (WHO, 2001)?

The research focused on six schools, which define themselves as innovative schools and were available to collaborate, in two different countries: Denmark and Italy. The choice of Denmark was made for three reasons. The first concerns the investments made in the school after the poor results in the OECD-PISA 2000 survey (Juelkjær, 2012); the second reason pertains to the investments that involved the new schools design, where an innovative teaching method was proposed putting the student at the center of education with its different learning style (McGrane, 2012). The third is historical - since 1844 legislative measures were issued in Denmark giving importance to the influence of educational spaces on child development (Vindum, 2007).

The Danish schools involved in the research are: Hellerup Folkeskole in Gentofte (Copenhagen), for children aged 6 to 15, total open space, and Høsterkøb Skole in Hørshol, for children aged 7 to 11, that has reorganised the spaces to become more inclusive. The Italian schools are: “Rondelli” Primary school in Monzuno (Bologna), for children aged 6 to 10, in which the internal spaces have been reorganised, without any structural intervention; “Piersanti Mattarella” first grade secondary school in Modena, for children aged 11 to 13, built according to the latest legislative provisions and architectural indications. In addition, two high schools for students aged 14 to 19: Don Milani Institute in Montichiari close to Brescia, that is reorganising their learning spaces also to cater for the enrollment of numerous students with disabilities; Enrico Fermi Institute, in Mantua, where, some years ago the “subject classroom” was realised and it is interesting to verify how this organisation influences the inclusion of students with disability.

The schools are particularly illustrative for their characteristics, highlighting some similar project ideas: although they have different conceptions of inclusion¹ and they are not comparable due to differences in the cultural, historical and social context of the two countries, all schools organised the spaces by referring to the socio-constructivist learning model. Some of them (Hellerup, Don Milani, Mattarella) are characterised by being the result of a shared design process with the teachers and by having important participation of families.

This research was carried out by adopting the ecological paradigm (Mertens, 2010), with a strong hermeneutic and orientative value (Mortari, 2012), and envisaged the use of qualitative survey techniques, such as the “Case Study”, according to an inductive vision. This allowed us to reach a shared picture of the situation, safeguarding the features of real life events (Yin, 2003).

With regard to data collection, various search tools have been used (Silvermann, 2002): bibliographic research about the influence of the organisation of spaces to guarantee the inclusion of students with impairments, even severe; maps and documents provided by schools; videos, geometric and photographic surveys; collection of static and dimensional data; direct observation of school premises, of inclusive organisation of spaces and of didactic organisation; individual interviews and focus group with the principals, teachers and students, with or without special educational needs, to understand their belief and perception about how the different organisation of spaces can influence students’ well-being and inclusion.

1 In Denmark, the legislation on special education can be organised in different ways. In most cases, the pupil remains in a mainstream school class and receives special education in one or more subjects as a supplement to general teaching. (...) Alternatively, they may be taught in a special class, either in mainstream or special school settings. Finally, the pupil may attend either a mainstream school class or a special class and be taught in both types of classes. (www.european-agency.org/country-information/denmark/systems-of-support-and-specialist-provision). In Italy, all the pupils with disabilities generally attend mainstream schools, in the ordinary sections and classes at all educational levels.

Discussion

The design of learning environments must consider human-environment interactions through Maslow's pyramid of needs (Maslow, 1954) which highlights how the need for privacy, personal spaces, isolation from crowding and the attention for the aspects related to sensoriality: sight, hearing, touch, proprioceptive functions and the vestibular apparatus are a priority. In particular, eyesight is the most important sensory organ and the most used by the population, but visual stimulation can be very disruptive for people with autistic syndrome. The characteristics related to eyesight are: light, in its declinations of natural/artificial light, glare, reflections and colors; the effects that derive are far beyond aesthetics. Studies on the effects of color on people show possible eye fatigue and changes in blood pressure and brain development (Gaines et al., 2016).

In space organisation, environments designed in a "legible" way according to Lynch's Theory of Legibility, compared to the activities that must be performed, allow people with disabilities to move safely, without wondering what activities and behaviors are most appropriate for that space. A method called "spatial sequencing" reorganises the space to promote routines that help people predict the activities that will be carried out in every environment and therefore to be less anxious.

From a hearing point of view, people with disabilities, in particular with autism, are influenced by noise that can cause reactions of various kinds even if the level of its acceptability varies from culture to culture. In any case it is important in the design phase to provide sound-absorbing materials that reduce noise and noise reverberation (Gaines et al., 2016).

All students, but especially those with disability, should find a space that supports their wellbeing and, if necessary, "take refuge" when they feel the need. The space should be equipped with minimal furniture, soft lights, relaxing music, comfortable cushions on which to sit, to allow stress reduction (Gaines et al. 2016). Also, in this case the design and architectural solutions are different in relation to the adopted principle of inclusion.

Results

Organisation of space influences the behaviours of humans in an 'invisible' way (Bernstein, 1979) through the 'latent pedagogy' (Bondioli & Nigito 2008) which is often passively accepted and experienced by teachers. In inclusive schools there is awareness of this influence and the flow of communicative authentic exchange (Rogers, 1951) between teachers and students helps to create a collaborative atmosphere, an educational community, and to overcome the fragmentation of disciplines.

The cornerstone, as all the members of the schools involved in the research confirm, is the relationship between the teachers and the students, but the "specific organisation of learning spaces" can facilitate an innovative, inclusive and individualised didactic practice where everyone learns in reciprocity and in well-being. "Well-being", as specified in the ICF (WHO, 2001), is not only the result of a state of health, but the possibility of feeling oneself as a person that contributes to their own community. All this involves the creation of distinct areas in the classroom for diversifying activities. A "soft or relaxed" space in the classroom, that we can call a "quiet area for inclusion" is present in all the schools involved in the research. In this space all students, especially when they feel over-stimulated, especially for students with Autistic Syndrome, emotional or behavioural problems, can find a space and time to be alone, if necessary for them, and to self-regulate (McLesky, Rosenberg & Westling, 2013). The "quiet area for inclusion" is a space in the classroom where regulated activities can be carried out also in small or large groups. It is based on the need to strengthen the sense of belonging to a community and the ability of students to exercise responsibility.

Every school involved in the research organises itself in different ways, but everyone tries to find a solution to guarantee the expression of students' potentiality and their inclusion through a flexible setting, the use of multiple teaching strategies and learning individualisation. We are briefly going to describe the different "quiet areas".

RONDELLI PRIMARY SCHOOL: "THE AGORÀ SPACE"

There are 80 students of which 7 (8.75%) have Special Educational Needs. The "Agorà" is a space in the classroom defined by a corner between two walls equipped with soft seats and hypoallergenic carpet.



Figure 1. Classrooms. (Source: Photos provided by teachers, 2018).

"Piersanti Mattarella" First Grade Secondary School: The "Island There Is"

There are 253 students of which 11 (4,34%) have Special Educational Needs. "The Island there is" is a space in the classroom separated by a wall or a piece of furniture. It is equipped with seats and comfortable cushions.



Figure 2. Classrooms. (Source: Sandri, Marcarini, 2018).

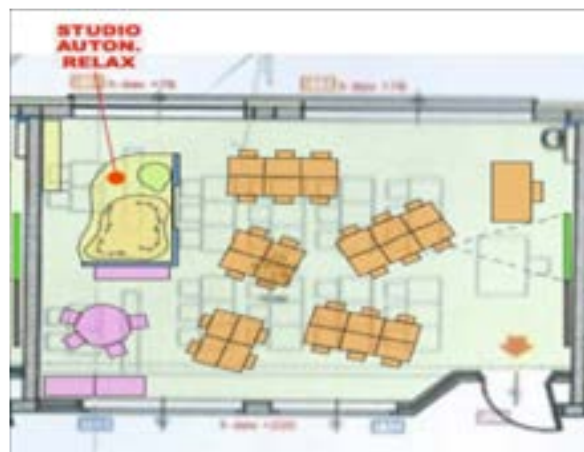


Figure 3. Mattarella -The island there is. (Source: Rivalenti, 2016).

“ENRICO FERMI” SECOND GRADE SECONDARY SCHOOL

There are 1660 students of which 12 (0,72%) have Special Educational Needs. Inside some classrooms there is a space equipped with comfortable seats.



Figure 4. Fermi-English Classroom & Quiet area. (Source: Paolino, 2018).

“DON MILANI” SECOND GRADE SECONDARY SCHOOL

There are 1750 students of which 31 (1,77%) have Special Educational Needs. Through the shared design process, the teachers and the students designed the classrooms as learning environments within which they think it is important to realise a private and inclusive space, where not only the students with disabilities, but all students can study alone or with a classmate or use for relaxing.



Figure 5. Don Milani-New classroom rendering. (Source: Filios & Arnaldi, 2018).

“HØSTERKØB» SKOLE PRIMARY SCHOOL “EVERYWHERE”

There are 212 students, of these 13 (6,13%) have Special Educational Needs: Autism Syndrome; ADHD (Attention Deficit Hyperactivity Disorder); OCD (Obsessive Compulsive Disorder). There aren't any spaces for children with disabilities or support teachers. Every space in the classroom can be suitable to help pupils who are in difficulty, but there are some quiet areas and spaces where the students can take a rest.

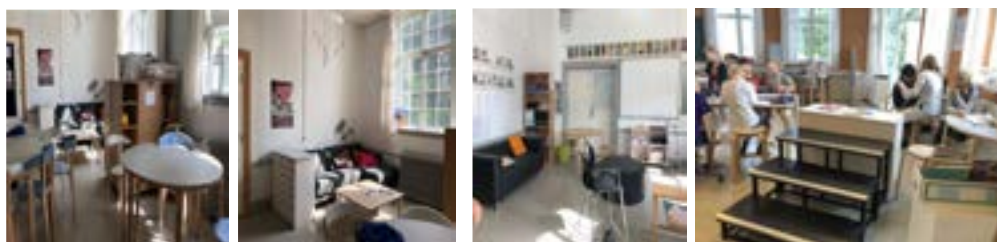


Figure 6. “Høsterkøb-Learning environments”. (Source: Authors, 2018).

HELLERUP” FOLKESKOLE: “THE NORTH STAR”

There are 621 students, of which 24 (3,86%) have special education needs: 12 students have a certification: Asperger Syndrome, ADHD (Attention Deficit Hyperactivity Disorder); OCD (Obsessive Compulsive Disorder); 12 students have: Dyslexia, Dyscalculia, Anxiety and other learning difficulties. In Hellerup there isn't a specialised space for children with disabilities. There is “The North Star”, «it is not a place or a special room, but it is a way to help children» (Headteacher of Hellerup, 2018).

The North Star is a function specifically for the younger students (from 6 to 10 years of age) with disabilities and for all students who at times need extra help by support teachers or pedagogues in their educational career or to find a quiet space in a specific room by the office.



Figure 7. Hellerup-The North Star. (Source: Marcarini, 2013).



Figure 8. Hellerup-Learning environments. (Source: Authors, 2018).

Conclusions

Spacious classrooms where the teachers may implement flexible and individualised didactics are an important aspect for inclusion. According to the perception of the interviewed teachers of Mattarella and Fermi schools, the new organisation in “subject classrooms” allowed all students and in particular those with disabilities to become “more autonomous and responsible”.

All the presented schools want to reach, more or less explicitly, the constitution of a “scholastic space”, of a “potential space” (Winnicott, 1989) where it is possible that pupils and teachers can relate to each other in terms of a “we” and they can co-build, each of them with their own different characteristics, in their own original identity, a community (Sergiovanni, 1994), where nobody is excluded.

References

- Appleton, I. (1975). *The experience of landscape*. New York, NY: John Wiley & Sons.
- Bernstein, B. (1979). Classi e pedagogie: visibili e invisibili. In E. Becchi (Ed.), *Il bambino sociale*. Milan, Italy: Feltrinelli.
- Bondioli A., & Nigito G. (Eds.). (2008). *Tempi, spazi, raggruppamenti. Un dispositivo di analisi e valutazione dell'organizzazione pedagogica della scuola dell'infanzia (DAVOPSI)*. Azzano San Paolo, Italy: Edizioni Junior.
- Bodgashina, O. (2003). *Sensory perceptual issues in autism and Asperger Syndrome. Different sensory experiences, different perceptual worlds*. London, England: Jessica Kingsley Publishers.
- Canevaro, A. (1999). *Pedagogia Speciale. La riduzione dell'handicap*. Milan, Italy: Mondadori.
- Dewey, J. (1916). *Democracy and Education*. New York, NY: The Macmillan Company.
- Fisher, A.G., Murray, E.A., & Bundy A.C. (1991). *Sensory integration: theory and practice*. Philadelphia, PA: F.A. Davis.
- Gaines, K., Bourne, A., Pearson, M., & Kleibrink, M. (2016). *Design for autism spectrum disorders*, New York, NY, London, England: Routledge.
- IO2 Training Tools. (2018). *Hey, Teachers! Don't leave the kids alone*. <http://heyteachers.splet.arnes.si/intellectual-output-2-training-tools/>
- Juelkjær, M. (2012). School architecture and learning conditions, a Danish case. *Jianzhu Jiyi*, 6, 69-71.
- Kaplan, R., Kaplan, S., & Brown T. (1989). Environmental preference: A comparison of four domains of predictors. *Environment and behaviour*, 21(5), 509-530.
- Khare, R. & Mullick, A. (2009). Incorporating the Behavioral Dimension in Designing Inclusive Learning Environment for Autism. *Archnet-IJAR*, 3(3), 45-64.
- Lewin, K. (1936). *Principles of topological psychology*. New York, NY, London, NY: McGraw-Hill Book Company Inc.
- Lynch, K. (1960). *The Image of the City*. Boston, MA: MIT Press.
- Marcarini, M. (2016). *Pedarchitettura: linee storiche ed esempi attuali in Italia e in Europa*. Rome, Italy: Edizioni Studium.
- Maslow, A.H. (1954). *Motivation and personality*. New York: Harper & Row Publishers.
- McGrane, S. (Jan 18, 2012). Open Spaces Transform Danish Education. *The Wall Street Journal*.
- McLeskey, J.L., Rosenberg, M.S. & Westling, D.L. (2013). *Inclusion: effective practices for all students* (2nd Ed.). Cambridge, MA: Pearson.
- Mertens, D.M. (2010). *Research and evaluation in education and psychology*. Thousand Oaks, CA: Sage.
- Mitchell, D. (2014). *What really works in special and inclusive education: Using evidence-based teaching strategies*. London, England, New York, NY: Routledge.
- Mortari, L. (2012). *Cultura della ricerca e pedagogia*. Rome, Italy: Carocci.
- Mostafa, M. (2008). An architecture for autism: Concepts of design intervention for the autistic user. *Archnet-IJAR*, 2(1), 189-211.
- Rogers, C.R. (1951). *Client-centred therapy: Its current practice, implications and theory*. Boston, MA: Houghton Mifflin.
- Sandri, P. (2014). Integration and inclusion in Italy: Forward a "special" pedagogy for inclusion. *ALTER - European Journal of Disability Research*, 8(2), 92-104.
- Sergiovanni, T.J., (1994). *Building Community in Schools*. San Francisco, CA: Jossey-Bass Publisher.
- Silvermann, D. (2002). *Doing qualitative research: A practical handbook*. Thousand Oaks, CA: Sage.
- Vindum, K. (2007). A misura di bambino. Due scuole di Arne Jacobsen. *Casabella*, 750/751, 44-53.
- World Health Organization. (2001). *International classification of functioning, disability and health*.
- Winnicott, D.W. (1989). *Playing and reality*. London, England: Tavistock Publications Ltd.
- Yin, R.I. (2003). *Case study research*. Thousand Oaks, CA: Sage.