Applying Human-Centered Design Methods to Social Design Education

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Abstract *This paper draws from the experience of applying the Human-Centered Design (HCD) approach to short and medium-term social design projects in design education. It is intended to be a starting point for further reflection on how HCD can contribute to social design education, its boundaries, and future lines of research.*

HCD has been widely used to create products and services, putting people at the centre of the design process. HCD aims for designers to understand and connect with the intended users' characteristics, needs, and barriers, improving the ideation and prototyping process from the early stages.

Applying HCD principles may help students of social design projects better understand people's characteristics and context (Zoltowski et al., 2012), especially if the projects confront multifactorial crises. However, its application cannot avoid some risks, such as, if poorly performed, leading students to a surface-level understanding of complex problems. Beyond the classroom, critics of HCD mention some pain points like its understanding of humans as individuals, primarily as consumers, and the need to develop approaches that help define new relations with the environment and socio-technical systems (Forlano, 2017).

Author keywords *crises; design education; human-centered design; social design; user-centered design*

Introduction

This article describes three projects at Elisava, Barcelona School of Design and Engineering, in which Human-Centered Design methods have been used as a framework to address actionable solutions in Social Design Education. All the cases correspond to brief projects in which students need to make decisions in the short term and lead to applicable design solutions. Besides the time limitation, the three cases confront crisis factors in other dimensions, as will be described later. The paper focuses

primarily on the third and most recent case, Aspasim, performed in 2023, in which some learnings obtained from previous projects were applied.

HCD and Social Design

The concept of Human-centered design (HCD) derives from User-Centered Design (UCD), a term coined at the end of the 80s in the field of Human-Computer Interaction (Wizinsky, 2022). As a design approach, UCD is oriented towards designing products and services, putting users at the centre of the process.

HCD aims to complement and expand UCD's approach, placing particular emphasis on the globality of the human dimension, which is broader than the mere "user" role (Gondomar & Mor, 2020; Giacomin, 2014). HCD aims for designers to understand and empathize with the intended users through research and promotes iterative prototyping from early stages (IDEO, 2015) (Chen et al., 2020). HCD has been traditionally employed in the design of software devices, although in the last few years, it has also spread to other design fields (Hernández, 2020).

In design education, HCD helps students to perform reasoning for problem-framing, acquire problem-solving skills for real-world challenges, and provide real-world solutions (McLaughlin et al., 2022). It may help students who participate in social design projects to understand the characteristics of people and their context, increasing the awareness of design complexity (Zoltowski et al., 2012). HCD facilitates working on short-time projects and generating action through rapid iteration to reach actionable solutions (Chen et al., 2020).

Compared to Participatory Design (PD), HCD tends to be individually oriented, and users act as informants, while PD is socially oriented, with people working as co-creators (Wizinsky, 2022). Generally, HCD designs *for* people, while PD designs *with* people (Sanders, 2002) (Sanders, 2008).

Although HCD is oriented towards creating design solutions in the private sector (Usability.gov., 2018), PD and HCD can be complementary. However, HCD presents some characteristics to take into consideration. It comes from the technology industry, and its primary objective is to define design solutions that attract users. It understands users as consumers (Hernández, 2020). These users are observed as individuals without social dimensions beyond consumption activities (Forlano, 2017).

Moreover, HCD is problem-solving-oriented. It fundamentally appeals to rationality and logic. Social design deals with complex problems, in which designers must have a broad vision of people and their context to deconstruct stereotyped narratives and consider the variety of human sensitivity (Pujadas, 2022).

With these issues in mind, throughout the projects described below, we have asked ourselves whether HCD can make a relevant contribution to Social Design

Education. Can HCD be a helpful framework for students to arrive at actionable solutions in the short term and under various difficult conditions? Given HCD's problem-solving orientation, do adjustments need to be made to this framework to respond to the complexities posed in Social Design Education projects?

HCD and Social Design Education

As mentioned, this paper will focus on the Aspasim project as a case in which the HCD framework has been applied to Social Design Education. Nevertheless, it relies on learnings obtained from two previous experiences, Decidim and Canòdrom, that will be briefly introduced before.

Beyond applying an HCD framework to Social Design Education projects, the three cases are related to crisis to one extent or another. All of them have in common the difficulties of carrying out an actionable design solution in a short time. Furthermore, Decidim is related to the crisis of democratic participation, Canodrom to a crisis of engagement with public policy, and Aspasim to the crisis of resources inherent to a non-profit organisation.

Decidim

Decidim (https://decidim.org/) is "a digital infrastructure for participatory democracy […] built entirely and collaboratively as free software" (Barandiaran et al., 2018).

Over three courses (2017–2020), Decidim and Elisava collaborated within the framework of Design for City Making Research Lab (Manzini et al., 2023). During the ten weeks of each course, students faced a different challenge related to the crisis of democratic participation: encourage democratic participation among young people, improve the registration and voting processes inherent to participatory democracy, or improve the inclusion of senior users (>65 years old).

Along the three editions, HCD allows students to understand the users' characteristics and identify some barriers (functional, cognitive, or social) that discourage users from participating.

Nevertheless, HCD leads to some difficulties: some methods must be reconsidered to better understand the context and the users (and non-users). Students must develop a critical vision of the consequences of design decisions in an environment as sensitive as democratic participation, which goes beyond HCD. There is also a need to introduce an inclusive design approach to categorise users into manageable categories and understand their diversity.

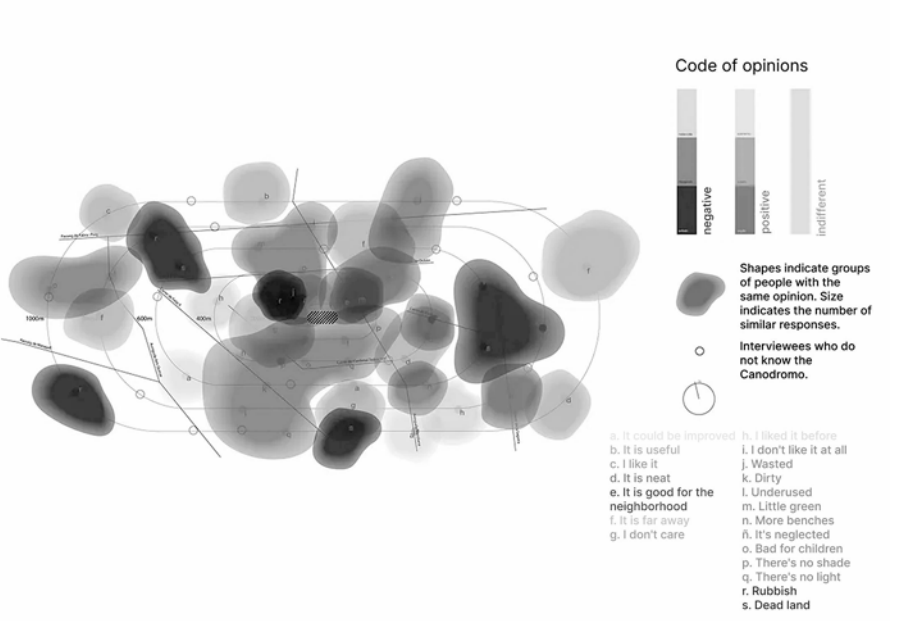
Canodrom

The Canodrom is a popular site in Barcelona, where greyhound races were held from 1970 to 2006. Over the years, the abandonment of the facilities and their posterior use for private projects drove the neighbours away from the space.

In 2021, Decidim adopted the building as the headquarters of its activities, where it wants to feature participatory activities of the neighbours so that they feel it as part of their neighbourhood again. The aim is to overcome a crisis of citizens' engagement with public policy.

Over two courses (2021–2023), Elisava, Decidim, and Barcelona City Council collaborated to rethink the public space of the Canodrom (https://canodrom.barcelona/en). In both courses, students worked on the project for ten weeks. Some participatory dynamics are included together with HCD. The methods used are desktop research, contextual observation, interviews, on-site polls, and mapping (Fig. 1).

Figure 1: Mapping the opinions collected from neighbours (Antelo et al., 2020).



After the previous Decidim experience (above), there is a will to promote a critical vision of the process among students. A narrative technique complements the HCD methods: students write a collaborative article, updated weekly. This "organic" article allows them to plan actions and relate—and therefore order—the process. As the project progresses, narration will enable students to understand a common thread in the actions performed. At the end of the term, reviewing and closing the article helps them make sense of the process and develop a critical vision (Antelo et al., 2020; August et al., 2020; Leyman & Van Hoorbeke, 2021).

The Aspasim Case

The Aspasim Foundation (https://aspasim.es/es) is a non-profit organisation created in 1993. Aspasim owns ten apartments in Barcelona, where people with severe intellectual disabilities live together, accompanied by professional caregivers. Over the years, these flats have been conditioned according to the needs of the occupants and the available budget.

From February to June 2023, Elisava and Aspasim collaborated to redesign 4 of the flats. The aim is to provide occupants with a more comfortable and adapted space. Elisava's team includes a team of professors and eight students.

This project faces some remarkable complexities. First, and shared with the two previously described cases, is the short-term characteristic of the project: students have four months to research, ideate and prototype four different environments.

Second, there is the need to work with a restricted budget since a non-profit organisation supports the project: solutions must consider the limited resources available for their implementation.

Third, the students and most professors have extensive experience in architecture or space design. Nevertheless, this project claims to fully understand the nature and conditions of the inhabitants, their needs, habits, and singularities since it is oriented to users with a wide range of functional and intellectual diversity. HCD may help satisfy operational needs and consider users' emotional needs from the diversity of the different cases.

When choosing research methods, various factors are considered:

- There are two main groups of users, residents and caregivers, and each case within these groups is unique, making it impossible for the designer to think of a standardised solution. There is a need to go beyond traditional HCD, integrating inclusive design to move away from the one-size-fits-all model and favour the one-size-fits-one approach (Inclusive Design Research Centre, n.d.).
- Carrying out participatory design actions with residents would require prior training for which there is neither time nor resources. To understand how the

residents use and personalise their space, it is essential to observe their daily routines and interactions with each other. Additionally, taking note of the customised elements and current condition of the houses would provide a better understanding of how the inhabitants utilise and appropriate the space.

- Caregivers have little time, so research actions must be well-defined and not time-consuming. They can provide valuable information about residents' routines, needs, and barriers.

After considering the given conditions, we decided to use secondary research, immersion, expert interviews with caregivers, and autoethnography (photo-journaling) as research methods (IDEO, 2015; Ellis et al., 2011). The information collected during research is analysed through affinity diagrams (Dam & Siang, 2022) and journey mapping (IDEO) techniques.

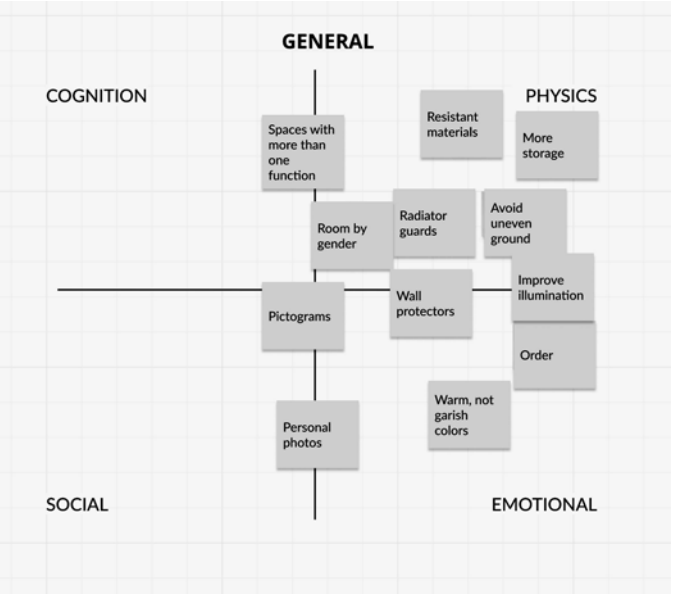
First, the students spent several days visiting the houses to collect observations through notes and annotated photographs. No videos were taken, as the recording could be sensitive and disrupt the daily activities of the residents.

After immersion, the students interviewed caregivers to better understand each apartment's routines, needs and pain points. Finally, the caregivers were invited to send the pictures taken through a day of photo-journaling.

After observing the issues, the team mapped them in four axes – cognitive, physical, social, and emotional – to understand their impact on the residents' dimensions.

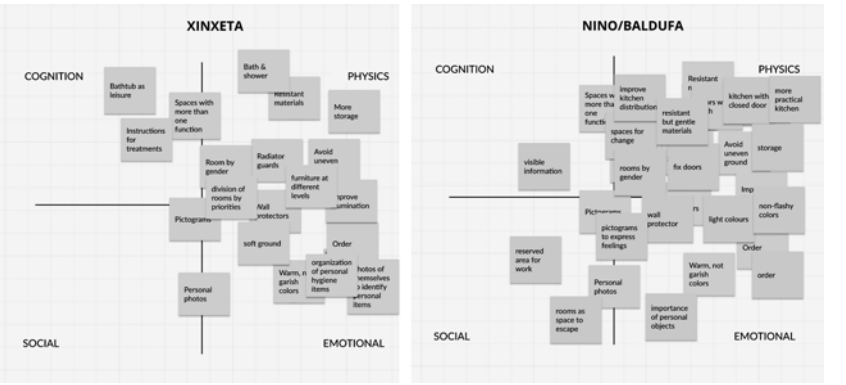
To comprehend the housing complex, the initial step involves creating a general affinity diagram (Fig. 2).

Figure 2: General map (Miro board).



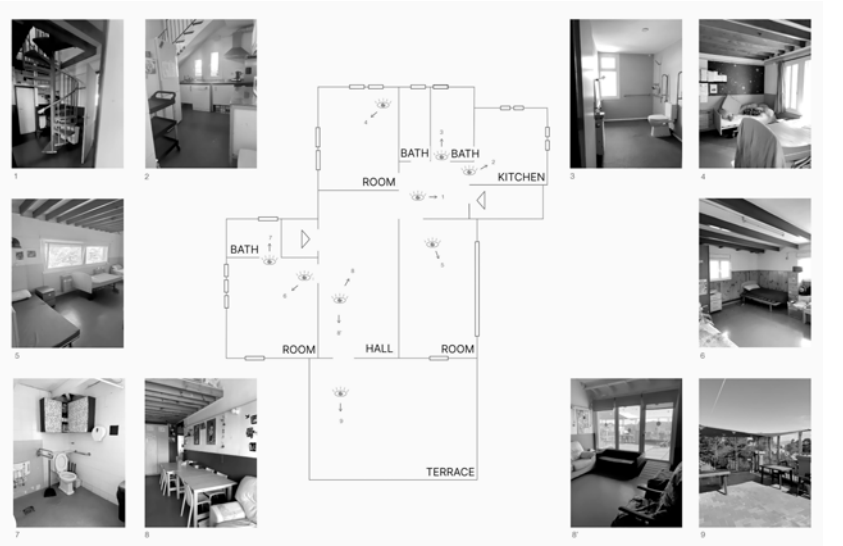
Using the initial affinity diagram, the students map the specific problems and opportunities of each dwelling (Fig. 3).

Figure 3: Specific map of two apartments (Miro board).



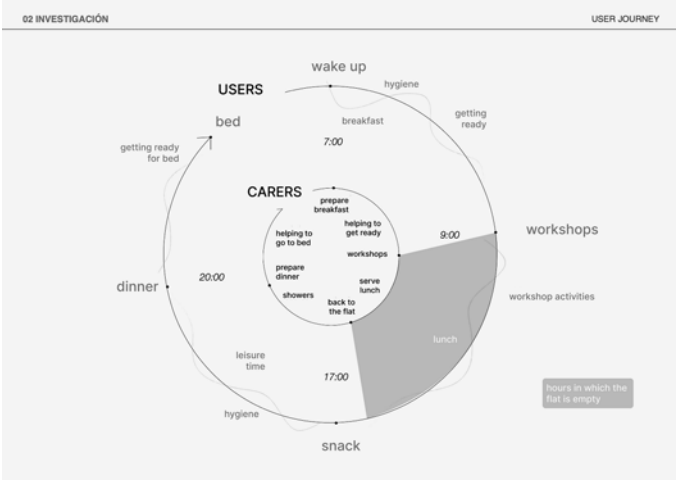
The next step is to approach these concepts in real space. The plans of the houses are used to locate the problems and opportunities, as well as the images collected on observation and caregivers' photo-journaling (Fig. 4).

Figure 4: Mapping on houses' plans.



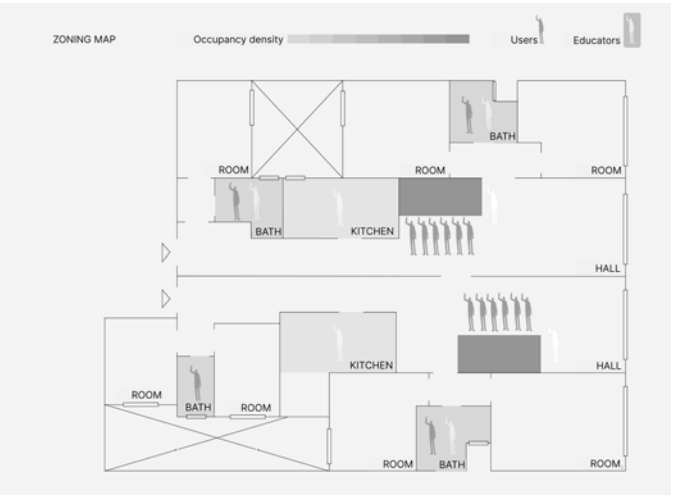
Even considering the diversity of users, students need to understand general routines. They prepare a journey map that shows the activities of the residents in parallel to those performed by the caregivers (Fig. 5).

Figure 5: Parallel user journey: understanding the daily routines of residents and caregivers and their use of the space.



The journey map allows students to identify space occupancy throughout the day and their uses (Fig. 6).

Figure 6: Uses of the space and occupancy throughout the day.



Results

After being inquired about the application of HCD to the project, students appreciate that it has allowed them to understand the characteristics and needs of the users and to take into account their diversity, which has a real impact on their approach to designing solutions.

The technique most valued by the students is the interview, followed by mapping, immersion, secondary research, and photo-journaling.

In this first edition of Aspasim, HCD, complemented by an inclusive approach, has positively impacted the project. It has allowed students to understand and empathise with residents and caregivers, putting space design to serve these needs. As issues to be improved, there is the need to include HCD in the design and evaluation phases to consolidate the impact of this approach on the final solutions and to encourage critical reflection on the entire process.

Conclusions

In the social design education cases described, the application of HCD had several positive implications: it allowed students to understand the broad context of the project, the nature of the crisis factors involved, and the users' characteristics, needs, and barriers. The emphasis on "human" allowed them to include emotional and cognitive factors beyond the purely functional ones. In addition, it allowed starting from a defined methodology. HCD enabled the generation of feasible and applicable design proposals in the short term.

However, taking into account the characteristics of social design projects, the experiences reported lead us to be cautious with several issues:

- HCD can lead to a vision based on standards which is not open to diversity. The act of "labelling" or modelling the users has to respect diversity as a core value. In social design projects, HCD should integrate an inclusive design approach (Clarkson et al., 2003).
- HCD is based on a hierarchical position between designer and user (Sanders, 2002), which must be considered and balanced with more participatory approaches in social design projects. Moreover, HCD has been widely used in commercial projects where the user *chooses* to use a product. In social design, the use of a service or a space does not always depend on a voluntary choice on the part of the users.
- In short projects, students only sometimes manage to define a coherent view of the process performed. It is optimal to work in the longer term, applying an evolutionary approach throughout different projects so that students can acquire knowledge that allows them to critically and autonomously use the methodology.

The application of HCD to social design education projects, therefore, necessarily has to go beyond HCD as we currently understand it. HCD has to broaden its range of vision, integrating (and not only complementing) inclusive design to avoid standardisation, allowing it to understand the diversity of users and its social and emotional dimensions (Forlano, 2017). Incorporating inclusive design methods and developing listening, observation, and analysis through narrative techniques becomes essential (Pujadas, 2022).

Last but not least, design as a field is increasingly aware of the need to overcome the anthropocentric perspective, which is causing suffering not only to users "on the margin" but also to other beings and the ecosystem. HCD needs to incorporate design approaches to consider the impact and implications of design in an interrelated world (Forlano, 2017; Thomas et al., 2017).

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