

# How Interior Design Impacts Learning Performance for Children with Special Needs in Surabaya

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## ABSTRACT

According to Indonesia's Central Statistics Agency (BPS), the number of children with special needs in 2017 reached 1.6 million, and among them, only 18% received inclusive education services. The Surabaya Government has issued a policy that every school has an inclusion class to accommodate children with special needs. Many factors determine the growth and development of children, such as formal and informal education. Therefore, equity in education for children is a crucial topic to study. Since all children should receive proper educational facilities to maximize their potential, interior design can be a solution to convey an adequate learning environment for children with special needs. Thus, this paper will survey children with special needs concerning school design planning using interactive and non-interactive qualitative data collection methods, including literature focusing on behavioral characteristics related to the environment, interviews, observation, and visits to some appropriate sites. The survey will be conducted with at least 40 respondents, including parents, teachers, and peers of the children. The goal of this study is to provide suggestions to schools around Surabaya on how to make their education more inclusive.

**Keywords:** Disabilities, children, inclusive, interior, design.

## INTRODUCTION

Special-Needs children are those in terms of fulfilling their lives and need help in several fields: education, social, counseling, and many other special services. Based on the law and ministerial regulations, those who fall into the category of children with special needs are those who are under 18 years old with limitations or extraordinary in the physical, mental, intellectual, social, sensory, and emotional aspect that has a significant effect on growth and development compared to other of their age which in the long term makes it difficult for them to participate effectively in the society. Children with special needs need different and unique handling from other children, starting from their education, health care, and surrounding environment (Profil Anak, 2017, p. 2). If the treatment is successful, they will become independent individuals and become an excellent potential nation's newer generation. This special attention is needed to improve their comfort and welfare; hence they'll feel accepted by society.

Based on the Central Bureau of Statistics dan data from the Ministry of Social Affairs, the number of people with disabilities has doubled in an interval of 10 years, 22.6% of them are 0 – 18 years old, and most of them

live on Java Island with the most significant number dominated in the West and East Java (Kementerian Sosial Republik Indonesia, 2018). In addition, the Central Bureau of Statistics also stated that 1/3 of people with disabilities didn't finish secondary school and less than 1/5 of them managed to graduate from college. Education statistics also show that only 5.48% of children aged five years and over are still in school, and those who haven't or have never attended school are 23.91%. Meanwhile, data from the 2018 National Economic Survey (SUSESNAS) stated that only 56% of children with disabilities graduated from elementary school. These various data became the root of injustice for children with special needs who are challenging to be accepted by the public in adulthood. This issue was supported by the evidence of employment opportunities for people with disabilities in the 2016 – 2019 period that never grew more than 49%. In line with the issue, all parties must continuously promote various programs and efforts to overcome it (Pusat Layanan Pembiayaan Pendidikan).

In response, the Indonesian government issued several laws for everyone without excluding certain groups of people to get the proper education and treatment they need. In the Indonesian law of building and construction, it's written that facilities must be safe and easy to

use, especially for people with disabilities. Indonesian law of public services also states that public service providers must also provide special services for people with disabilities (Inklusi Penyandang Disabilitas). To answer all those said issues and regulations, the East Java Provincial government has required all public schools in East Java to provide inclusive education since 2016. (Profil Anak, 2017). According to the Indonesian Dictionary (KBBI), inclusive means included or counted. In terms of the education service system, inclusive education means schools' service doesn't exclude certain groups of students who can learn and use the provided facilities properly and appropriately.

## METHOD

An interactive and non-interactive qualitative data collection method was used to understand the issue and overall picture, including a literature study focusing on behavioral characteristics related to the environment, interviews, observations, and visits to appropriate sites.

Discourse analysis was used as the framework for the analysis of Children's reactions and behavior. It is a series of interdisciplinary approaches to explore many different studies to search for different perspectives and suggestions. This method helps to have a deeper understanding. Discourse analysis helps investigate and analyze the relation of Children's learning performance to their surroundings to formulate some perspectives, critiques, and conclusions that may be useful for social change (Jorgensen & Phillips, 2002, p. 3).

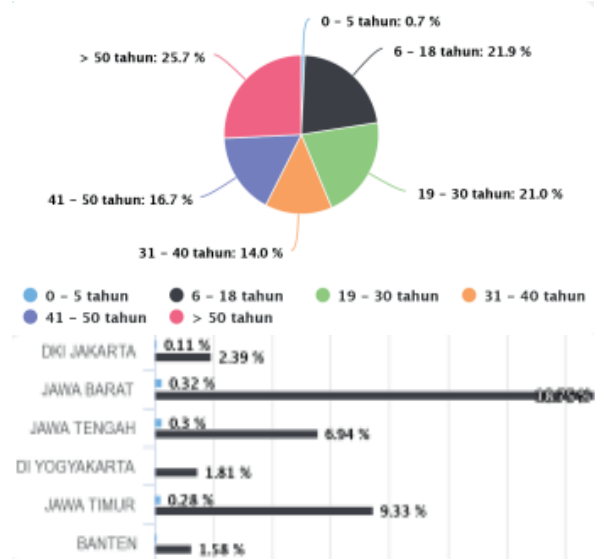
## FINDINGS AND DISCUSSION

### Children with Special Needs

According to Indonesian law, anyone under 18 years old is considered a kid, including those still in the womb. Thus, children with disabilities are under the age of 18 and have restrictions or exceptional physical, mental, intellectual, social, and emotional characteristics that significantly impact their growth and development compared to other children their age. Children with disabilities can be differentiated into three categories: physical disorder, emotional and mental disorder, and intellectual disorder (Desiningrum, 2016, p. 7).

According to 2018 Health Research (RISKESDA), most people with disabilities are over 50 years old, with the next-largest group being those aged 6 to 18 years and the third-largest group being those aged 19 to 30

years. Most Indonesians with disabilities aged 0-18 years live on the island of Java, primarily in the provinces of West Java, East Java, and Central Java (Kementerian Sosial Republik Indonesia, 2018).



**Figure 1.** Data on Age and Number of People with Disabilities in Indonesia (Source: Kementerian Sosial Republik Indonesia, 2018)

### Type of Education for Children with Special Needs

#### (a) Segregation Education

It is the country's first and oldest special education system for children with special needs. Because the educational system was vastly different from ordinary education, children with special needs could not be placed in the same classroom as typical pupils. This technique was implemented due to concerns about the ability of children with special needs to participate in classrooms with their typically developing peers. There are four types of segregation in the educational system, which are as follows:

(1) Extraordinary School (SLB): This was the first school form for children with disabilities. All levels were implemented in a single unit under the supervision of a school administrator. Initial development follows the pattern of a distinct disorder, and it is divided into five types: SLB-A for blind children, SLB-B for deaf children, SLB-C for mentally disabled children, SLB-D for physically disabled children, and SLB-E for children who have difficulties with their emotions and interpersonal relationships, among others. However, some schools have concentrated on more than one problem during the course of their development, leading to the discovery of SLB-AB, SLB-BD, SLB-AE, and so on.

- (2) **Extraordinary School with Dormitory:** This kind was quite similar to the first one, with the exception that this type provides dormitory facilities for the students. The administration of the dormitory becomes an integral aspect of the administration of the entire institution. The education unit has a similar structure to the extraordinary conventional school (SLB), and it is organized into SLB-A to SLB-E divisions.
- (3) **Distant/Visiting Class:** This government institution provides educational services to special-needs children in areas where no other extraordinary school exists. The target group is children with special needs who reside in remote areas, as special schools are currently only available in a few places.
- (4) **Kindergarten, Primary, Junior High, and High Extraordinary School (TKLB, SDLB, SMPLB, and SMALB):** Initially, the school lacked distinct stages, but extraordinary primary schools were erected in droves after the government mandated that everyone receive a six-year primary education. However, as the academic unit has grown, it has developed into an autonomous institution with schools ranging from kindergarten to primary, junior high, and high school.

### (b) Inclusive Education

This was the most recent form of schooling and was heavily promoted by the government. This approach is based on the inclusion concept, which states that an institution's structure should adapt to the needs of its students. The curriculum is designed using a communicative engagement system that the teacher guides and is centered on the students' needs. Thus, some of the advantages of inclusive education over the extraordinary traditional school are as follows: increasing awareness of the importance of inclusive education while simultaneously eliminating discriminatory attitudes, involving additional parties and the community in analyzing the educational situation in each region as well as identifying children's problems, and finally, identifying barriers to access and learning associated with physical, social, and other disabilities (Profil Anak, 2017, pp. 83–87)

### School Curriculum

The general curriculum utilized by inclusive schools does not have a specific name; it is frequently referred to as an adaptive curriculum. This curriculum is a modification of a standard curriculum used at the time and is tailored to the student's needs and developmental stage of abilities or potential. The curriculum is prepared in four steps:

**Table 1.** Stages of Modified Curriculum for Special-Needs Children.

Duplication	Develop and implement a curriculum for students with disabilities in a manner similar to that utilized for general education students.
Modification	Students follow a curriculum that is tailored to their unique circumstances, requirements, and talents. The applied curriculum is slightly different from the standard curriculum.
Substitution	Substituting something in the general curriculum for one that is inaccessible to special-needs children and can be replaced with something of similar weight.
Omission	Removing or deleting anything from the general curriculum, either partially or totally, since it is impossible to provide it to children with more severe disabilities.

Source: Rudiwati, n.d., pp. 9–20

### Types of Therapy for Children with Special Needs

Numerous forms of therapy have evolved greatly throughout time. The therapy was developed to assist children with special needs to communicate more effectively, thus engaging in society more effectively, minimizing inappropriate behavior, and teaching academic subjects and other skills. Several therapies that are frequently used to treat children with special needs include the following Table 2.

According to a personal interview with teachers, therapists, psychologists, and parents of children with special needs, all of them indicated that their children's behavior, learning performance, movement flexibility, and a few other minor features had improved dramatically after they began therapy.

### Inclusive School Facilities

Important considerations to keep in mind while designing a school structure:

- Access:** Simple, accessible, and clear layout, easily understood by all users, ample area for wheelchairs and sticks, and, last but not least, ways of escape developed with disabled people in mind. Ergonomic doors are at least 90cm wide with an easy-to-use handle; sliding and heavy doors are not advised.
- Space:** Clearances around furniture and equipment, particularly for wheelchair users, storage, and use of (often heavy) equipment and a diverse variety of educational materials, and safe vehicle mobility (which should be considered in a special school).
- Sensory Awareness:** Anti-glare lighting, adequate acoustics, visual contrast and texture to promote sensory navigation, and a reduction in levels of

**Table 2.** Therapy for Children with Special Needs

<b>Therapy</b>	<b>Scope of Focus</b>	<b>Description</b>
Occupational	Motoric Disorders	Healing efforts are made possible by providing specific physical, intellectual, social, emotional, and creative activities that promote the child's independence. The objective is for youngsters to be self-independent in carrying out daily activities. Materials and approaches are chosen based on the child's traits. The therapy exercises include reaction exercises such as calling names, movement habits such as walking in a straight line, gross motor skills such as walking freely without assistance, balance exercises such as slowly walking on a titan board, and fine motor skills such as opening a bottle cap.
Physiotherapy	Physical Limitations	The objective is to strengthen and train the motion function. It is classified into two types: passive (movements are performed with the assistance of the therapist) and active (movements are performed with the child's efforts). Physical rehabilitation exercises include swimming, walking, climbing, twisting, etc.
Applied Behavior Analysis (ABA)	Emotional, Behavior, and Intellectual Disorder	Giving positive reinforcement if the child follows the instructions correctly and withholding reinforcement when the youngster follows the instructions incorrectly or does not respond at all. The fundamental concept is denoted by the acronym A-B-C, which stands for Antecedent (things that occur before the occurrence of the behavior, specifically instructions), Behavior (i.e., behavior/response/ response to instructions), and Consequence (positive rewards). The objective is to promote comprehension and compliance.
Sensory Integrity	Autistic Spectrum Disorder	The therapist will direct activities that gradually stimulate (challenge) the child, and the youngster is supposed to respond positively / improve their response. This therapy aims to alleviate autism symptoms and tantrums to enhance children's ability to handle various complex sensory information encountered in daily life.
Play	Motoric and Sensory Disorder	Playing can help children develop their physical, intellectual, emotional, and social abilities. For instance, motor activities involving plasticine, role-playing doctors, and so forth. Developing imagination, creativity, and expression, as well as the self-confidence and ability to solve difficulties. Sensory-motoric activities include walking on a rope, kicking a ball, erecting block towers, and finger-painting symbols. Therapy for communication and socializing like playing with sand.
Speech / Talk	Behavioral and Emotional Disorders	This therapy is also appropriate for people who have high speech skills but are unable to use them for communication/interaction with others and those who have significantly compromised nonverbal or linguistic abilities. Massage is also used in this therapy to relax the muscles surrounding the mouth.
Development	All Disorders	Floortime, Son-Rise, and Relationship Development Intervention are the three types of developmental treatment. Children's interests, strengths, and growth will be examined, and their social, emotional, and intellectual abilities will be sharpened further. This therapy is more widespread.
Visual	Visual Learner / Visual Thinker	Learning and communication methods such as photos, video games, and picture cards can be used to develop abilities. PECS (Picture Exchange Communication System) is a specific system that is currently simple and frequently utilized by regular children.
Snoezelen	Mental Disorder	This therapy is intended to relax the child while allowing him to explore and express himself through primary sensory stimulation (sight, hearing, touch, taste, tongue, smell, and internal sensors). As a method of mental relaxation for children, as a medium for playing (leisure environment), and as a form of treatment, children are oriented to one activity, delivering a variety of sensory stimuli. Achievable objectives include: Children can enjoy games, activities, or themselves, relax psychologically and physically, raise their awareness, take the initiative to participate in activities, increase self-confidence, and improve social interactions.
Music	Emotional and Behavioral Disorders (especially very reserved, aloof, or retarded)	According to numerous studies, music may be utilized as an educational tool since it can build an artistic sense of initiative, which can influence psychomotor and psychometric development and growth. The purpose is to build and strengthen physical ability, train perception, develop potential, and regulate emotions. Music therapy encompasses moving the body in response to music, listening to music, using instruments, singing, and playing in response to music.
Brain Exercise	Mild Emotional, Behavioral and Intellectual Disorder	This therapy is at the center of educational kinesiology (the science of human movement), which uses touch and simple pleasant movements to connect all sections of the brain in order to increase skills, cognitive abilities, learning, self-esteem, and togetherness.

Source: Desiningrum, 2016, Chapter 6; Relaksasi Saat Pandemi, 2021, p. 1; Rudiwati, n.d.

negative stimuli to avoid overstimulating. Ceramic/marble floor materials might be uncomfortable since they tend to feel chilly; thus, materials with a poor heat conductivity are advised. It is advised to use interactive decoration as a passive treatment while still having fun.

- (d) Flexibility: Rationalizing space to their tasks so that it can adapt over time, being able to adjust the environment (for example, lighting and acoustics) to support a variety of learning demands, eliminating fixed furniture, especially in the classroom, to allow re-arrangement for different activities.
- (e) Well-Being: Thermal comfort, ventilation with good oxygen levels, limiting distracting background noise, specialized medical and therapy facilities intended for children with special needs standards, cleanliness management since children with special needs typically have a lower immune level.
- (f) Safety and Security: Adequate sightlines for passive supervision, especially if unacceptable behavior is probable and activities are risky. Strong materials and a mattress layer were used to construct the structure since tantrum-prone children can't always regulate their behavior and environment.

(Designing for Disabled, 2014, Chapter 3; Menteri Pekerjaan Umum, 2006, Chapters 1–2)

The classroom and therapy room are the two most significant inclusive school rooms. However, such rooms cannot be created in the same way as a conventional school; here are some important things to consider when designing:

### CONCLUSION

In Indonesia, children with special needs are commonly disregarded and neglected. As a result, the development and growth of special-needs children in Indonesia are less than optimal. As a result, the Indonesian government enacted a variety of regulations to address the problem. There are several unique regulations that apply to public buildings that should be designed more inclusive.

However, aside from the construction and architecture of the building, interior design has a significant impact on learning performance that is sometimes underestimated. Access, space, sensory awareness, flexibility, well-being, safety, and security are all important factors to consider while developing a school structure. This must be carefully studied because there are various restrictions and standards that differ from those of conventional buildings or schools.

**Table 3.**

Room	Key Furniture	Recommendation
Classroom	Student’s table and chair, whiteboard / chalkboard, teacher’s table, and chair.	<p>(a) Typically, primary school classrooms utilize educational decorations glued on the walls; however, to avoid damaging the walls, it is preferable to set a proper place to attach the decorations for learning. But too crowded decorations can interfere with a child’s concentration, especially for those with learning difficulties.</p> <p>(b) Later in grade 6 elementary school, there will be tests that need the classroom to be free of distracting decorations that might lead to cheating, so for children to get adjusted to it, the higher the class level, the fewer decorations.</p> <p>(c) Sharp corners are not suggested because when kids experience tantrums, they may not have full control of their body and environment, making sharp corners dangerous.</p> <p>(d) Personal storage space, preferably near their chair and table, because their stuff may appear jumbled without it, which might encourage undesirable habits.</p> <p>(e) The classroom must have at least one clear side so that the activity within may be seen from the outside.</p> <p>(d) At the very least, the distance between furniture, particularly between seats, is wheelchair accessible.</p>
Therapy Room	Equipment according to therapy type	<p>(a) Most therapies are more effective when performed one on one, hence smaller rooms with suitable facilities are essential.</p> <p>(b) Because some children perceive therapy as a punishment, the entire therapy room design must promote happiness and joy.</p>
Service Area (Toilet, Staff Room, Kitchen, etc.)	Depends on the room, i.e., kitchen set for kitchen	Rooms containing sharp objects, such as the kitchen and storage room, must be kept out of reach of children without adult supervision.

Source: Designing for Disabled, 2014, pp. 15–16

## REFERENCES

- Designing for disabled. (2014). *Building Bulletin 102*. Retrieved from [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/276698/Building\\_Bulletin\\_102\\_designing\\_for\\_disabled\\_children\\_and\\_children\\_with\\_SEN.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/276698/Building_Bulletin_102_designing_for_disabled_children_and_children_with_SEN.pdf)
- Desiningrum, D. R. (2016). *Psikologi anak berkebutuhan khusus* [Psychology of children with special needs]. Psikosain.
- Inklusi penyandang disabilitas [Inclusion of persons with disabilities]. (2011). 1–4. [https://www.ilo.org/jakarta/whatwedo/publications/WCMS\\_233426/lang--en/index.htm](https://www.ilo.org/jakarta/whatwedo/publications/WCMS_233426/lang--en/index.htm)
- Jorgensen, M., & Phillips, L. J. (2002). *Discourse analysis as theory and method*. SAGE Publications.
- KBBI. (n.d.). Inklusif [Inclusive]. In *KBBI Online*. Retrieved April 29, 2022, from <https://kbbi.web.id/inklusif>
- Kementerian Sosial Republik Indonesia [Indonesian Ministry of Social Republic]. (2018). *Sistem informasi penyandang disabilitas* [Information system for persons with disabilities]. Kemensos. Retrieved from <https://simpd.kemensos.go.id/>
- Menteri Pekerjaan Umum [Minister of Public Works]. (2006). *Peraturan menteri pekerjaan umum nomor : 30/PRT/M/2006 tentang pedoman teknis fasilitas dan aksesibilitas pada bangunan gedung dan lingkungan* [Regulation of the minister of public works number: 30/PRT/M/2006 concerning technical guidelines for facilities and accessibility in buildings and the environment].
- Profil anak [Profile of children]. (2017). *Sidiaperka*. Retrieved from [https://sidiaperka.kemenpppa.go.id/wp-content/uploads/2020/03/Tahun-2017\\_Profil-ABK-Jawa-Timur.pdf](https://sidiaperka.kemenpppa.go.id/wp-content/uploads/2020/03/Tahun-2017_Profil-ABK-Jawa-Timur.pdf)
- Pusat Layanan Pembiayaan Pendidikan [Education Financing Service Center]. (n.d.). *Puslapdik*. Retrieved March 26, 2022, from <https://puslapdik.kemdikbud.go.id/artikel/hari-disabilitas-internasional-2021:-libatkan-penyandang-disabilitas-pascacovid-19>
- Relaksasi saat pandemi [Relax during the pandemic]. (2021, July 22). *Kompasiana*. Retrieved from <https://www.kompasiana.com/nitakristantinoer/60f90b2806310e42b71a8f72/relaksasi-saat-pandemi-dengan-snoezelen-room>
- Rudiyati, S. (n.d.). Pengembangan kurikulum adaptif di sekolah inklusif [Adaptive curriculum development in inclusive schools]. In *Universitas Negeri Yogyakarta: Snoezelen multi-sensory environments*. Retrieved April 30, 2022, from <https://www.snoezelen.info/>