

Participatory Design Practices for Inclusive Learning Environments. A Cross-fertilization experience for a pilot project on accessible signage at the Instituto Superior Técnico —

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# P / REFERENCES OF CUMULUS BUDAPEST 2024 15-17 MAY 2024 DESIGN

MOHOLY-NAGY UNIVERSITY  
OF ART AND DESIGN BUDAPEST

## PARTICIPATORY DESIGN PRACTICES FOR INCLUSIVE LEARNING ENVIRONMENTS. A CROSS- FERTILIZATION EXPERIENCE FOR A PILOT PROJECT ON ACCESSIBLE SIGNAGE AT THE INSTITUTO SUPERIOR TÉCNICO – LISBON.

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**ABSTRACT** | The research delves into the realm of accessibility within Higher Education, advocating for a paradigm shift towards inclusivity. It underscores the significance of participatory design methodologies rooted in Universal Design principles. Central to this exploration is a collaborative pilot initiative concerning inclusive signage at IST Lisbon, developed in cross-fertilization with Politecnico di Torino. Employing a robust methodology, the study conducts a thorough examination encompassing literature reviews, exploratory inquiries, and focus group engagements. Through this comprehensive approach, the research aims to elucidate both global best practices and localized challenges pertaining to accessibility. Particularly noteworthy is the emphasis on participatory focus group sessions, designed to delineate the role of signage and determine effective communication strategies within the project framework. By leveraging insights garnered from these deliberations, the study seeks to inform the development of comprehensive guidelines, thus steering the trajectory of the pilot initiative towards greater efficacy and impact. Ultimately, the overarching goal of this research endeavor is to advance accessibility and inclusivity within the realm of Higher Education. By fostering collaborative partnerships and embracing holistic design approaches, it strives to cultivate learning environments that cater to the special needs of all students, thereby fostering a culture of diversity and equitable access to educational resources and opportunities.

**KEYWORDS** | INCLUSIVE SIGNAGE, PARTICIPATORY DESIGN PRACTICES, HIGHER EDUCATION, ACCESSIBILITY, DESIGN FOR DEMOCRACY

## 1. Introduction

The debate about the aspects that make the built and educational environment accessible in Higher Education context started spreading on the threshold of the new millennium: in 1993, the United Nations formulated the Standard Rules on the Equalization of Opportunity for People with Disabilities, outlining an ambitious program for governments aimed at ensuring equality for individuals with disabilities. Subsequently, in December 2006, the Convention on the Rights of Persons with Disabilities (United Nations, 2006) was adopted, along with its Optional Protocol: "with its 50 articles, the Convention represents the most comprehensive document ever produced on the rights of persons with disabilities" (Barnes & Vehmas, 2020), aiming to ensure their independent living, active citizenship, equal opportunities, and social inclusion. Thus, a new awareness begins to emerge, a shared sensitivity about the role that Universities must play in defining a paradigm of best practices that actively and participatively promote the integration of students with special needs. On one hand, academic interest is growing on the part of many Italian universities, which are independently developing complex and diversified training tools, carrying out in-depth studies and research around the issues of inclusion and accessibility of spaces and services provided to students. On the other hand, Sustainable Development Goals 4 and 10 contained in the UN Agenda2030, linked respectively to Quality Education and the Reduction of Inequalities, require immediate and circumstantial action.

However, even today, university campuses

"are often ill-suited to accommodate users with special needs, and efforts to enhance their accessibility to services are typically limited to regulatory compliance. This results in the creation of dedicated spaces that, while designed for specific needs, are poorly integrated, thus erecting barriers within the university community" (Lacirignola et al., 2022)

Taking into account the diverse student population and the educational offerings within university spaces, and reconciling these complexities with the framework of human rights principles of equal opportunity, accessibility, and social inclusion, constitutes a pathway that can and must transcend mere integration. Creating a genuinely inclusive learning environment necessitates a transversal, multidisciplinary, and complex design approach wherein the principles of design for all give rise to integrated, effective, resilient, and tailored solutions for each member of the university community.

The ethical and practical imperative recognized by international institutions and organizations to initiate a design for all capable of ensuring equal access to all members of the academic community, bypassing the need for redesigning offerings specifically for special needs individuals (Trieglaff, 2022), appears to necessitate a shift in perspective: adopting a design approach that goes beyond mere resolution of immediate needs, focusing instead on the general well-being of the involved communities and the long-term impact of proposed solutions. The adoption of a humanity-centered design, rather than a human-centered one, allows for broadening the scope of intervention: while on one hand, there is consideration of the needs, desires, and aspirations of individuals, with a humanity-centered approach the focus shifts to larger groups, more complex systems of relationships,

"including society at large, all living things, and the ecological system, as well as the design of work in general and services. This encompasses digital products and services as well, due to their significant but often invisible impact on power and energy usage, and of course, on the physical infrastructure required for their delivery to customers. While human-centered design remains appropriate for mass markets, humanity-centered design becomes crucial for addressing larger issues, such as aiding a community in self-improvement" (Norman, 2023).

## 2. Outlining the context

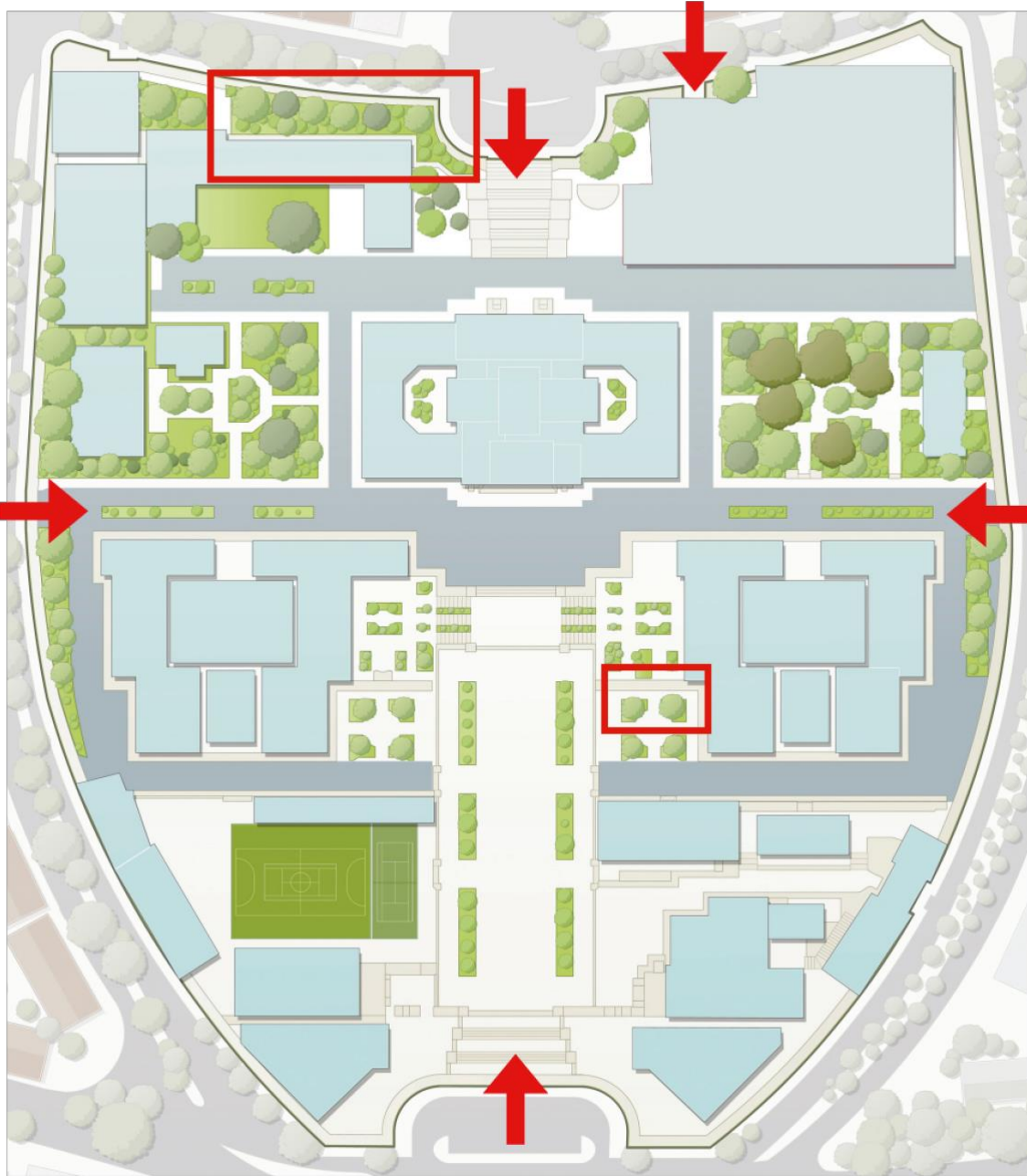
Building upon a collaborative and cross-fertilized experience between Politecnico di Torino and Instituto Superior Técnico (IST), integrated within 'Técnico Sustentável – Ambiente Sociedade Economia' (TS), an initiative of IST-Ambiente, a transversal and interdepartmental structure in Environmental Science and Engineering and related areas, this contribution presents a pilot project of inclusive signage for a green area of the IST Campus Alameda, the largest Portuguese school of Engineering, Architecture, Science, and Technology.

The pilot project, guided by a humanity-centered approach (Norman, 2023), focuses on the necessity to reinvigorate the debate surrounding the Special Needs dimension within the university context, aiming for the advancement and implementation of truly accessible spaces, services, and teachings. This perspective adopts a participatory approach based on the Principles of Universal Design.

 Saldanha Metro Station/Arco do Cego  
(Yellow Line/ Red Line)

**WEST ENTRANCE**  
Alves Redol street

**SOUTH ENTRANCE**  
Rovisco Pais avenue



**NORTH ENTRANCE**  
António José de Almeida avenue

Manuel da Maia avenue  
**EAST ENTRANCE**

 Alameda Metro Station  
(Green Line/ Red Line)

Figure 1. Map of the Main Campus Alameda.

The pilot project of inclusive signage integrates with the design of a meeting and debate space on IST's sustainability initiatives, developed by a group of students for a green area of the Alameda Campus (Figure 1). The project area, located on the western border of the campus, serves as a privileged space connecting the campus, the city, and the surrounding area, ideal for promoting the sustainability initiatives undertaken by IST. The design process for this space is led by students from architecture field, civil engineering, management engineering, and communication design, coordinated by faculty members and researchers in architecture, within the framework of the European Horizon project 'A European Competence Framework for a low carbon economy and sustainability through education' (ECF4Clim).

### 3. Methods of Inquiry

The research method includes:

- 1. An in-depth research phase.**

The research phase starts with a thorough analysis of existing literature concerning accessibility within the university context, focusing on recent developments and international best practices. Concurrently, there is an acknowledgment of the need to conduct a case study research involving the analysis of similar projects carried out by other academic institutions globally, with a focus on the strategies employed and the outcomes achieved, in order to derive a comprehensive mapping of best practices to be adopted in the design phase.
- 2. An exploratory investigation of the Institution.**

The investigation directly focuses on the Institute through interviews with academic and administrative staff, field observations, and analysis of institutional documentation, with a perspective of close collaboration and support from the Responsible for supporting the SEN students. The aim is to understand IST's existing policies, resources, and practices for supporting students with disabilities and to identify areas for improvement through a top-down approach.
- 3. A collection and analysis of data from the student community with disabilities.**

The collection of data is essential to fully understand the landscape of needs among students with disabilities at the Alameda Campus and to effectively guide the design intervention. These data provide an empirical basis for identifying key needs and trends in supporting students with special requirements, enabling the adoption of targeted strategies and appropriate resources.
- 4. Focus Group design.**

To ensure a participatory and inclusive approach, it is envisioned that the formation of a focus group involving diverse members of the university community will be necessary. The aim will be to cultivate a conducive environment for investigating the specific needs of users of spaces and services provided by IST, in order to gather direct insights on the pilot project of inclusive signage from a bottom-up perspective.
- 5. Identification of the requirements framework.**

In essence, identifying the needs and specific challenges faced by students with special requirements within the context of IST Lisbon is both feasible and imperative through interviews, field observations, and analysis of collected data. This process will aid in delineating a clear framework of priorities and intervention gaps to contribute towards creating a more inclusive and accessible university environment.
- 6. Guidelines development.**

Critical to ensuring a methodological and practical approach to the project is the development of guidelines for inclusive signage at IST Lisbon. Addressing user needs and adhering to best practices in university accessibility, these guidelines will translate research findings and consultations into practical solutions, ensuring coherence, stakeholder participation, and compliance with international standards.

### 4. First results and conclusion

From the initial research phase, a detailed overview of international best practices in university accessibility emerged, as well as the specific challenges faced by Instituto Superior Técnico (IST) Lisbon in promoting an inclusive environment for students with disabilities. Through the analysis of academic sources, institutional documents, and research reports, a comprehensive understanding of feasible scenarios was obtained by interpolating documented experiences from other institutions and insights gathered from the survey conducted at Técnico. It became evident that designing inclusive signage at Técnico requires a balanced approach that integrates parallel, bottom-up, and top-down processes.

## Campus Alameda

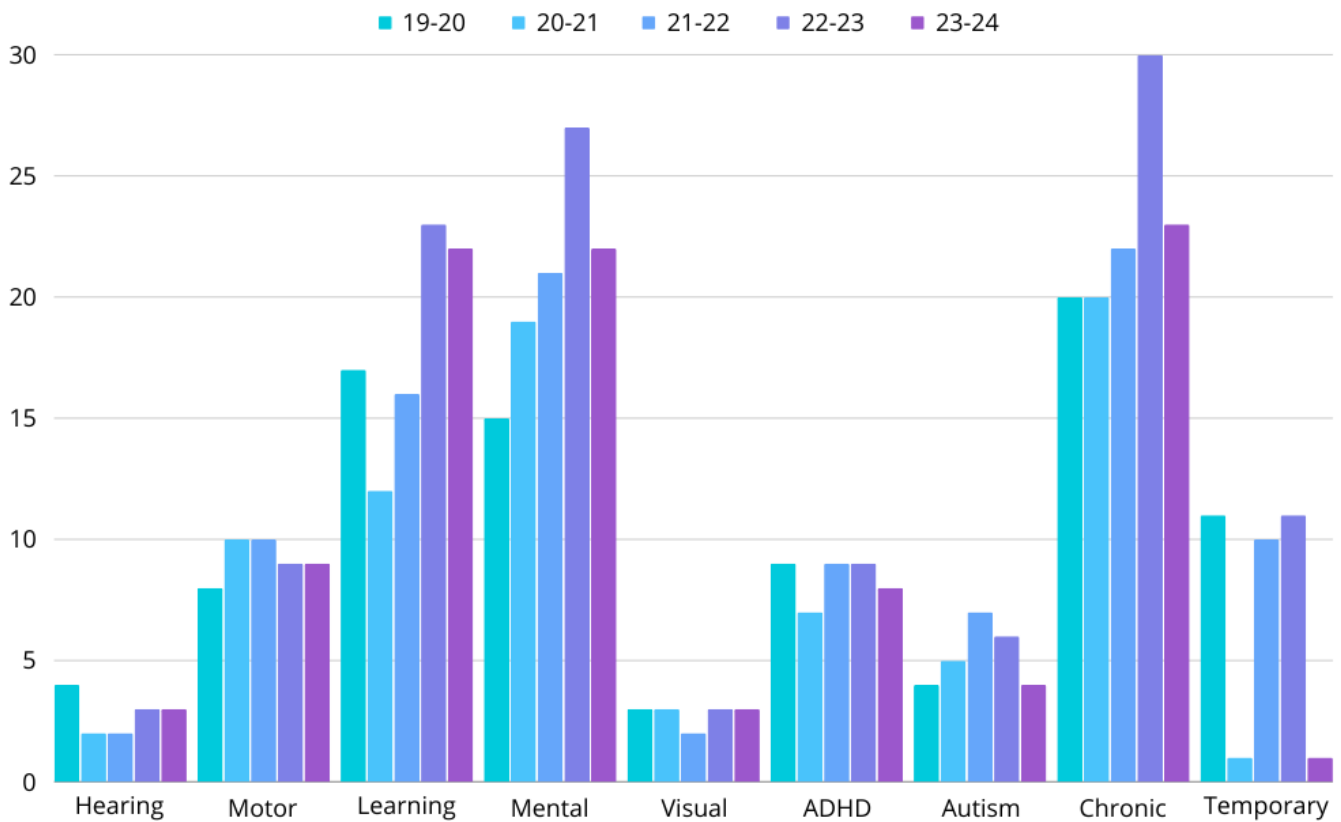


Figure 2. Trend chart students impaired-based over the time interval considered in the study (2019-2020/2023-2024).

Simultaneously, while the analysis of literature and case studies provides an overview of solutions implemented in other institutions, the direct exploratory survey at IST has allowed for an understanding of the specific needs of special needs users within the Higher Education context of IST. The knowledge framework of the institution highlighted the necessity of a participatory and inclusive approach in the design of signage: the importance of integrating the entire academic community in the phases that inform the pilot project of inclusive signage is evident from the analysis of reference writings, just as the urgency to create an internal focus group at the university becomes increasingly clear from the critical analysis of data collected at the institutional level.

The collected and analyzed data refer to the Alameda Campus where the design intervention is located, covering a period of five academic years (2019-2024) and are related to the distribution over the last five academic years of special needs cases in the university. The methodological analysis of the data was conducted by discriminating according to the course of study and various impairments according to ten categories of descriptors, including ADHD and learning disorders, motor, visual and auditory limitations, mental illnesses, chronic and temporary illnesses, autism.

From the data analysis, a focus group was structured homogeneously to reflect the observed growth trend. The six participants who joined the initiative were carefully selected to represent the categories of impairments with the most significant percentage increase: 35.2% learning disorders, 80% mental diseases, and 50% chronic diseases (the percentage increase is calculated from the academic year 2019/2020 to the last year with finished data (2022/2023), as the current measurement, although relevant, is still ongoing).

The process of forming the focus groups primarily involved the Academic Area Office and required coordination from three other administrative staff members to finalize its organization. The main objective of the focus group investigation was to determine the actual role of signage within the project, considering it not only as a tool for orientation but also as a means to provide information, stories, regulations, and various contents as a mediator between the user and the natural or built environment (Oddone et al., 2021). To achieve this objective, the focus group was organized to establish the most important communicative hierarchies to adopt. The focus group activities were divided into two phases: in the first phase, each member was individually involved in a site visit, while in the second phase, a collective meeting was organized during

which various activities were conducted, including exercises to identify examples of accessibility, discussion of critical issues, and brainstorming of key elements for inclusive signage.

Subsequently, the focus group provided a series of fundamental inputs for the creation of a requirement/performance table, useful for the implementation of the guideline system. Concurrently, the experimentation of the identified structure is still ongoing, in the form of an informal micro-intervention to be placed on the Campus itself.

## 5. Future work

As the research evidence obtained thus far concludes at this juncture, the forthcoming steps to be undertaken will be pivotal in informing the subsequent phases of the pilot project: from the analysis of results stemming from the focus group, it will be possible to derive a comprehensive and defined requirements framework, from which to extract the layout of comprehensive guidelines to initiate the design of communicative artifacts themselves. While ensuring the correct level of environmental integration and differentiation, each project should define a reference point from the local context, adding elements of reinterpretation and innovation (Bozzola & De Giorgi, 2017). However, only through a participatory and holistic approach, based on the principles of Universal Design and humanity-centered design, can one aspire to create an educational environment truly accessible to all. This essay has underscored the importance of adopting a participatory and holistic design approach capable of transcending mere integration, aiming to create a university environment that fully respects the needs of all students by promoting practices, policies, and educational environments that are genuinely accessible and inclusive.

## References

- Barnes, C., & Vehmas, S. (2020). Understanding the Social Model of Disability: Past, Present, and Future. In *Routledge Handbook of Disability Studies* (2nd ed.). essay, Routledge.
- Bozzola, M., & De Giorgi, C. (2017). An introduction to design as a tool for the enhancement of local cultural heritage: a possible methodological approach and experiences from Politecnico di Torino. In S. S. Berg, & E. Fiedler (Eds.), *Cultural Heritage. Perspectives, challenges and future directions* (pp. 65-95). New York: Nova Science Publishers.
- Hodson, E., Svanda, A. & Dadashi, N. (2023). Whom do we include and when? Participatory design with vulnerable groups. In *CoDesign*, 19(4), pp. 269–286. DOI: 10.1080/15710882.2022.2160464
- Johnson, K., Hopkins, R. & Minogue, G. (2019). Research, advocacy and activism. In *Global Perspectives on Disability Activism and Advocacy*, pp. 114–125. DOI: 10.4324/9781351237499-8
- Lacirignola, A., Azzolino, C., Savio, L. (2022). Accessible University: Architectural Design for Special Needs Users Integration. Design Proposals for Politecnico di Torino. In *Transforming our world through Universal Design for Human Development: Proceedings of the Sixth International Conference on Universal Design (UD2022)*. IOS Press. DOI: 10.3233/SHTI297
- Norman, D. (2023). *Design for a Better World. Meaningful, Sustainable, Humanity Centered*. The MIT Press. ISBN 9780262548304
- Oddone, M., Caputo, I. & Bozzola, M. (2021). Design and Cultural Sites: new signage methods and languages for fruition, accessibility and storytelling. In *Design Culture(s) Cumulus Conference Proceedings Roma 2021*. ISBN: 978-952-64-9004-5
- Sacco, M. (2021). Niente su di noi, senza di noi. Labsus (Laboratorio per la sussidiarietà). <https://www.labsus.org/2021/07/disabilita-niente-su-di-noi-senza-di-noi/>
- Trieglaff, M. (2022). Universal Design in Exhibit. In *Transforming our world through Universal Design for Human Development: Proceedings of the Sixth International Conference on Universal Design (UD2022)*. IOS Press. DOI: 10.3233/SHTI297
- United Nations. (2006). *Convention on the Rights of Persons with Disabilities. Treaty Series, 2515, 3*

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