

Cities for all: co-design interventions on urban features by using inclusive technology



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Abstract

All residents of the city should have the right to access, occupy, and produce space to their demands and desires. Cities and public spaces are not for a particular group; they are for everyone's use, including people of different ages, genders, races, and abilities. However, participation, mobility, and engagement levels vary among different people. Minorities in particular are challenged by segregation and inhibited from participating in the city. Designers, local governments, non-governmental organizations, and social enterprises are responsible for providing solutions to this problem. This paper introduces a multidisciplinary project, HeyKENT: Inclusive Urban Experience For All, which aims to increase the civic participation and engagement of all citizens with urban features, regardless of citizens' abilities. The project was designed by PinGOin, a social initiative that aims to reduce inequalities in social life. The collaborative project was conducted and monitored by two designers, local volunteers, and two Metropolitan Municipalities in Turkey. The project's primary outcome was a co-design intervention conducted in two cities with existing urban features using inclusive technology. Twelve urban sculptures in the first city center and 15 different tree species in an urban park in the second city center were determined. The project entailed accessible signboards with QR codes next to each urban feature that led to online video modules. The video modules, co-designed with diverse volunteer groups, were intended to be accessible to people of different ages and abilities (e.g., people with visual and audio impairments, children, the elderly, and tourists). Each video includes visuals, general narrations, audio descriptions for blind visitors, and sign language translations for deaf visitors about the urban feature. Thus, this project is a new approach in Turkey in which urban features of the city are equipped with multisensory features so that people of different ages and with diverse abilities can experience them. It is also a new application of inclusive video narrations for diverse users that are presented with accessible signboards. This design application helps to improve the participation and engagement of citizens with diverse abilities, enhances user interaction with urban features, and cultivates public awareness toward different accessibility criteria. It advocates civic participation and leads designers and local governments to consider inclu-

sivity features using collective design intervention in a public space. In the project's next stage, users' engagement levels and the factors influencing their experience will be studied by a post-occupancy evaluation using observation and survey methods. The follow-up research outcomes will provide additional feedback to enhance future interventions' design processes and outcomes.

Keywords

city, co-design, design, inclusive, urban feature

Introduction

People of all ages, genders, ethnicities, and abilities are welcome to use the city and its public places, which are open to everyone (UNESCO, 2016). Everyone has an equal right to participate in city life and social interactions (Arnold, 2007). However, people's levels of inclusion, participation, and engagement in the city differ. Particularly children, the elderly, women, and those with various abilities have challenges participating in the city. The environment should ensure all citizens' participation through inclusive design.

Designing products and/or services that are usable by as many people as possible without special adaptation or unique design is known as inclusive design (British Standards Institute, n.d.). An inclusive environment should allow everyday activities to be carried out comfortably, effectively, and safely without restrictions of poor design, maintenance, or management of the environment (Hanson, 2004), including the urban environment. This could be ensured by offering accessible physical, intellectual, and emotional solutions for as many users with diverse abilities as possible. However, it is seen that the inclusivity of the urban environment for all is limited to the physical access of the citizens. The information and service accessibility is not highly focused (Rebernik et al., 2017). Therefore, in this paper, we focus on the inclusivity of urban environments, in terms of information and service accessibility, by using co-design intervention projects with specific urban features that are the natural or built main components of the urban environment in continuous relation with people (such as streets, squares, parks, trees, monuments, sculptures, etc.) in different cities of Turkey.

Participation Right of All to the City

Many studies have discussed the importance of the participation of all citizens in the city. In the urban context, Lefebvre developed the vision of the “right to the city” by asserting that the city is a space that is the center of humanity, not the capital. He portrayed a collective rather than a personal entitlement to the city (Donahue, 2022). First, he highlighted the city’s “centrality” and the opportunity to provide a physical space for interpersonal communication and interaction among the citizens. Second, he conceptualized “the right to difference” offering the city to embody everyone who lives in it rather than a homogenization of space (Galič & Schuilenburg, 2020). Third, with “complete usage” he conveyed all citizens’ entitlement to appropriate their everyday life. In summary, the form of a city should be flexible and adaptable to the needs and perspectives of everyone (Lynch, 1964), which is possible through the participation of all in the city (Galič & Schuilenburg, 2020).

People with diverse abilities have always been part of urban life. The United Nations Convention on the Rights of People with Disabilities acknowledges the right of people with disabilities to fully participate in society without mistreatment due to their different access criteria (CRPD, 2022). Inclusive design efforts impact the effectiveness and utilization for all users (Repeva & Adjide, 2020). However, the lack of accessibility in an urban environment still makes it challenging to fully include people with diverse abilities (such as people with hearing or a visual impairment, wheelchair users, crutches users, etc.) in all aspects of social life (Gharebaghi et al., 2018). Similarly, children are part of society. This is supported by the United Nations Convention on the Rights of the Child, which argues that children need to be able to participate in their communities’ urban, cultural, and artistic life (Mai & Gibson, 2011; Terreni, 2013). Another diverse group to consider is that of older adults. Age-inclusive cities should be sensitive to changes in the bodies and cognitive levels of older people. Their choices, decisions, and ways of life must be regarded in urban environments. Additionally, a city should consider the orientation of older people when integrating technology (Tymkiewicz, 2019). To summarize, when designing an inclusive city, the city’s stakeholders (such as designers, local governments, non-governmental organizations, and social enterprises) should consider and include, with a multidisciplinary approach, people with different access criteria.

Inclusive Design Solutions and Smart Cities

In recent decades, a smart city approach has been embraced to create inclusive cities. This is an urban development vision to integrate technology to improve the efficiency of services and allow stakeholders to interact with the community and the city to increase the quality of life for all citizens. The smart city concept is usually contextualized as technology, people, and institutions/governments (Castelnovo, 2015; Ishida, 2000; Mohanty et al., 2016; Nam & Pardo, 2011; Stadler, 2013). Although one of the considerations of smart cities is physical accessibility (i.e., the opportunity for everyone to access and use different parts of the city equally), the environment’s design should also consider intellectual and emotional access (O’Neill, 2002). To create inclusive smart cities for all users, the application of co-design processes with different stakeholders and integrating digital dimension has been applied

to increase the civic participation of citizens (Rebernik et al., 2017), mainly in open and enclosed public spaces.

Inclusive Interventions in Open & Enclosed Public Spaces

As public spaces, museums are one of the most often visited spaces in the city (Filova & Rollova, 2019). Museums are traditionally designed as venues where objects are displayed relative to different fields. Lately, modern museums also incorporate spaces and functions such as exhibition areas, art workshops, libraries, and recreation areas (Öden, 2020). Since these spaces offer visitors a combination of education and recreation (Filova & Rollova, 2019), designers have incorporated inclusive design solutions. Previous studies have focused extensively on physically accessible design, inclusive services, and information. The use of inclusive design tools and technology within participatory exhibition design, allowing for a multisensory experience that includes touch-based, hands-on exhibitions and storytelling, are among the design features (Chick, 2017; Christidou & Pierrou, 2019; Cullen & Metatla, 2018; Filova & Rollova, 2019; Görel, 2019; Hadley & Rieger, 2021; Ruiz et al., 2022). Recently, in Turkey, a social initiative named Bongo Art Project collaborated with the Anatolian Civilizations Museum and designed a multisensory exhibition area where visitors can touch the 3D-printed touchable replicas of display objects. The inclusivity of the display object is enhanced by audio descriptions and sign language narrations accessible by QR codes, which improve accessibility by means of quick and direct access to information and by eliminating the need to type (Kulturlimited, 2022). Thus, the display objects become accessible, especially for people with visual or hearing impairment, children, and consequently, other museum visitors. Through recent studies and collaborative projects, museums are progressing in their provision of an inclusive environment for diverse visitors.

The urban public space has a rich tangible potential of visual, audio, and spatial data such as streets, trees, sculptures, traffic noise, etc. In this manner, the urban environment is a kind of open-air museum (Lynch, 1964; Saidi, 2012). The characteristics of the urban environment show similarities with the museum regarding providing sensory experience and opportunities for learning and personal growth. They offer visitors a new experience as well as learning and entertainment opportunities through the living and changing structure. However, to some extent, they differ due to their scale and position in the city. As such, visibility across urban routes, security, vandalism, and outdoor conditions should also be considered in inclusive urban design. Experiencing the urban environment to its full potential is possible where significant urban features can be experienced daily as a part of everyday practices. Streets, squares, parks, trees, urban sculptures, etc., can all become a part of this enriched multisensory experience. Studies reveal that within the urban context, people with diverse abilities face the obstacle of not receiving one or more of the channels of information provided by visual, auditory, or spatial cues due to a lack of inclusive solutions (de Oliveira Neto & Kofuji, 2016; Durhan & Özgüven, 2013; Hanson, 2014; Saidi, 2012). Many studies focus on physical accessibility, highlighting inclusive design guidelines and providing checklists for the urban environment (Plouffe & Kalache, 2010; Setiawan et al., 2022; Van Herzele & Wiedemann, 2003; Offei et

al., 2017). Furthermore, regarding digital accessibility, several studies focus on geographic information systems (GIS), roadmaps, and navigation tools to ensure citizens' movement and wayfinding in the urban environment (Fernández-Díaz et al., 2022; Svennson, 2009).

Despite the potential that cities offer, urban features can only be experienced extensively by some citizens. Hence there is a lack of information, implication, and integration (Salha et al., 2020). In that respect, diverse design solutions to enhance accessible information and services are still needed (Rebernik et al., 2017). This can be provided through a collaborative design approach that includes different stakeholders as well as people with diverse abilities. Here we describe a collaborative co-design intervention designed and conducted with a focus on service and content accessibility of urban space to contribute to the field.

Inclusive Urban Experience for All

HeyKENT: Inclusive Urban Experience for All, facilitated by the PinGOin social enterprise, is a collaborative social awareness project that supports an accessible social life for everyone. In this social enterprise, we work for people with various accessibility criteria, including people with disabilities, children, the elderly, and anyone who may encounter barriers in their social life. Approximately eight million people with disabilities live in Turkey (TUIK, 2011). Including children and the elderly, the number of people with special access criteria in this society is considerable. However, in Turkey, people cannot fully participate in their cities due to physical and behavioral barriers in places and a general lack of social understanding and awareness. We concentrate on areas where individuals with disabilities and different access criteria are not receiving equal opportunities for socialization with a rights-based and collective working understanding. For this, we first aim at *bringing people together*: without any barriers, people with and without disabilities are brought together through the organization of educational events and workshops in inclusive environments. Additionally, the accessibility level of social places (such as parks, museums, and restaurants) is listed and shared with users, through the help of volunteers, on a user-experience-oriented website. Second, we aim at *making it better*: our team consists of interior architects, communication designers, and psychologists who provide inclusive solutions through consultation to improve the accessibility of public spaces. What matters most is creating a connection and improving the communication between users' needs and social places, urban environments, and local governments. As such, the following project was facilitated by our social enterprise.

The Background of the Project

The inclusive city community project, initiated within two years, is a multidisciplinary co-design intervention project funded by international organizations. The project aims to increase the civic participation and engagement of all citizens with urban features, regardless of citizens' abilities. The collaborative project was conducted and monitored by a social enterprise that the first two authors co-founded. Moreover, two local governments in two metropolitan cities in Turkey participated. As a bridge for municipalities to meet and cooperate with civil actors, an international foundation, the National Democratic Institute, funded the project. Within

the scope of this program, local volunteers of the social enterprise were included in the co-design process. The project started in Eskişehir (the first metropolitan city), and it was carried out in Adana (the second city) with modifications and improvements the following year.

First Steps

The key to the project was to involve as many local citizens and communities as possible. The first challenge we faced was reaching participants in a metropolitan city where we had not been active or interacted with the community beforehand. Initially, we looked for citizens to volunteer for the project through an open call on social media, with the help of the local government's network. With the support of the institution that sponsors the project, we organized social media advertisements to target people living in specific cities. We created a community with 65 volunteers in each city. In the following stage, participants connected with one another through inclusive events. Social innovation and the significance of accessibility in cities were emphasized at these events. We organized workshops to have the opportunity to listen to participants' visions of accessibility. During the project, participants were asked to report on the accessibility of the public venues they visited in their cities. Additionally, to deepen the process, a focus group formed comprising ten volunteers who wanted to contribute to further stages of the co-designing process regarding the accessibility of city features. The focus group worked on selecting urban features and creating and inspecting the validity of inclusive narrations (Figure 1).



Figure 1. Inclusive City Community Meeting & Workshop

Project in City 1: Eskişehir

The project was initiated in Eskişehir, a metropolitan city in Turkey, in 2021–2022. Initially, weekly meetings were held with the head of the metropolitan municipality's social services department and the youth center team to select urban features. To increase public awareness, city sculptures were chosen as they are the most notable urban feature of the city. These sculptures are primarily located along the river in the city center, where citizens frequently spend their time. In the end, 12 sculptures in the highly visited walking route were selected.

The aim was to provide all visitors with an equal experience of the sculptures. We began the content writing process for the video, which consisted of two parts. In the first part, the content was written to give information about each sculpture as well as its purpose and its message to the citizens. For the second part of the video, we prepared a detailed au-

audio description of the sculptures for visually impaired visitors. These texts were approved to use in the accessible videos by audio description experts, visually impaired participants in our community, and the city's mayor. The content was then delivered to the video editors to be converted into a video containing accessible audio and sign language. The videos were displayed on the social networking tool Youtube.

To increase the videos' visibility and ensure they reached a wider audience, we proposed that QR-coded signboards be placed next to the sculptures. With the approval of the local government, a QR-coded sign board, which contained text in the braille alphabet, was placed next to each sculpture. After this addition, the views of the videos increased considerably, and diverse citizens and tourists were able to interact with the sculptures by reading the QR code next to the sculpture and watching the inclusive videos (Figure 2).



Figure 2. Gossiping Women Sculpture, QR-Coded Signboards, User Interaction

One year after the installation of the signboards, the videos had been watched over 17,000 times. Most viewers (77.2%) are between 25–34 years of age. Also, 51.6% of the viewers were female, and 48.4% were male, and the most-watched video was seen over 5,300 times and the least-watched over 230 times. The initial observations of the changes in viewing rates depended on the sculpture's location and the location of the QR code signboard. However, in-depth studies are required to learn more about user interaction and experience.

Project in City 2: Adana

In 2022, a similar project was conducted in Adana, another metropolitan city in Turkey. New actions were organized to increase civic participation and co-design. Like the first project, we reached participants through an open call, organized events, and workshops, and established a working group. This time, the urban features we used were the trees in an urban park, the city's most central, which included many tree species. To decide which trees to include in the videos, a survey was conducted on the social enterprise and metropolitan municipality's social media sites to gather data from citizens. Based on the answers, 15 different tree species were selected.

To include citizens in the civic participation process, we made another open call for volunteers to be part of the co-design phase of content creation. During this phase, a workshop was held to provide information about the audio descriptions and create an accessible context. In this workshop, audio description rules (such as the correct identification of the image, written language and tenses, and objectivity in narration) were mentioned by an audio description expert working in the local government. After the online workshop, each tree was narrated by different volunteers. This supported the project's co-production goals and strengthened civic participa-

tion by providing citizens the opportunity to directly contribute to the accessibility of their cities.

Additionally, the content creation considered the needs of children with visual impairment and aimed to be appealing to all children in the city. The final product included a description of the characteristics of the tree and an audio caption, presented as if the trees were speaking about themselves.



Figure 3. Inclusive City Community Meeting, QR-Coded Signboards, and Video Narration

With the very recent launch of the second project, the degree of user interaction has not yet been observed. It is critical to track the effect of these design interventions on citizens. Therefore, the next step of the study is to conduct a post-occupancy evaluation of the project to understand the engagement levels of users and the factors influencing their experience.

Conclusion

It is a human right to participate in the public spaces of the city in which we live. The city and its activities should embrace human diversity and provide inclusive solutions for citizens' needs (Donahue, 2022; Harvey, 2004; Lefebvre, 1968). This is possible through a participatory approach that promotes a co-design process involving all citizens. Collaborative projects that include different stakeholders with diverse professions, capabilities, and resources enhance the delivery of products and services to a broader range of citizen groups. Using technologically inclusive design tools such as audio description and user interface design may bring many benefits if incorporated wisely, particularly when driven by users' needs (Rebernik et al., 2017). In that respect, our project has contributed to design literature and practice at many levels. First, although there are examples of inclusive experiences in museums or audio descriptions and sign language narrations of city features in written text formats referring to two-dimensional photographs, this new approach in Turkey treated the city as an open-air museum. Thus, the urban features we pass by daily without noticing were brought to the foreground and introduced to establish a connection between citizens with diverse capabilities and characteristics. Using inclusive signboards on-site can also enhance citizens' awareness of diversity and inclusivity. Informative video modules provide additional information about the city's features and, through their format, send the message of the possibility of accessibility to everyone. While the project outcome contributed to increasing public awareness of inclusivity in the city, transforming the project into output was important in terms of the gains of the volunteers and the project partners. Thus the design process advocated civic participation, leading authorities, designers, and local governments to consider the inclusivity of urban public space in a collective design process. This project-based study can be scaled and applied in differ-

ent cities with different stakeholders and urban features. As such, we will continue to increase accessibility in cities and awareness in the field by developing collaborative, inclusive design interventions in Turkey.

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