

USER EXPERIENCE BASED PARTICIPATORY URBAN DESIGN PRACTICES: CASE OF İZMİR

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**By
Aleyna YORULMAZ**

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İZMİR**

We approve the thesis of **ALEYNA YORULMAZ**

Examining Committee Members:

Prof. Dr. Koray VELİBEYOĞLU

Department of City and Regional Planning, İzmir Institute of Technology

Assist. Prof. Dr. Pelin ÖZDEN

Department of Architecture and City Planning, İzmir Kavram Vocational School

Assoc. Prof. Dr. Sevim Pelin ÖZTÜRK

Department of City and Regional Planning, İzmir Democracy University

Assoc. Prof. Dr. Ayşe Kalaycı ÖNAÇ

Department of City and Regional Planning, İzmir Kâtip Çelebi University

Assist. Prof. Dr. Nicel SAYGIN

Department of City and Regional Planning, İzmir Institute of Technology

08 July 2024

Prof. Dr. Koray VELİBEYOĞLU

Supervisor, Department of City and
Regional Planning, İzmir Institute of
Technology

Assist. Prof. Dr. Pelin ÖZDEN

Co-advisor, Department of Architecture
and City Planning, İzmir Kavram
Vocational School

Prof. Dr. Hasan Engin DURAN

Head of Department of City and
Regional Planning

Prof. Dr. Mehtap EANES

Dean of the Graduate School of
Engineering and Sciences

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All izz well...

(3 Idiots)

ABSTRACT

USER EXPERIENCE BASED PARTICIPATORY URBAN DESIGN PRACTICES: CASE OF İZMİR

This thesis aims to analyze how participatory processes increase community engagement and enhance the role of the user in urban design processes. In this context, a mixed approach is used, blending qualitative and quantitative methods including spatial analysis, surveys, interviews and participatory design workshops. The research explores the effectiveness of participatory approaches and co-design tools in urban design, focusing on two case studies from İzmir, Turkey. The research is organized around three main questions: Which participatory design approaches effectively involve community members in urban planning? How do different co-design tools affect the effectiveness of participatory design processes? How do toolkit techniques shape user experiences in urban design? Key findings show that participatory design enables the creation of more inclusive, innovative and sustainable urban spaces by incorporating the knowledge and experience of community members. The study highlights the importance of user experience in co-design processes and reveals that well-designed interfaces and tools can increase the overall effectiveness of urban design projects by facilitating the active participation of citizens. The findings highlight the potential of participatory design to strengthen the social fabric of communities and increase individuals' sense of belonging to urban life. Through extensive analysis, this study provides valuable insights into the role of community engagement in creating livable and resilient urban environments. By examining the effects of different toolkit techniques on user experiences, the thesis aims to contribute to the development of more effective and user-friendly design processes. This research provides recommendations for developing more inclusive and innovative urban design practices and advocates for the wider application of participatory approaches in urban planning.

Keywords: *Participatory Urban Design, Co-Design, User Experience, Community Engagement, İzmir*

ÖZET

KULLANICI DENEYİMİ TABANLI KENTSEL TASARIM PRATİKLERİ: İZMİR ÖRNEĞİ

Bu tez katılımcı süreçlerinin, toplum katılımını nasıl artırdığını ve kentsel tasarım süreçlerinde kullanıcının rolünü nasıl geliştirdiğini analiz etmeyi amaçlamaktadır. Bu kapsamda, mekânsal analizler, anketler, mülakatlar ve katılımcı tasarım atölyelerini içeren nitel ve nicel yöntemleri harmanlayan karma bir yaklaşım kullanılmıştır. Araştırma; İzmir ve Türkiye'den iki adet vaka çalışmasına odaklanarak, kentsel tasarımında katılımcı yaklaşımının ve ortak tasarım araçlarının etkinliğini araştırmaktadır. Araştırma üç ana soru etrafında şekillenmiştir: Hangi katılımcı tasarım yaklaşımı topluluk üyelerini kentsel tasarıma etkin bir şekilde dahil eder? Farklı ortak tasarım araçları katılımcı tasarım süreçlerinin verimliliğini nasıl etkiler? Araç seti teknikleri kentsel tasarımında kullanıcı deneyimlerini nasıl şekillendirir? Temel bulgular, katılımcı tasarımın, topluluk üyelerinin bilgi ve deneyimlerini sürece dahil ederek daha kapsayıcı, yenilikçi ve sürdürülebilir kentsel alanlar yaratılmasını sağladığını göstermektedir. Çalışma, ortak tasarım süreçlerinde kullanıcı deneyiminin önemini vurgulamakta; iyi tasarlanmış arayüzlerin ve araçların vatandaşların aktif katılımını kolaylaştırarak kentsel tasarım projelerinin genel etkinliğini artırabileceğini ortaya koymaktadır. Bulgular, katılımcı tasarımın toplumların sosyal dokusunu güçlendirme ve bireylerin kentsel yaşama ait D.I.Y. duygusunu artırma potansiyelini vurgulamaktadır. Kapsamlı analizler sayesinde bu çalışma, yaşanabilir ve dirençli kentsel çevreler oluşturmak için toplum katılımının rolüne dair değerli bilgiler sunmaktadır. Tez, farklı araç seti tekniklerinin kullanıcı deneyimleri üzerindeki etkilerini inceleyerek, daha etkili ve kullanıcı dostu tasarım süreçlerinin geliştirilmesine katkıda bulunmayı hedeflemektedir. Bu araştırma, daha kapsayıcı ve yenilikçi kentsel tasarım uygulamaları geliştirmek için öneriler sunarken, katılımcı yaklaşımın kentsel planlamada daha geniş çapta uygulanmasını savunmaktadır.

Anahtar Kelimeler: *Katılımcı Kentsel Tasarım, Birlikte Tasarım, Kullanıcı Deneyimi, Toplum Katılımı, İzmir*

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CHAPTER 1

INTRODUCTION

Public spaces are important places that meet people's physical, perceptual and social needs, reflect urban identity and culture and affect quality of life. As Jane Jacobs noted, cities have the potential to offer something to everyone when they are created with everyone's participation.¹ However, this vitality does not emerge spontaneously. The social and spatial relations and dialogues established within the city constitute the basic elements of this vitality. This movement within the city follows a certain pattern and the most important factor in the formation of this pattern is qualified urban design. The process of establishing the physical and social relations of the city is directly related to qualified urban design models.² Participatory urban design is an approach that encourages the active participation of citizens in urban planning and design processes. This process allows us to better understand the needs, values and expectations of communities and contributes to the creation of more livable, sustainable spaces.³

Participatory urban design brings together the knowledge, experience and skills of community members to achieve better results. The active participation of citizens in urban planning and design processes not only creates more inclusive and innovative urban spaces, but also strengthens the social fabric of communities and increases the belonging of individuals to urban life.⁴ Co-design processes offer more effective and user-friendly solutions by taking into account the needs and expectations of citizens. User experience-oriented participatory design supports healthy living and sustainability by providing solutions that meet the physical, perceptual and emotional needs of individuals.⁵

Participatory urban design is a multidimensional approach that includes concepts such as sustainability, accessibility, social equality, community participation and belonging. These approaches aim not only to improve the physical environment, but also to strengthen the social fabric of communities and increase the commitment of individuals to urban life. In user experience-oriented participatory design studies, good

design of interfaces strengthens the communication between experts and citizens. This communication directly affects the user experience, leading to more successful and user-friendly design results. Well-designed interfaces encourage more active participation of users in the process, while effectively collecting their needs and feedback. As a result, user experience orientated participatory design will create spaces that reflect the spirit of the users, fostering urban belonging and community, supporting healthy living and sustainability.

1.1. Problem Definition

Traditional urban design processes are often based on expert-orientated approaches, resulting in the needs and expectations of urban residents not being adequately heard or met. Such approaches can negatively affect the quality of urban life and lead to a neglect of the spatial needs of communities. As Lynch (1964), points out, urban design is not only about improving the physical environment, but also about strengthening the social structure and creating spaces that better respond to the needs of communities.² However, there is limited information on the effectiveness of different participatory design approaches and tools used in these processes.

Participatory urban design is an approach that encourages the active participation of community members in urban planning and design processes. This approach allows us to better understand the needs, values and expectations of communities and contributes to the creation of more liveable, sustainable spaces. Sendra (2024) emphasises that co-design processes often do not involve true co-design and it is difficult to involve communities in these processes. In this context, it is of great importance to evaluate the effectiveness of different participatory design approaches and co-design tools.⁶

Research on the effectiveness of co-design tools used in participatory design processes is still ongoing. Manzini & Rizzo (2011) state that participatory design requires various tools such as prototypes, models and design games. However, there is not enough information on the effectiveness of these tools.⁷ It is unclear how different co-design tools affect the efficiency of the design process and participant satisfaction. Likewise, the impact of toolkit techniques on user experiences has not been sufficiently

investigated. How these techniques affect users' ability to contribute to the design process and express themselves is an important research topic.

In user experience-orientated participatory design processes, good design of the interfaces used strengthens the communication between experts and citizens. Zimmermann (2008) states that user experience plays a critical role in design processes and well-designed interfaces encourage users to participate more actively in the process.⁵ This communication directly affects the user experience, leading to more successful and user-friendly design results. Well-designed interfaces effectively collect users' needs and feedback, which leads to more inclusive and user-friendly solutions. User experience-based participatory design promotes healthy living and sustainability by providing solutions that meet the physical, perceptual and emotional needs of individuals. As a result, this study will provide important insights for the development of more inclusive, innovative and sustainable urban design practices that encourage more active participation of communities.

1.2. Aims of the Thesis

The objective of this thesis is to analyse the effectiveness of participatory design approaches and co-design tools in urban design. It is aimed to evaluate how participatory design processes increase the involvement of community members in urban planning processes and how they affect the efficiency of these processes. Furthermore, by analysing the effects of different toolkit techniques on user experiences, it is aimed to contribute to the development of more effective and user-friendly design processes. By investigating how to better integrate user-centred and participatory approaches in urban design, this study aims to provide innovative suggestions for toolkits that are used in participatory design processes or that can be used in the future.

Studies on the positive effects of participatory design on urban life emphasise the importance of this approach.^{3,6} Accordingly, three main research questions were identified:

- What are the participatory design approaches used to involve community members in the urban design process?

- How do different co-design tools affect the effectiveness of participatory design processes in urban design?
- How do different toolkit techniques affect participatory design processes in urban design in terms of user experiences?

In line with these research questions, the thesis hopes to shed light on the importance of participatory design approaches and the development of visualization tools. In this process, it is aimed to develop solutions that encourage the active participation of users in the design process and better respond to their needs. The thesis aims to provide more effective and user-friendly methods in urban design by making innovative suggestions for toolkits that are used in participatory design processes or that can be used in the future. In the light of existing studies in the literature, this research is planned to contribute to a wider and more effective application of participatory approaches in urban design.^{9,10}

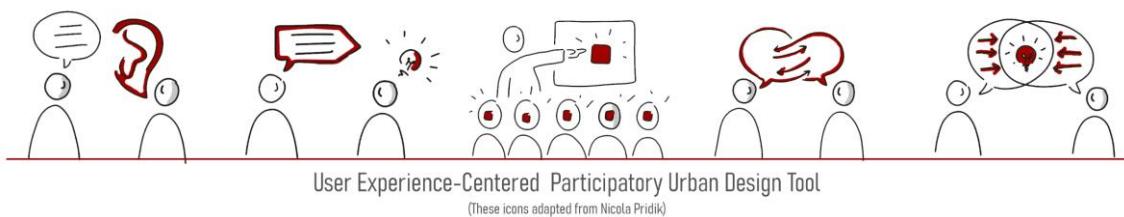


Figure 1: User Experience-Centered Participatory Urban Design Tool Image
(These icons adapted from Nicola Pridik)⁸

1.3. Methodology

The methodology used in this thesis is a comprehensive mixed method approach that combines qualitative and quantitative research approaches. At the beginning of the study, a detailed review of the literature on urban design, participatory design methodologies and user experience in design is provided. The theoretical framework forms the scientific basis of the research by providing the basis for the objectives and research topics.

The first stage of the research involves a comprehensive review of the existing literature on participatory design and co-design. In this stage, a theoretical foundation is

established by reviewing academic articles, books and previous research. The literature review plays a critical role in understanding the effectiveness of participatory design approaches and toolkit techniques.

The second stage involves case studies. In the site selection process, Karşıyaka Yalı Neighborhood and Konak Basmane Square in İzmir were selected as the study locations. Spatial analyses will be conducted to understand the urban fabric, land use patterns and user behavior in these areas. The case studies aim to examine the real-world relevance of participatory design approaches and co-design tools. In this process, participatory design workshops that enhance user experiences and community engagement will be organized.

Do-It-Yourself (D.I.Y.) Urbanism and Citizen Design Science approaches will be used in the research. The D.I.Y. Urbanism approach encourages citizens to actively participate in shaping and improving their cities. The Unlimited Cities D.I.Y. application enables users to create their own design ideas in urban areas. For example, in the Wenshan Oasis Project in Taipei, participants had the opportunity to transform empty spaces into green spaces and strengthen community ties using digital tools.¹¹ The Citizen Design Science method generates data for design science by using citizens' experiences about the environment they live in. Based on dialogue between scientists, citizens and designers, this method involves citizens not only as observers but also as active designers. This approach contributes to the development of more effective and inclusive solutions by increasing community participation in urban design.⁴

Spatial analyses, surveys, interviews and participatory design workshops will be used in the data collection process. Spatial analyses are field studies that include research, observations and documentation of the physical characteristics of the regions. These analyses are critical for understanding the current state of urban areas and assessing user behavior. Surveys and interviews will be conducted with community members and design experts involved in participatory design processes. The surveys will be structured using a Likert scale and will include both closed-ended and open-ended questions. These methods will be used to understand participants' experiences and views on the process.

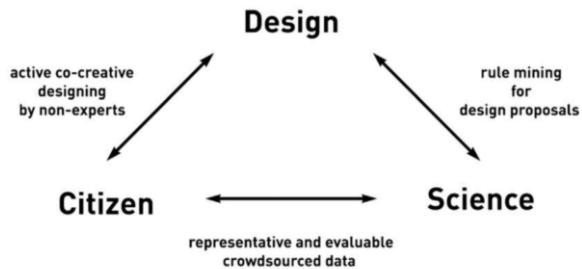


Figure 2: Citizen Design Science⁴

Participatory design workshops are events that enable community members to actively participate in the urban planning process. These workshops will be organized to collect users' experiences and feedback. The collected data will be analyzed using qualitative and quantitative analysis methods.

The data obtained from the interviews will be analyzed using emotional analysis method. This method will help to identify the main themes and patterns in the data. The data obtained from the questionnaires will be analyzed using statistical analysis methods. These analyses will provide quantitative data on the effectiveness of participatory design processes. The graphical design data obtained from the participatory design workshop will be analyzed by overlapping with real space photographs with the help of Adobe Photoshop.

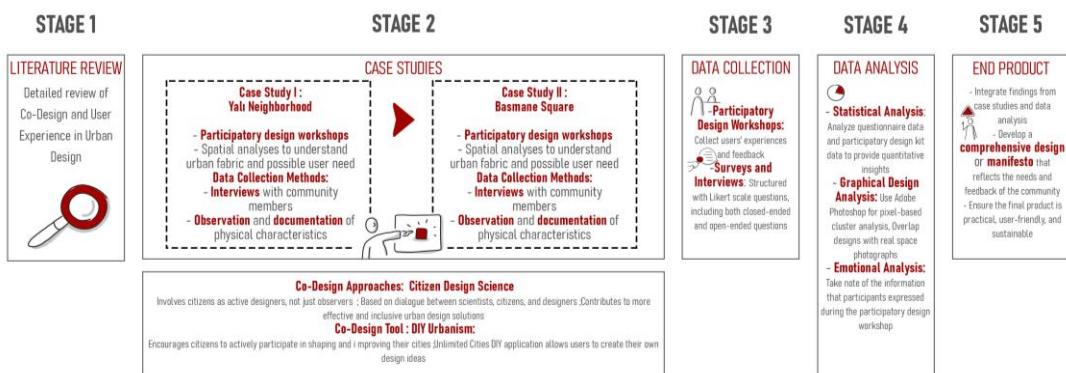


Figure 3: Methodology of Thesis

With the help of this program, pixel-based cluster analysis was used. Finally, the study will use the statistical result to measure the user experience.

A literature review will be conducted to comprehensively evaluate the existing body of knowledge. Case studies are planned and conducted in detail to examine real-world applications. The questionnaire and interviews were structured to accurately reflect the experiences and views of the participants. The Participatory Design Kit used in the workshop will enable participants to communicate their desired data about the space.

This methodology provides a comprehensive and systematic approach to assessing the effectiveness of participatory approaches and tools in urban design and to make innovative suggestions for toolkits that have been used in these processes or could be used in the future.

1.4. Structure of the Thesis

This thesis consists of four main chapters that aim to provide innovative solutions by analyzing the effects and tools of participatory urban design in depth: Introduction, Literature Review, Case Studies and Conclusion. Each chapter is structured to serve the overall purpose of the study and aims to answer the research questions.

Chapter 1 covers the problem definition, research questions and methodology underpinning the study. This chapter explains why participatory approaches are important in the design of urban spaces and how this study will contribute to this field. It also gives an overview of the scope and structure of the thesis and provides a roadmap of what the reader can expect to find in the remaining chapters of the thesis.

Chapter 2 provides a comprehensive analysis of the existing literature on participatory design, co-design tools and user experience. This chapter analyses the theoretical approaches, previous studies and key findings on the topic. The literature review covers a wide range of topics such as the historical development of participatory urban design, the effectiveness of different co-design tools and studies on user experience. This analysis forms the scientific basis of the study and identifies gaps and opportunities in the literature to address the research questions.

Chapter 3 is Participatory Urban Design Practices: Case Studies. This chapter discusses in detail the case studies carried out in two different neighborhoods in İzmir

(Karşıyaka Yalı Neighborhood and Konak Basmane Square). The chapter includes a comprehensive spatial and social analysis to understand the urban fabric and social dynamics of both neighborhoods. Both districts are introduced in terms of existing urban structure, demographics and social dynamics. This introduction explains why the neighborhoods were selected for the urban design projects. The participatory design tools and methods used in both case studies are detailed. How the participatory design workshops were organized and what activities were carried out in these workshops are explained in detail. In the workshops, participants are encouraged to share their experiences, develop design ideas and provide feedback. The data collected through spatial analyses, surveys and in-depth interviews are examined. This section describes how the data from both case studies were analyzed and the themes and patterns within which these data were evaluated. The data is analyzed using thematic and statistical methods and the findings are used to evaluate the effectiveness of urban design processes. The findings from the case studies reflect the experiences of the participants in both regions and their views on the process. In this section, the level of participation of the participants in the process, their design proposals and their contribution to the design of urban spaces are evaluated and discussed. Furthermore, the effects of participatory design on urban design are analyzed by comparing the feedback of the participants in both case studies and their experiences during the process. Finally, the conclusions of the case studies in both regions and their recommendations for urban design processes are discussed.

In the conclusion chapter, the findings of the research are summarized and the conclusions of the thesis are discussed comprehensively. The answers to the research questions are evaluated by comparing them with the existing knowledge in the literature. Furthermore, this chapter presents innovative suggestions for toolkits that are used or could be used in participatory design processes in the future. The results of the thesis include recommendations for developing more effective and user-friendly approaches to urban design and offer new perspectives for future research.

This structure provides a comprehensive and systematic roadmap for evaluating the effectiveness of participatory approaches and tools in urban design and providing innovative solutions in these processes. Each chapter is detailed to serve the overall objectives of the study and is structured in a way that helps the reader to understand the integrity of the thesis.

CHAPTER 2

CO-DESIGN AND USER EXPERIENCE IN URBAN DESIGN

Public spaces are an important part of cities, where communities come together and interact. The creation of cities with everyone contributing can benefit everyone, according to Jane Jacobs.¹ However, this vitality does not come naturally. It is the social and spatial relationships and dialogues established there that make up the vitality of the city. This movement follows a certain pattern of the city. Qualified urban design is the most important component in the formation of this pattern. Qualified urban design patterns are directly related to the physical and social relations of the city. Therefore, the spirit of public spaces depends on the design process and urban designers manage this process. Urban design focuses on the pattern between buildings and emphasizes the livability, aesthetics and functionality of public spaces.²

Urban design begins with the planning and organization of cities to create functional and aesthetically pleasing environments. It includes the layout of buildings, streets, parks and public spaces to improve efficiency, sustainability and quality of life. Urban designers work to balance economic growth and environmental issues.³ The process of designing and sculpting the physical environment of cities, towns, and villages is known as urban design. This involves creating spaces that are usable, visually attractive and sustainable for society. To create cohesive and livable environments for people, urban design takes into account elements such as transportation, infrastructure, public spaces, and architecture.⁴

User experience and participatory design are vital in urban design processes. Co-design, a participatory design approach, is an approach where designers, stakeholders and users work together to create solutions. This method allows everyone affected by the design to actively participate in the process and share their ideas. User experience examines the impact of design on the user and the user experience.

In this chapter, we will examine the role and importance of co-design and user experience in urban design processes. First, we will define the concept of co-design and discuss how this approach is applied in the urban design context. Then, we will discuss user experience and its impact on co-design processes. Under these headings, we will focus on the tools and methods used in co-design processes, the theoretical foundations of these processes and examples of their application. We will also examine the interaction between co-design and user experience and analyze how these two concepts are integrated in urban design projects and how they are reflected in the results.

2.1. The Concept of Co-Design in Urban Design

2.1.1. What is Co-Design Concept?

Co-design is a participatory design approach where users, stakeholders and designers work together to develop solutions. This method ensures that everyone affected by the design takes an active role in the process and shares their ideas. The participatory design process aims to produce more inclusive and innovative solutions by putting the needs, expectations and experiences of users at the center. In the context of urban design, co-design aims to create more livable, sustainable and user-friendly environments by encouraging public participation in the planning of cities and public spaces. This process ensures that citizens are not only consulted but also become active participants at every stage of the design process.

As Arnstein says "Citizen Participation is Power", citizen participation should not only be at the stage of informing or deliberating, but should also play an active role in decision-making processes.¹² Arnstein's ladder of citizen participation describes the role of citizens in decision-making processes and the various levels of participation. At the lowest levels are low forms of participation, such as manipulation and therapy, while at the highest levels are high forms of participation, such as partnership and citizen control. This idea supports the idea that citizens should be involved in urban design processes and argues that active citizen participation plays an important role in making cities more sustainable and livable.

Arnstein's ladder of citizen participation, developed in 1969, consists of eight rungs and identifies how citizens participate in democratic decision-making processes. These figures fall into three main categories: non-participation (no participation), token participation (tokenism) and citizen power. Manipulation and therapy are used at the level of non-participation. At this level, control over citizens is attempted, but there is no real participation. Informing, consultation and placing are found at the tokenism level. At this level, the public is informed and consulted, but has no influence on the decision-making process.¹²

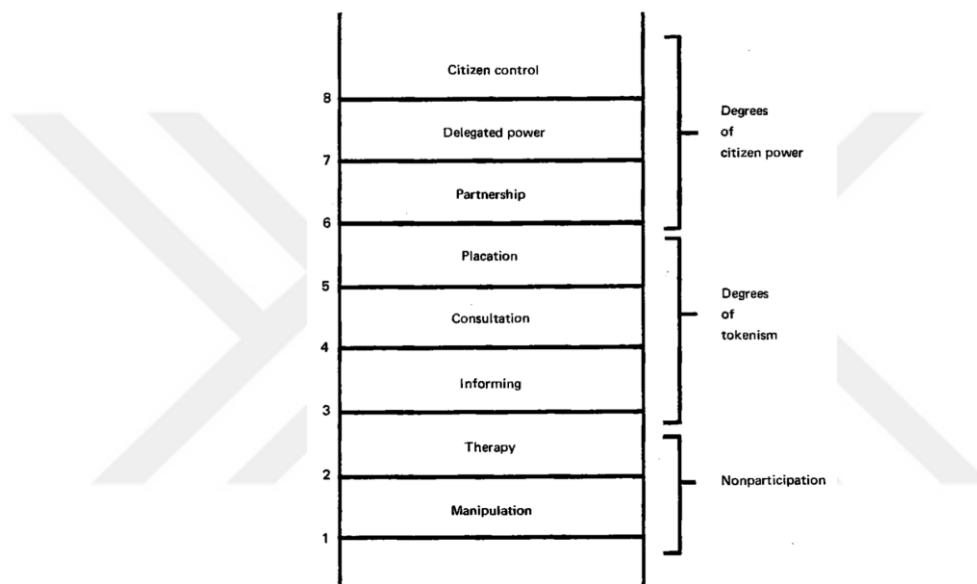


Figure 4: Eight Rungs on The Ladder of Citizen Participation¹²

The citizen power level includes partnership, delegated power and citizen control. At this level, people are truly involved and actively participate in decision-making.¹²

Participatory design is based on the idea that those affected by design should have a say in the design process.¹³ This approach allows existing skills to be utilized in the design process and enables participants to contribute not only to the design outcomes but also to the design process. In this context, citizens' experiences and knowledge should be integrated into the design process in the participatory design process.

In urban design, designers and stakeholders collaborate to produce solutions. According to Mueller et al. the process is designed to include the views of different

participants, both experts and citizens.⁴ This method ensures that different views are taken into account and creates more inclusive and creative urban spaces. Co-design engages the public in a variety of ways. These approaches aim to create more inclusive and innovative urban spaces by combining the knowledge, experience and skills of community members. This process encourages community members to actively participate in both the design outcomes and the process.

Manzini and Rizzo (2011) state that participatory design is a complex co-design activity and that prototypes, mock-ups, design games, models, sketches and other materials should be used to encourage, sustain and guide it.⁷ These tools allow participants to engage in the creative process and share their ideas. Participatory design tools encourage active involvement of users in the design process, which helps us to better understand their expectations and needs. These tools provide an effective means of collecting users' views and opinions.

Co-creation is defined as the process of mutual value creation between employees and citizens.¹⁴ This innovative process encourages interaction and sharing between citizens and employees. As a result, the relationship between professionals and citizens is more experienced, which improves the quality of participation. The co-creation process enables professionals and citizens to produce more efficient and user-friendly solutions. This process develops more innovative and sustainable solutions using the knowledge and experience of the participants.

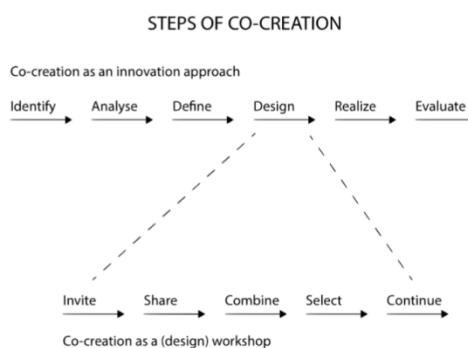


Figure 5: The Steps of a Co-Creation Process¹⁵

Co-design and co-creation are complementary and interactive methods in participatory design processes. Co-design is a process where users, stakeholders and designers work together to develop solutions, incorporating the knowledge, experience

and ideas of participants into the design process. This helps us better understand the needs and expectations of community members and produces more inclusive and innovative solutions. Co-creation refers to the process of mutual value creation between professionals and citizens. Co-creation processes enable professionals and citizens to work together to develop more creative and effective solutions.

The co-creation process is defined by De Koning, Crul and Wever (2016) as an innovative approach.¹⁵ Defining, analyzing, identifying, designing, realizing and evaluating are parts of this process. Co-creation workshops involve inviting, sharing, combining, selecting and continuing. This model treats co-creation both as an innovative process and as design workshops. This process fosters collaboration and interaction between citizens and professionals, helping to develop more innovative and efficient solutions.

Public participation is different from co-design. In general, public participation remains at the stage of providing information or advice, while co-design refers to collective design. According to Sendra (2024), for co-design processes to take place, existing power imbalances need to be recognized and addressed, and the necessary structures and collaborations need to be created.⁶ Co-design is a process that facilitates the collaboration of urban design teams and creates the conditions for these processes to take place. This difference between co-design and public participation means that it encourages a more active and effective involvement of the public in design processes. Co-design allows community members to contribute directly to the design process, not just discuss it.

As Heijne et al. (2018) note, user-centered design, participatory design and co-creation comprise the three main categories of interaction between professionals and citizens.¹⁴ User-centered design involves planning by identifying customers' feelings, needs and expectations. In participatory design, professionals involve citizens in the decision-making process. People and citizens working in the process of mutual value creation create an active environment of interaction and sharing in co-creation.¹⁴

Ucodesign

Terminology:	User Centered Design	Participatory Design	Co-Creation
Interaction:			
Description:	Professionals identify the needs, wants, emotions, concerns and aspirations of the citizens and apply that to the planning process.	Professionals involve the citizens who are (potentially) affected by or interested in a decision in the decision-making process.	Professionals and citizens closely collaborate in a mutual value creation process, promoting an active form of interaction and sharing.
Outcome:	Information Finding	Acceptance Finding	Design Finding

 = Citizens
  = Professionals

Figure 6: Types of Professional-Citizen Interaction¹⁴

Mattelmäki and Visser (2011) identify four aspects of co-design: User-centered design focuses on the needs of users but is not fully co-designed. Designers are inspired by users.¹⁶

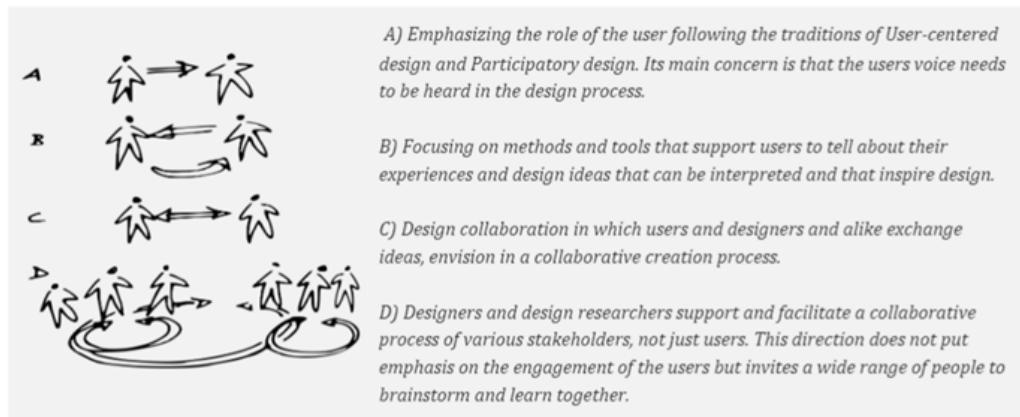


Figure 7: The Four Co-Design Directions¹⁶

Designers and users work together to share ideas. Designers and users exchange ideas and learn by inviting a wide audience. These four elements involve co-design

giving voice to users, encouraging the participation of potential users and stakeholders, sharing ideas and experiences, and temporarily creating specific parts of the process. These aspects provide important recommendations for improving the effectiveness of co-design.

2.1.2. Co-Design in Urban Design

Urban design is a process that aims to change the physical environment of cities. It aims to create more efficient, aesthetically appealing and sustainable places. Urban design is designed to meet the needs of communities, offset environmental issues and stimulate economic growth through the organization of buildings, roads, parks and public spaces.³ As a result, urban design helps communities create integrated and livable environments.⁴

Urban design has evolved over time according to changing social demands, new technologies and management techniques. This process can be divided into several main periods. 19th Century and Before Early Urban Design (19th Century and Before) focused more on monumental and aesthetic structures. The main components of the design of cities were public spaces, squares and huge monumental structures.¹⁷ Modernist urban design emerged with industrialization and rapid urbanization in the early 20th century. In this period, order and functionality were prioritized and urban plans were based on grid systems.⁴ Postmodern urban design (Mid and Late 20th Century) placed more emphasis on historic fabric and aesthetics and created pedestrian-friendly spaces and mixed-use areas.¹⁰ Today, participation and sustainability are crucial for urban design. More user-friendly and democratic designs involve public participation. Digital platforms and technological tools play an important role to increase this participation.¹⁸

The role of citizens in the urban design process has also changed significantly over time. In the 19th and early 20th century, the public was passively involved in urban design processes. Government officials and experts usually made the decisions and the public had little involvement.¹² In the 1960s, Sherry Arnstein's idea of the "Ladder of Citizen Participation" began to significantly increase public involvement through feedback and consultation. Soliciting opinions from citizens became widespread during

this period, but did not have a direct impact on the decision-making process.¹² Today, citizens are encouraged to actively participate in urban design processes. "Approaches such as 'citizen design science' and 'co-design' integrate the views and experiences of the public into the design process. This helps to create more equitable and usable urban spaces.⁴

Participatory design, or co-design, aims to create more livable, sustainable and user-friendly environments by encouraging active public participation in the planning of cities and public spaces. Through this process, community members can not only discuss but also directly contribute to the design process. Co-design refers to the process of designers, users and stakeholders working together to create solutions. Participatory design aims to develop more inclusive and innovative solutions by focusing on the needs, expectations and experiences of users. This method integrates the knowledge, experience and skills of community members into the design process, resulting in more meaningful and effective outcomes. Co-design processes allow for stronger collaborations between stakeholders and designers, while encouraging the active participation of citizens. This makes cities more sustainable, livable and accessible.¹⁹

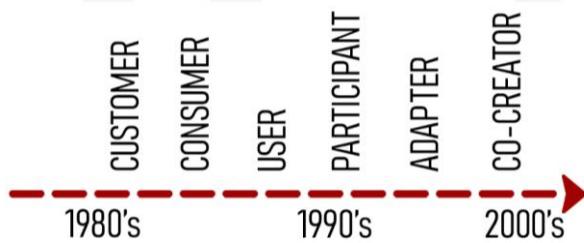


Figure 8: Changes in the Way Designers Think About People²⁰

Sanches and Frankel (2010) say that there has been a significant transformation in designers' perception of people.²⁰ In the 1980s, people were seen as customers, but in the 1990s they were seen as consumers and users. In the 2000s, people were seen more as individuals who participate, adapt and co-create. This change shows a greater involvement of citizens in urban design processes.²⁰

This historical evolution further deepens the relationship between urban design and co-design. Citizens, who initially worked passively, now work as active participants and co-creators. As a result of this transformation, the aim of co-design is to integrate

citizens' knowledge and experience into urban design processes. This helps to create more equitable, consumer-oriented and sustainable urban spaces. Co-design and co-creation approaches enable citizens to not only be informed but also directly contribute to the design process, which makes urban design more effective and inclusive.

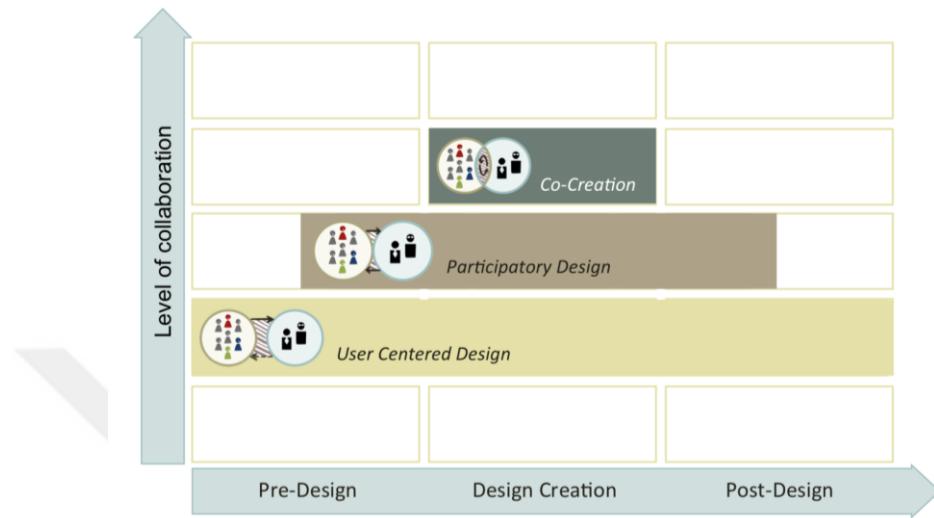


Figure 9: Level of Collaboration and Project Phases¹⁴

In the last decade, the term "co-design" has been used in urban renewal processes, along with "co-production", "co-creation" and other related terms. However, often these consultative processes do not involve a collective reflection on how future urban spaces will be. Therefore, they often do not really involve co-creation or co-design.⁶

Urban design is defined as the process of creating places that are better than existing ones.²¹ However, urban design approaches are sometimes said to ignore the cultural and social aspects of everyday urban experiences. Simon (2019) describes a technical-rationalist approach to problem solving.²² This method works to transform the current situation into a desirable one, but ignores the human element and works only for predetermined scenarios and goals.^{22,23} However, according to van der Bijl-Brouwer & Malcolm (2020), design problems have become more complex and diverse over time.²⁴ Urban design is not limited to the cultural and social elements of people as well as the material and functional aspects of the physical environment.²⁵

Situated actions in urban design involve a variety of relationships involving interactions and dependencies between multiple designers and actors, design processes,

users and designs.²⁶ Lave and Wenger (1991) also advocate the idea of "situated learning".²⁷ They argue that learning isolated from social practice cannot be successful. Urban design, for example, can be perceptual (value and meaning), social (safety, power, equity), morphological (building form, structure and patterns), temporal (time cycles and change), functional (movement, activity and opportunities) and visual (aesthetics).²⁷

Urban design takes place at different scales, from an entire city to a park and involves a variety of stakeholders that add to the complexity of its positioning. Various approaches have been developed and applied in the past to understand the different dimensions of urban design. In his 1964 work "The Image of the City", Lynch argues that cities, including roads, edges, nodes, nodes, districts and landmarks, should be organized to facilitate people's movement and wayfinding.² In "Life Between the Buildings", Gehl (1987) explores how the built environment can improve people's quality of life.²⁸ Placemaking, widely used today, dates back to the 1960s and promotes real-world collaboration and empowerment between professionals, local residents and decision-makers.²⁹

In conclusion, co-design is an important approach to develop more inclusive, innovative and sustainable solutions in urban design. This approach integrates the knowledge, experience and skills of citizen into the design process, resulting in more meaningful and effective outcomes. Co-design processes encourage the active participation of citizens and enable stronger collaborations between designers and stakeholders. This contributes to making cities more livable, accessible and sustainable.

2.2. Co-Design Approaches

One of the reasons for the emergence of the co-design process is the need for a new approach that is not deterministic and can be sustained in parallel with changes in society. Participation leads to a new structure of relationships and many professionals have developed various definitions of participation, both in theory and in practice. These definitions stem from changing circumstances and perspectives over time.

To learn more about participatory urban design, it is important to first examine the concept of participation and its different levels. The active participation of

individuals and communities in decision-making processes contributes to the development of more inclusive, sustainable and effective design solutions. The foundations of co-design approaches are established by the various types and levels of participation and provide a framework for their application. Ultimately, participation aims to create lasting processes that are beneficial for the community.³⁰ Consequently, it is crucial to understand the dynamics and evolution of participation before discussing co-design approaches.

The conceptualization of participation has changed over time. Arnstein's ladder of citizen participation identifies various levels of participation: manipulation, therapy, token participation, delegated power, consultation, volunteering and partnership.

These levels indicate how involved citizens are in the decision-making process. At the top of the ladder is true citizen control, where citizens have significant authority over a particular plan or program. Each rung represents a progression of increasing public power and influence. Arnstein's ladder provides a basis for understanding the different levels and dynamics of citizen participation in shaping policy decisions.¹²

The evolution of participation is also illustrated by White's insights and Pretty's typology. While Sarah White examines how different interests operate in various forms of participation, Pretty emphasizes the importance of motivations that shape interventions and power structure.³¹

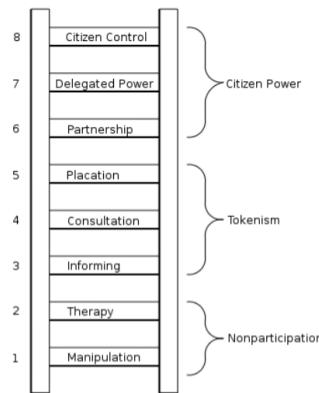


Figure 10: Arnstein Citizen Ladder¹²

Pretty's typology describes in detail the various types of participation and the characteristics of each type. Manipulative participation is when there is no real power-

sharing and participation is merely a show. In passive participation, individuals are only informed and receive feedback. Consultative participation is when people are consulted but have no say in the decision-making process. People participate in exchange for financial incentives. Functional participation is when individuals participate to achieve specific goals but have little influence in the decision-making process. Interactive participation involves joint decision-making processes and strengthening local institutions. Finally, self-determination is when individuals act on their own with the help of external resources.³³

Type	Characteristics of each type
Manipulative participation	Participation is simply a pretence, with 'people's' representatives on official boards, but who are un-elected and have no power.
Passive participation	People participate by being told what has been decided or has already happened. It involves unilateral announcements by an administration or project management without any listening to people's responses. The information being shared belongs only to external professionals.
Participation by consultation	People participate by being consulted or by answering questions. External agents define problems and information-gathering processes, and so control analysis. Such a consultative process does not concede any share in decision-making, and professionals are under no obligation to take on board people's views.
Participation for material incentives	People participate by contributing resources, for example, labour, in return for food, cash or other material incentives. Farmers may provide the fields and labour, but are involved in neither experimentation nor the process of learning. It is very common to see this 'called' participation, yet people have no stake in prolonging technologies or practices when the incentives end.
Functional participation	Participation seen by external agencies as a means to achieve project goals, especially reduced costs. People may participate by forming groups to meet predetermined objectives related to the project. Such involvement may be interactive and involve shared decision-making, but tends to arise only after major decisions have already been made by external agents. At worst, local people may still only be co-opted to serve external goals.
Interactive participation	People participate in joint analysis, development of action plans and formation or strengthening of local institutions. Participation is seen as a right, not just the means to achieve project goals. The process involves interdisciplinary methodologies that seek multiple perspectives and make use of systemic and structured learning processes. As groups take control over local decisions and determine how available resources are used, so they have a stake in maintaining structures or practices.
Self-mobilization	People participate by taking initiatives independently of external institutions to change systems. They develop contacts with external institutions for resources and technical advice they need, but retain control over how resources are used. Self-mobilization can spread if government and NGOs provide an enabling framework of support. Such self-initiated mobilization may or may not challenge existing distributions of wealth and power.

Adapted from Jules Pretty (1995).

Figure 11: Pretty's Typology of Participation^{30,32}

White divides participation into four main categories: nominal, instrumental, representative and transformational. Nominal participation is done simply to give the impression that participation exists and usually has a symbolic value. Instrumental participation is used for the success of specific projects or programs. Representative participation, which represents the interests of specific groups, aims to give a voice to communities. Transformational participation aims to empower communities and individuals and bring about social change. These findings illustrate the dynamics and complexities of participation. Progression from simple consultation to active participation and empowerment of individuals and communities.

Form	Top-Down	Bottom-Up	Function
Nominal	Legitimation	Inclusion	Display
Instrumental	Efficiency	Cost	Means
Representative	Sustainability	Leverage	Voice
Transformational	Empowerment	Empowerment	Means/End

Figure 12: Interest in Participation³⁴

Co-design approaches involve multiple parties collaborating to create value and engage potential users. These approaches emphasize stakeholder collaboration by giving voice and tools to those not involved in the traditional design process.

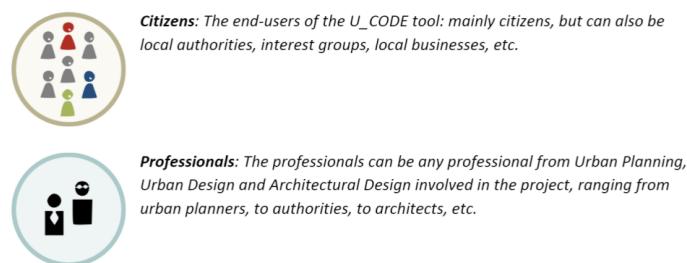


Figure 13: Description of Participants in the Pre-test Studies¹⁴

Co-creation means collaborating on a temporary framework for specializations, ideas and experiences. The ground rules for successful co-design include ensuring that

all parties add value and that the results benefit everyone. Ineffective results and frustration among stakeholders require choosing the right approach. Co-design is essential to understand how the output will be used.¹⁴

The definitions of participants and experts in the pre-test studies will be similar to the definitions in the U_CODE tool presented in this study. Participants include citizens, who are usually users of space. Experts include professionals working in the fields of urban planning, urban design and/or architectural design.

To fully comprehend the fundamentals of participatory urban design, it is necessary to first comprehend the concept of participation and its different dimensions. Participatory participation creates a new relational structure that affects how communities and professionals interact in the decision-making process. The definitions and applications of participation have changed as society has evolved. These changes have highlighted the need for more inclusive, sustainable, and effective design solutions. Once we have a good grasp of these participation dynamics, we can now dive deeper into the various co-design approaches that build upon these basic concepts.

Co-Design Methods

Co-design approaches involve multiple parties working together to generate value and engage potential users in the process. These approaches emphasize stakeholder collaboration by providing voice and tools to those not involved in the traditional design process. Co-creation involves sharing expertise, ideas and experiences within a temporary framework. Ground rules for successful collaboration include that all parties generate value and that the results benefit everyone. Choosing the right approach is crucial to avoid ineffective results and frustration among stakeholders. To succeed in co-design, it is necessary to understand how the output will be used.¹⁴

Participatory design approaches are gaining more and more attention, leading to an increase in research examining a large number of co-design approaches. In different design-oriented fields, these approaches can take various forms. Each approach has advantages and disadvantages, so it is important to carefully consider which method will be most effective for a specific project. Six different co-design approaches will be described here, selected in turn. These are; User-Centered Design (UCD), Collaborative

Design, Participatory Design, Experience Design, Open Innovation and Citizen Design Science (CDC). The Citizen Design Science will be discussed in detail as it is also used in the methodology of pre-testing studies.

User-Centered Design (UCD)

User-centered design (UCD), a co-design approach, encourages the direct involvement of users at every stage of design. User experience, needs and preferences influence design choices in this approach.³⁵ In UCD, citizens are seen as subjects or reactive information providers who are instructed to perform tasks or evaluate the opinions of experts. Researchers transform the information made or provided by participants into needs, demands or design requirements for experts.¹⁴ A key advantage of UCD is that design focuses on the actual needs and expectations of users. This helps to make goods and services more practical and easily accessible. At each stage of the design, improvements are made by creating continuous interaction and feedback loops with users.

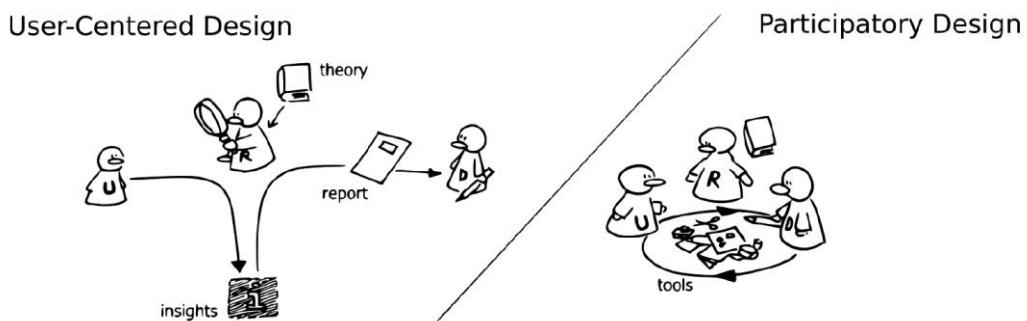


Figure 14: Visual Representation User Centered Design and Participatory Design¹⁰

However, spending time and resources on this process can be expensive, and users cannot always give as comprehensive feedback as experts, which can result in some aspects of design being based on insufficient information. For example, the UCD approach to designing a new city park uses surveys, focus group meetings and prototype

testing, directly incorporating the expectations and needs of potential users of the park into the design process.

Participatory Design (PD)

One approach that encourages the direct involvement of local communities, residents and other stakeholders is participatory design (PD). This approach creates more inclusive and sustainable urban environments by taking into account the preferences, needs and experiences of residents.³⁶ Participatory Design views citizens not only as information providers, but also as decision-makers and active participants. People's opinions, needs and political power are crucial. Professionals aim to identify the needs and views of citizens and make decisions based on a common understanding.¹⁴ Public meetings, workshops, surveys and online platforms are a few tools used in the implementation of PD. These tools allow citizens to actively participate in the design process. PD inclusiveness involves greater commitment of community members to projects and the development of more diverse and innovative solutions through the involvement of different stakeholders. However, the involvement of a large number of stakeholders can make the decision-making process more complex and longer, and also the interests of different stakeholders can lead to conflict. For example, when a new park is planned to be built in a neighborhood during the PD process, a series of meetings with residents are organized. The expectations, needs and suggestions of the residents are discussed in these meetings and the design team creates the design of the park based on these discussions.

Collaborative Design

Collaborative design is a design methodology that requires various stakeholders such as researchers, end users and designers to work together in the design process. Collective creativity and co-creativity to solve complex problems is the focus of this approach. Collaborative design focuses on generating solutions that meet the

perspectives and needs of all parties and fosters a shared understanding and ownership of design outcomes.¹⁰ In this approach, designers facilitate conversation and work. At each stage of the design process, stakeholders share ideas and information so that more innovative and sustainable outcomes can be achieved. Collaborative design is characterized by the inclusion of diverse perspectives, shared ownership of design outputs and the ability to produce more innovative and sustainable solutions. Effective communication between different stakeholders can be challenging, and the involvement of a large number of stakeholders can make the management and coordination of resources difficult. For example, in an urban renewal project, designers work with local residents, business owners and municipal authorities to create holistic solutions that take into account everyone's needs and expectations.

Experience Design

An approach known as Experience Design focuses on improving the user experience in urban spaces. This approach addresses the design of physical environments to make the daily lives of urban people more fun, easy and interactive. How users interact with the environment and the quality of these interactions are prioritized.^{37,38} Experience Design explores ways to make users' daily activities in the city more positive. The advantages of this method include improving users' daily experiences, strengthening their connection to the city and creating more accessible environments.³⁹ However, a large number of variables need to be taken into account to improve the user experience, which can make it challenging, and projects can often be expensive and time-consuming. For example, when creating a pedestrian area in the city center, it is important to consider how elements such as walkways, rest areas and public art can enhance the user experience.

Open Innovation

Open Innovation is an approach that generates innovative solutions to improve urban life through collaboration with various stakeholders and communities.⁴⁰ This method seeks to find solutions to urban problems by utilizing the collective resources and intelligence of those living and working in the city. Open Innovation encourages communities to collaborate and actively participate.⁴¹ This approach brings together the resources and knowledge of various stakeholders to produce more innovative and effective solutions. Open Innovation fosters innovation and creativity, encourages collaboration between communities and enables effective use of shared resources and knowledge.⁴² However, the coordination of various stakeholders can be difficult and cumbersome, and also the different interests of different stakeholders can lead to conflicts and complicate the process. For example, to reduce traffic congestion in a city, local governments, transportation experts, technology companies and community members collaborate.

Citizen Design Science (CDS)

Citizen Design Science (CDS) is a new co-design strategy that uses citizens' observations, experiences and local knowledge to improve planning, design, management and regeneration processes for urban systems. This approach combines active co-design approaches and crowdsourcing methods to actively engage the public in the urban planning process.⁴ Citizen Science, Citizen Design and Design Science are the three main components underpinning CDS. Citizen science involves citizens' participation in scientific studies, contributing to data collection, analysis and dissemination. The active participation of non-expert citizens in the urban design process and sharing their preferences and insights is called Citizen Design.⁴³ According to Sanders (2002), design science aims to transform citizens' contributions into design solutions that can be implemented by urban designers.⁴⁴

The key dimensions of citizen science, as illustrated in Figure 15 highlight the intersection of science, socio-economic factors, and citizen participation. This model

emphasizes the cyclical process where citizens contribute to defining problems, forming policies, implementing policies and evaluating outcomes.

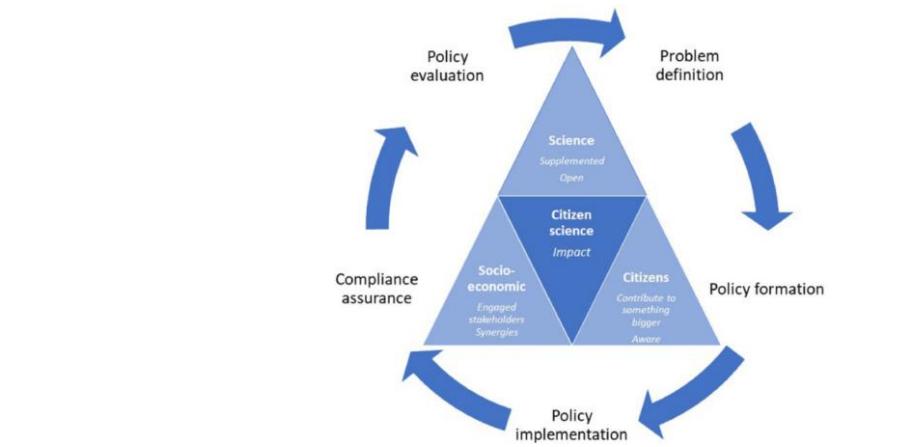


Figure 15: Three Key Dimensions of Citizen Science⁴⁵

The integration of socio-economic stakeholders and scientific knowledge ensures that the impact of citizen science is both comprehensive and sustainable. This approach aligns with the goals of CDS, where active citizen engagement and scientific methods collaboratively drive urban design and policy-making processes.

The CDS process consists of information sharing, data collection and design implementation. Citizens provide data using their knowledge and experience of urban areas. Collaborative methods transform this data into scientific knowledge and urban designers use this knowledge to develop design solutions. Citizens decide on these solutions by voting.⁴⁶

Citizen Design Science offers a number of advantages. The use of local knowledge better aligns urban planning with the wants and needs of the community. Citizens' greater engagement with their environment encourages civic participation. In addition, public participation allows a variety of innovative urban design ideas to emerge.⁴⁷ Atakent Parking Lot project is an example of CDS applications in Izmir. Face-to-face interviews, design adjustments on an analog model, and surveys are some of the participatory methods used in this research.⁴⁸ Expert designers analyze the collected data and develop urban design proposals. Citizen votes determine the best designs.⁴

CDS presents several challenges, including balancing expert knowledge and citizen input, ensuring broad and representative participation and managing the complexity of data collection and analysis. Despite these challenges, CDS serves as an important advance for participatory urban design, helping to create more sustainable and inclusive urban environments.⁴⁹

As closely related methodologies, Citizen Design Science (CDS) and co-design emphasize the involvement of non-expert citizens in the design and planning process. Similar to co-design, CDS involves citizens actively participating in the design process. Citizens are not only passive providers of information, actively contributing their insights and preferences through various design tools and methods.¹⁰ Co-design is a collaborative process that generates design solutions by working together with designers, designers and other stakeholders. As a core component of CDS, this collaborative nature enables urban spaces to be co-designed through the joint effort of all participants.⁵⁰

Using digital and analog design tools, citizens can express their ideas and preferences about urban spaces in CDS. With the help of these tools, people can transform their inputs into appropriate design proposals. Co-design methodologies facilitate the design process using similar tools and enable all stakeholders, regardless of design expertise, to contribute in a meaningful way. Co-design principles are closely linked to the democratization of these tools.¹⁹

CDS not only collect data from citizens, but also inform urban planning and design decisions. The final designs reflect the real needs and preferences of the community through this data-driven method. Co-design processes use the collected data to ensure that designs are user-friendly and community-friendly. By incorporating co-design principles, CDS makes urban governance and participation more inclusive.¹⁸

The CDS approach involves an iterative process that develops initial design ideas through continuous feedback from citizens. One of the key features of co-design is this iterative characteristic, which relies on multiple rounds of feedback and refinement to reach the best design solutions. Co-design and CDS emphasize the importance of collaboration in the design process and ensure that all voices are heard and considered in the final outcome.⁴

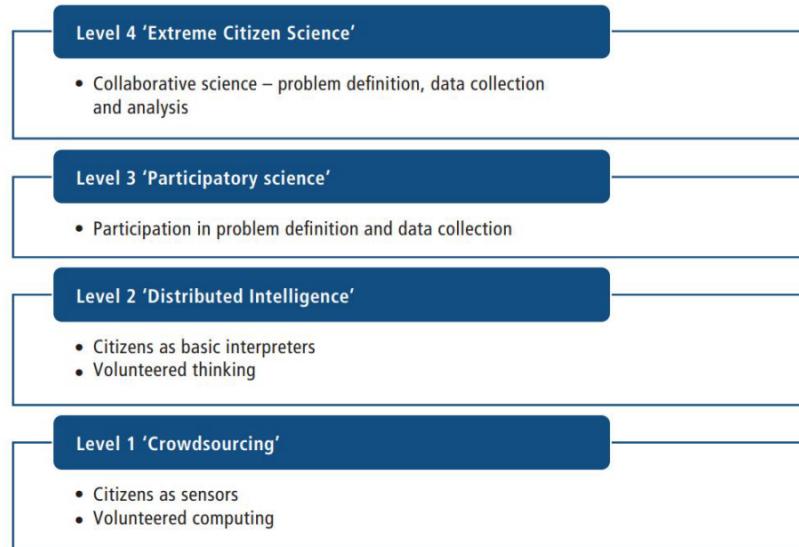


Figure 16: Levels of Participation in Citizen Science⁵¹

The levels of citizen science engagement in Figure 16 show how citizens contribute in different roles. The first level, 'Crowdsourcing', refers to the voluntary process of information gathering, where citizens are used as sensors. The second level, 'Distributed Intelligence', involves the participation of citizens as key interpreters and voluntary thought processes. The third level, 'Participatory Science', involves participation in problem definition and data collection. The highest level, 'Extreme Citizen Science', refers to collaborative science in problem definition, data collection and analysis. These levels describe how citizens can be integrated into scientific processes and how their contributions can be assessed. These approaches emphasize the importance of citizen participation in design processes, in line with the iterative and collaborative nature of CDS.

One of the main objectives of CDS is to directly involve citizens in the design process, increasing their commitment and sense of ownership of their urban environment. Co-design encourages the active participation of participants at every stage of the design process, making their contributions valuable. This empowerment will lead to more reliable and long-term design solutions.¹⁰

As a result, the growing interest in citizen participation in urban planning in recent years has made design processes more responsive and inclusive.⁵² More democratic and sustainable solutions will emerge when the needs, concerns and views of citizens are taken into account in urban design. Democratic decision-making

processes are influenced by participatory design processes that strengthen the role of individuals and communities.⁵³ Therefore, it is crucial to understand and properly apply co-design approaches. For co-design processes to be ethical and efficient, the tools used must also be appropriate and of high quality. Qualified co-design tools encourage greater participation of communities and enable design processes to be more inclusive and innovative. Following co-design approaches, the next section will explore co-design tools and methodologies in more detail.

2.3. Tools in Co-Design

Today, collaborative design tools in urban design include digital user-centered design tools, methods collected in databases such as MethodBank, and collaborative platforms that encourage citizen participation such as Community PlanIt. These tools aim to improve stakeholder collaboration and participation processes. Traditional approaches such as user-centered design approaches and workshops are also widely used.¹⁴ With the help of these tools, experts can create creative, inclusive urban designs that take into account the wants and needs of the community.

Involving the community in decision-making processes regarding urban development projects provides a more inclusive approach to incorporate citizens' feedback into urban design. Participatory design tools should be developed because there is a gap between traditional planning methods and modern digital tools.⁵² This will enable a data-driven and more collaborative process in urban development.

2.3.1. Tools and Methods Used in the Co-Design Process

Participatory design approaches have changed significantly in recent times, involving end-users in decision-making processes. The COVID-19 pandemic has changed how people look at public spaces and forced the trend of finding quick and inclusive public design solutions. To overcome this crucial period, expert designers have adopted information technology-based smart and inclusive design techniques as

mainstream methods. Using co-design tools, designers want to learn what users are thinking and what they are considering at the beginning of the design process. These tools require designers to empathize in order to identify design problems and understand the possibility for users to interact.⁵⁴ The time, resources and activities required for the successful execution of a co-design process should be considered. The implementation phases of a project, such as feasibility studies, briefing, co-designing the process and outputs and feasibility studies, should examine how communities can be involved at all stages.⁶

Helping to improve the conditions of others or shape the future of the community through ways of participating in the life of the community" refers to citizen participation or civic engagement.⁵⁵ This definition includes a variety of civic activities, such as voluntarily participating in social projects and engaging in public debates.⁴ User participation is defined when there is a chance to integrate individuals into a development process. Participatory design involves the involvement of consumers in the appearance, use and design of a product or service.¹⁰ According to Sanders, in this report, in a user-centered approach, design researchers provide the communication between the user and the designer. User information is interpreted as design standards and the designer evaluates these standards through the language of sketches or scenarios.⁴

Participatory design approaches help designers empathize with customers and understand how the product works.⁹ These methods are particularly important for user experiences and idea development and creative stages of the design process.⁵⁶ They provide data and insights that address functional, personal and social aspects of the experience.⁵⁷ Representation studies and methods developed to visualize the current situation and future plans are crucial for public discussions in the urban design and planning process.⁴

Changing the profile of participants and using existing skills in the design process requires new tools. This change requires the creation of new socio-material combinations to ensure that resources are best unlocked and valorized.^{57,59}

IAP2's range of citizen interaction demonstrates that co-design is an activity that may be considered at the partnership level. At the collaborative level, there are a wide variety of tools and techniques available today. They are not all categorized as co-design tools, either. It is vital to have a thorough grasp of people' decision-making

authority, interactions, and involvement in co-design in order to comprehend this nuanced difference.¹⁴

	INFORM	CONSULT	INVOLVE	COLLABORATE	EMPOWER
PUBLIC PARTICIPATION GOAL	To provide the public with balanced and objective information to assist them in understanding the problems, alternatives and/or solutions.	To obtain public feedback on analysis, alternatives and/or decision.	To work directly with the public throughout the process to ensure that public issues and concerns are consistently understood and considered.	To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.	To place final decision-making in the hands of the public.
PROMISE TO THE PUBLIC	We will keep you informed.	We will keep you informed, listen to and acknowledge concerns and provide feedback on how public input influenced the decision.	We will work with you to ensure that your concerns and issues are directly reflected in the alternatives developed and provide feedback on how public input influenced the decision.	We will look to you for direct advice and innovation in formulating solutions and incorporate your advise and recommendations into the decisions to the maximum extent possible.	We will implement what you decide.
EXAMPLE TOOLS	<ul style="list-style-type: none"> Fact sheets Websites Open houses 	<ul style="list-style-type: none"> Public comment Focus groups Surveys Public meetings 	<ul style="list-style-type: none"> Workshops Deliberate polling 	<ul style="list-style-type: none"> Citizen Advisory committees Consensus-building Participatory decision-making 	<ul style="list-style-type: none"> Citizen juries Ballots Delegated decisions

Figure 17: IAP2 Public Participation Spectrum (2013), Devoted by The International Association for Public Participation¹⁴

Figure 17 illustrates the three primary facets of citizen science: science, socioeconomics, and citizen participation. Through their input into the policy-making process, these dimensions allow residents to actively participate in the processes of urban planning. These aspects of citizen science have a big influence on problem definition, policy formulation, policy assessment and policy execution. In this approach, scientific knowledge is integrated with the expertise and experience of citizens to provide solutions for urban design.

The degrees of participation in citizen science offer a valuable framework for comprehending the intricacy and breadth of co-design procedures. Extreme citizen science, distributed intelligence, participatory science, and crowdsourcing are some of these levels. The level of citizen participation in problem creation, data gathering and analysis is reflected in each stage. At these levels, residents are actively encouraged to participate in decision-making processes and to use co-design technologies effectively.

Participatory design approaches have changed significantly in recent years. The COVID-19 pandemic has changed the way citizens view public spaces and has necessitated the need to find fast, inclusive design solutions. In this context, co-design tools play a critical role to learn users' feedback and what they think at the beginning of the design process.⁵⁴ Through these tools, designers should identify design problems and empathize with users to understand how they are likely to interact. The time, resources and activities required to carry out a successful co-design process should be considered. The phases of project implementation should examine how communities can be involved at all stages, aspects such as briefing, co-designing the process and outputs, and feasibility studies.⁶ Many co-design tools have emerged in recent years and have been tested in various places. One of these examples, the Do It Yourself (D.I.Y.) Unlimited Urbanism tool, will be detailed in the next section. These tools provide digital platforms for citizens to develop their own design ideas and implement them in urban spaces, thus supporting participatory design processes.

2.3.2. D.I.Y. Unlimited Urbanism

Today, as a result of increasing urbanization, cities need to be designed in a more sustainable way. Policy makers and decision makers plan to use evidence-based strategies and tools to facilitate collaborative planning. Although numerous tools for spatial planning and decision support systems have been developed over the last few decades, few have been used.³²

Do-It-Yourself (D.I.Y.) urbanism is an approach that encourages individuals to actively participate in developing and improving their own cities. Activities such as community gardens, street art, temporary installations and participatory urban planning can be realized through this approach. The aim is to increase people's ability to make positive changes in their neighborhoods and cities. As a co-design tool, D.I.Y. Urbanism allows citizens to create their own design ideas and implement them in urban spaces. When examined as a participatory design toolkit, this study has been selected in the literature as a best practice that can be applied and further developed. With reference to D.I.Y. Urbanism, two pre-test studies were designed in this thesis. The aim of these studies is to develop more inclusive and sustainable urban designs by encouraging more

citizen participation in design processes. Therefore, a comprehensive description of D.I.Y. Unlimited urbanism will be provided.¹¹

Unlimited Cities in the Wenshan Oasis Project

The Unlimited Cities in Wenshan project in Taipei's Wenshan district is a project that adopts a participatory urban design approach. The project, which was led by the Taipei City Urban Renewal Office and started on October 28, 2018. The project is supported by the Urban Tai-ouan team as well as 7 million urban civil society organizations. The project used the Unlimited Cities D.I.Y. app to identify the demands and needs of city residents and share them with local governments and urban experts.



Figure 18: Unlimited Cities Wenshan Oasis Project Study Site

The aim of the project is to transform empty and abandoned spaces in Wenshan district into environmentally friendly and community-oriented spaces. To achieve this goal, the project encouraged the participation of residents, identified their needs and aspirations, and used this feedback to help influence the design of public spaces. Water retention and flood prevention systems such as rain gardens and bioswales were installed to protect the geographical features and ecological values of the Wenshan region. In addition, vacant and underutilized spaces were transformed into attractive, useful venues for community events. Public space designs incorporate these values to emphasize the cultural and historical significance of the area.



Figure 19: Unlimited Cities Wenshan Oasis Project Workshop Day (28.10.2018)

The project organized a series of events and workshops for participants to actively engage them in the space planning processes. This fostered a stronger solidarity within the community and contributed to urban development through the collective wisdom of citizens. The protection of natural and historical assets, the improvement of water management and the expansion of community spaces show that the project has had a positive impact in numerous areas.

Unlimited Cities D.I.Y. is a web application and is available on various devices. It allows users to select and save up-to-date photos of urban areas in their neighborhood. Users can overlay and scale elements such as trees, bike paths and shops onto these photos. This method allows users to come up with new ideas and share them with the community.

The Wenshan Oasis Project in Taipei is a successful example of D.I.Y. Unlimited Cities. The Taipei city government is making efforts to transform empty spaces into shared community spaces. The Wenshan area, while ecologically great, suffers from humidity and flooding problems. Empty spaces repurposed as Rain Gardens and Biological Pathways have been used to mitigate these problems and strengthen the connection between the communities. Before the project started, Collaborative O. and other stakeholders conducted extensive preliminary research on the geographical and ecological characteristics, existing infrastructure and socio-cultural structure of the Wenshan region. This research helped to identify the needs and potential problems of the area. In particular, the presence of old irrigation systems and the fact that they are now underground provided important data for water management and flood prevention strategies for the region.

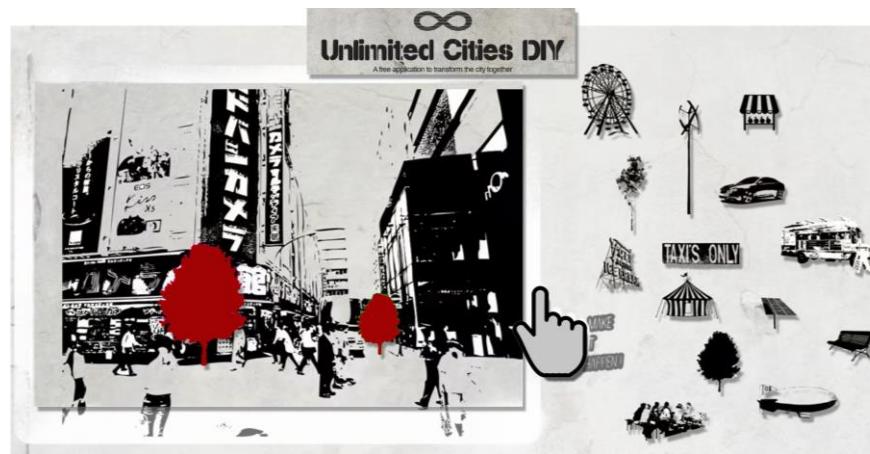


Figure 20: Unlimited Cities D.I.Y. Web Application Page

According to these analyses, the elements to be used for the area were decided.

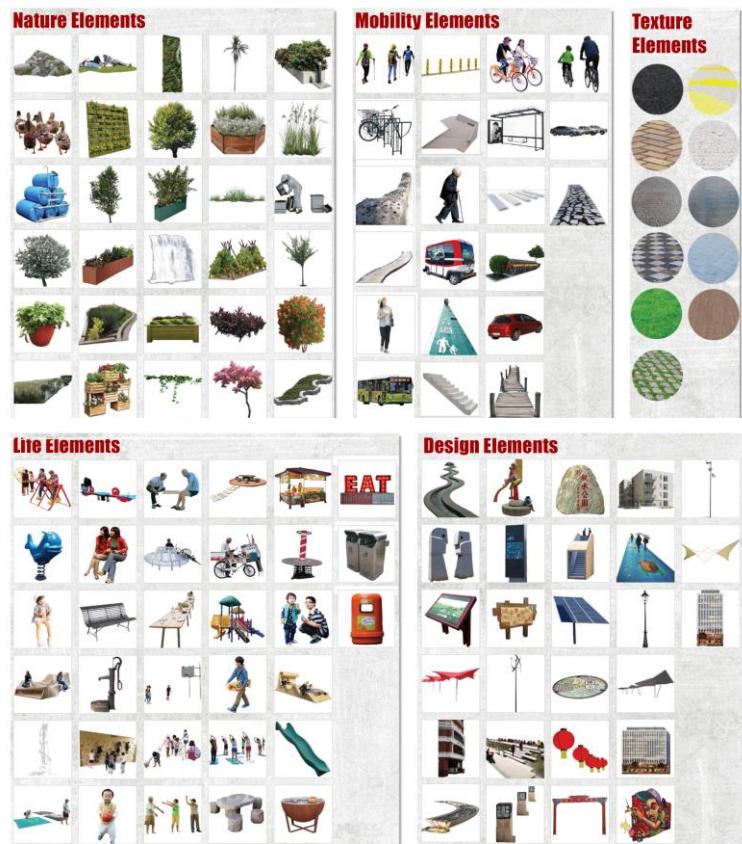


Figure 21: Elements (Objects) for The Unlimited Cities Wenshan Oasis Project

In the second step, various events were organized to ensure the active participation of residents. These events provided a platform for residents to directly express their needs and aspirations.



Figure 22: Unlimited Cities Wenshan Oasis Project Workshop Day (28.10.2018) II

Through the Unlimited Cities D.I.Y. app, participants created their own designs by selecting photos of specific areas in their neighborhoods and adding elements such as trees, bike lanes, shops, etc. to these photos. This process was an important step in collecting users' creative contributions.

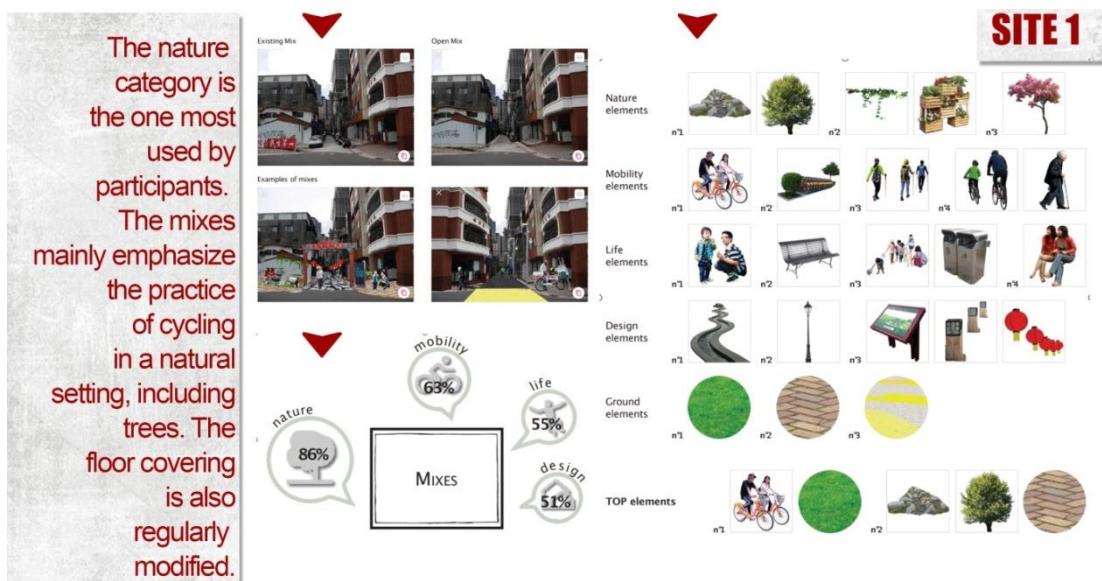


Figure 23: Case Study Statistical Analysis, Site 1, Adopted From¹¹

The Unlimited Cities D.I.Y. app was used to identify people's wants and needs. This information was shared with local authorities and urban experts. The app allowed users to visualize their thoughts and share them with the community. Specific themes and trends were revealed through a thorough analysis of the collected data. This information was used to better understand the needs and aspirations of the area's residents.

In the analysis process, the designs and opinions of the participants developed using the app were collected. Photos, comments and changes to the app constituted this data. In addition, messages left by participants during the activities and survey responses were collected for analysis. The collected data was statistically analyzed for the most preferred elements (bike lanes, trees, etc.). For example, the fact that users chose trees the most indicates a high demand for nature. Graphs and tables were used to identify users' preferences.

User designs were visually analyzed. This analysis visually showed how certain areas were changed and what elements were added. The paving, greening, bike lanes and other features of the spaces were included in the details of the designs.

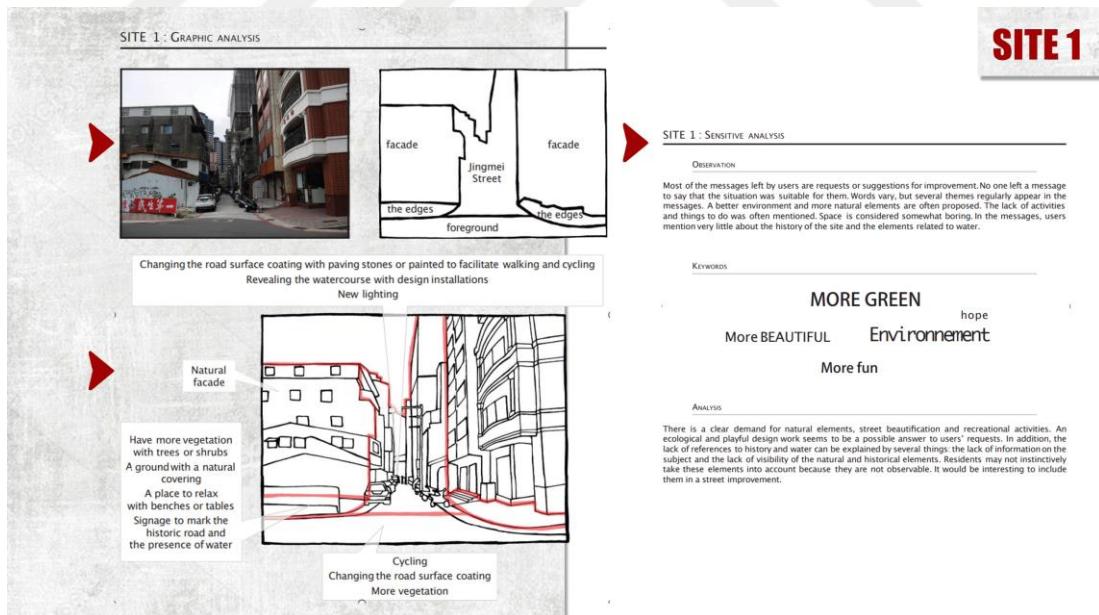


Figure 24: Case Study Graphical Analysis, Site 1, Adopted From¹¹

Messages and comments from users were analyzed and prominent themes and keywords were found. This analysis was crucial to learn more about users' emotional

responses and needs. Issues frequently discussed in the comments, such as the demand for more green space and increased visibility of water, were taken into account.

In conclusion, the results of the analysis were evaluated by the project team and the data was used for design proposals and strategies. An urban regeneration plan was created based on feedback from participants and met the expectations and needs of residents. This process, which stands out as an example of urban transformation, was enriched by the participation of citizens and reflected common sense. The project thus strengthened both ecological sustainability and community solidarity.

As a result, the Unlimited Cities D.I.Y. implementation was based on the principles of co-design. Co-design aims to develop more inclusive and effective solutions by encouraging the participation of various stakeholders and end users in the design process. This method encourages the active involvement of users at every stage of the design process and takes their needs and feedback into account.

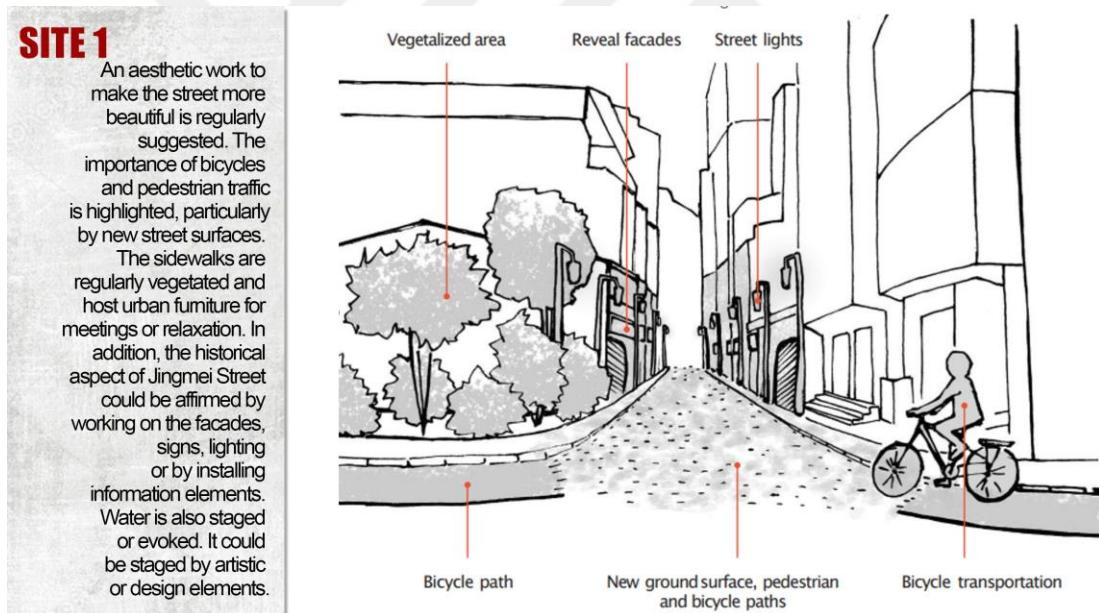


Figure 25: Case Study Design Result, Site 1, Adopted From¹¹

In the case studies of the thesis, the Unlimited Cities D.I.Y. app was transformed into an analog system. By using physical models and analog tools, citizens' participation was enabled instead of digital platforms. Moreover, this method facilitated the participation of vulnerable groups, especially those who have difficulties in using digital tools. By expressing the design ideas of the selected study areas on physical models,

participants contributed to the redesign of urban spaces. Using analog modification, these studies collected participants' design ideas and feedback. The data were analyzed qualitatively and quantitatively. These approaches use statistical analysis and thematic analysis to understand the experiences and suggestions of participants in the process.

Therefore, the Unlimited Cities D.I.Y. and analog modification method were seen as effective tools to increase community participation in urban design processes. The use of these techniques in future urban design projects is seen as an important step towards a more equitable and participatory planning process.

2.4. User Experience (UX)

The overall experience and satisfaction of a person interacting with a system or product is known as user experience (UX). Co-design aims to provide a positive and seamless experience by taking into account user emotions, preferences and interactions. In the co-design process, incorporating users' experiences and feedback into the design process allows for the creation of more effective and user-friendly products.



Figure 26: Abstract Description of User Experience by Safatul Islam Aly⁶¹

As a result, addressing user experience and co-design helps designers to learn more about the needs of users and to create solutions that meet these needs. As Donald

Norman, points out, the quality of a product can only be judged from the consumer's point of view, which shows how important user experience is.⁵

User experience includes aesthetics, usability and emotional responses as well as the functionality of the product. User experience design tries to provide a positive and lasting experience by taking into account the consumer's emotions, preferences and interaction with the product. UX has been studied in a wide variety of contexts over time and has found a wide range of applications. For example, it has become a hybrid discipline between the fields of environmental and multisensory design for digital displays and installations.⁶²

The importance of user experience stems from the fact that the quality of a system or product can only be judged by a user. Therefore, user experience (UX) research is conducted with a purely user-centered approach. The use of a product or system directly affects how the user interacts with it. This ensures a positive user experience by increasing consumers' interactions and satisfaction with the product.

Hassenzahl, Law and Hvannberg (2006) emphasize three main components where UX transcends traditional usability measurements.³⁷ The first is the Holistic Approach. Ease of use focuses on task-related (pragmatic) aspects and their achievement, while covering non-task (hedonic) aspects related to product ownership and use. This consists of factors such as beauty, difficulty, alertness and self-expression. The second is the subjective approach. While usability evaluations are based on observation-based 'objective' measurement methods, user experience is about how users perceive and evaluate the products they use. It may not necessarily matter how good a product is, but the experience of use is important. The latter is known as the Positive Approach. While usability focuses on how to overcome problems, obstacles, frustration or stress, the experience of use emphasizes the positive outcomes of using or owning the technology. This can include value or positive emotions such as joy, pride and excitement. User experience (UX) design focuses on making products fun, intuitive and valuable. The goal of UX is to improve the user's interaction and satisfaction with the product. This includes the product's appearance, use and emotional responses. User experience design tries to provide a positive and lasting experience by taking into account the consumer's emotions, preferences and interaction with the product.⁵

2.4.1. User Experience (UX) in Co-Design

The overall experience and satisfaction of a person interacting with a product or system is known as user experience (UX). Although ignored for several years in the field of user-centered design, the idea of UX has been considered in different contexts and evolved into its current understanding.^{63,65} According to Katja Battarbee, Experience Design is a hybrid design discipline that focuses on environmental and multisensory design disciplines. However, experiences have always been addressed in the field of design.⁶⁶

The term "User Experience Architect," the title chosen by Donald Norman for Apple Computer Inc., created a new concept in the human-machine interaction (HCI) community. Norman, seen as a thought leader in the HCI community, has raised awareness of this new concept. The purely user-centered human-product interaction perspective is the link that unites all user experience research. The quality of a product can only be understood through the eyes of the consumer.⁵

User experience and participatory design are linked because they focus on involving users in the design process. Participatory design emphasizes collaboration between designers and end-users so that products can be developed that meet the needs of consumers. By incorporating participatory design principles, user experience designers can create better designs by directly using user experience data to create more meaningful and effective designs. This collaborative approach helps to develop products that not only meet user demands but also enhance the user experience through feedback and active participation.⁵

It is clear that design has much to offer to the social sciences, just as the social sciences have much to offer design. The roles of designer and researcher become blurred during participatory experiences and become an important part of the user process. According to Frascara (2002), new rules require new tools. Sanders presented a framework for how individuals can contribute to co-design based on knowledge as a social scientist and experience as a designer.⁶⁷ The main goal of this process is for a designer to achieve user experience. According to Sanders, people express their experiences by knowing, feeling, imagining, talking, thinking, acting, and using. People want to participate and express themselves directly and proactively in the design development process.⁶⁷

The similarities of the three approaches to user experience (UX) (holistic, subjective, and positive) in many ways are evident from the examination of the Do-It-Yourself (D.I.Y.) work illustrated here. In D.I.Y. work, users should actively participate in the process of redesigning their environment. This initiative includes aesthetic and environmental factors, taking into account the user's spatial perceptions and emotional attachments. This is similar to the holistic approach of UX. Part of the subjective approach is to collect users' experiences of the space and their emotional reactions. This feedback is used to improve the design process. As with the positive approach, the D.I.Y. work emphasizes the positive feelings that users experience when using public spaces and the emotional connections of these spaces. Thus, the tripartite approach of UX with the D.I.Y. project allows for a more democratic and participatory design process by putting users' needs and emotions at the center.

Therefore, an active design tool should be developed to enable public participation in the design process of an urban area. This tool will establish a link between the designer and the consumer. This connection will enhance the user experience between the physical space and the people who use it. Just as a well-designed website makes it easy and enjoyable to use, a successful public space will take into account the needs of users. This promotes reliability, usability, accessibility and usefulness.⁶⁸

Creating a tool for design interaction and involvement of end-users requires the contribution of experts in identifying the design problem, creating the task and designing the tool. Any design thinking approach is a clear example of this. Experts identify a problem by empathizing with evidence-based input through a survey or other recorded sources. In addition, they need to synchronize the design task with the instrument and context problem. When choosing the computational instrument, experts evaluate themselves to learn more about the possible interactions of users. In some cases, they conduct tests with participants to evaluate the system.⁵⁴

Participants may be more creative due to the abstract nature of the object designs intended for the design kit. Respondents reported combining design ideas with textual descriptions, using modules such as Lego to create their designs, and that the 3D model was understandable but somewhat abstract. In addition, they cared about social impact and spatial features and were satisfied with the processes of comparing with other participants and receiving feedback from professionals.⁵²

In conclusion, developing a tool that cares about the user experience helps to develop more inclusive and effective design solutions by collecting user interaction and feedback. This method provides a more egalitarian and participatory design process by taking users' ideas and needs into account.



CHAPTER 3

PARTICIPATORY URBAN DESIGN PRACTICES: CASE OF İZMİR

In this chapter, extensive prosthetic works in two different neighborhoods of İzmir are discussed in detail: Yalı Neighborhood in Karşıyaka and Basmane Square in Konak. Both neighborhoods were selected for prosthetic studies aimed at increasing citizen participation in urban design processes and evaluating the effectiveness of co-design tools. These case studies investigate how participatory design processes work, how communities are involved in these processes and how these processes contribute to the improvement of urban spaces.

The "Unlimited Cities: D.I.Y." study described in detail in Chapter 2 was taken as a reference for these prosthetic studies. The reference study was modified according to the urban design scale area analyses for the selected study areas. In order to include particularly vulnerable groups, the method designed as a digital application has been transformed into an analogue system. In this context, two public spaces were selected: Karşıyaka Yalı Neighborhood, which has a recently renovated urban fabric, and Konak Basmane Square, which has a high historical and cultural importance. Case study applications were carried out on parts of the streets in these two areas.

In line with the data obtained from the first pretest study, changes were made in the user design kit prepared for the second pretest study. The first case study was carried out within the scope of 2023 Spring Semester UD502 Urban Design II Studio of İzmir Institute of Technology and was assisted by İzmir Karşıyaka Municipality Urban Design Unit and Citizen Participation Unit. In this study, the participants expressed the existing problems of their neighborhoods and developed solutions for these problems.

The second field study was conducted for Konak Basmane Square and was organized with the assistance of İzmir Metropolitan Municipality and Pedestrian Association within the scope of the 4th Congress of "*Engelsiz İzmir*" in 2023. In this study, the participants developed ideas for the preservation of the historical and cultural

values of the square and worked on design solutions to increase the social integration of the square.

These case studies illustrate how co-design tools are used in urban design processes and how these tools enhance community participation. The data collected through workshops, questionnaires and interviews in both study sites detail the contributions of participants to the process and their impact on the improvement of urban spaces. These studies reveal how participatory design can provide more effective and sustainable solutions in urban planning.

For each pretest study, the analyses of the study areas, the preparation of the participatory design kit, and the data obtained were explained in detail. At the end of the chapter, the general results of both studies were evaluated comparatively and conclusions were drawn about urban design processes. In this context, the effectiveness of participatory design approaches was discussed through the differences and similarities in the study areas. This comparison aimed to evaluate the applicability of co-design methods and the contribution of community participation to the improvement of urban spaces from a broader perspective.



Figure 27: General Comparison of Case Studies

3.1. Case 1: Yali Neighborhood

The first Case Study, the Yali Neighborhood pre-test study, was carried out within the scope of UD 502 Urban Design Studio II in the Spring Semester of 2022-

2023 at İzmir Institute of Technology. This study process was carried out with a detailed and systematic approach. Firstly, comprehensive field analyses were conducted to understand the existing urban texture and socio-economic structure of Yalı Neighborhood. These analyses revealed the physical, social and economic dynamics of the area and provided the necessary data to determine the area to be studied.



Figure 28: Case Studies Process Diagram

Based on the results of these analyses, a specially designed participatory design kit was created to ensure the participation of neighbourhood residents and to develop solutions tailored to their needs. This kit includes tools that participants can easily use and express their ideas. In addition, field surveys were prepared to collect the opinions and suggestions of neighbourhood residents in a systematic way. Field studies carried out with the participatory design kit ensured the active participation of neighbourhood residents and valuable data was obtained from their perspectives. The data obtained from the field studies and questionnaires were meticulously analysed and the priority needs and expectations of the neighbourhood residents were identified. In the light of this data, basic data was provided for the design studies to be carried out within the scope of the urban design studio. During the design process, an alternative theme and design proposal was developed for the street where the field study was conducted.

This systematic and participatory process has demonstrated how urban design in Yalı Neighbourhood can be made more inclusive and sustainable, and has provided a valuable guide for future urban design projects. These studies emphasise the

effectiveness of the participatory design process and its contribution to sustainable urban development.

3.1.1. Study Site

Yalı Neighbourhood has an urban texture that has recently been renewed. This neighbourhood includes wide streets, high-rise housing estates, educational and health institutions serving various age groups.

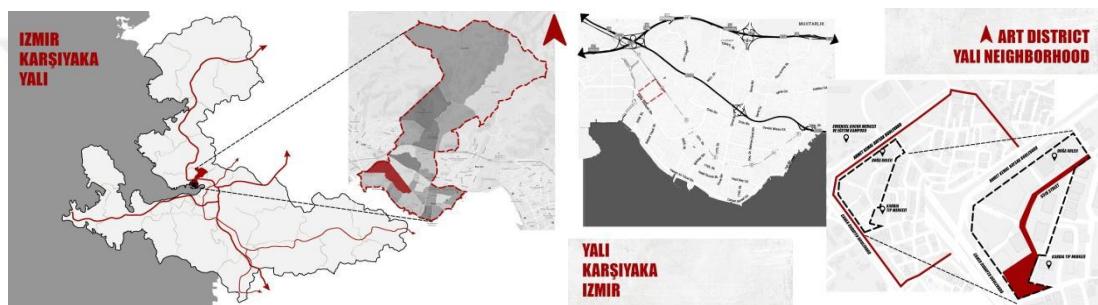


Figure 29: Izmir/Karşıyaka/Yalı Neighbourhood Site Maps

It is also an area where middle and high income groups reside. However, there are undefined squatter parcels between the buildings, streets with undefined boundaries and an urban texture that moves away from the human scale. Izmir Karşıyaka Yalı Neighbourhood was chosen as the area to be studied in order to make the space defined and identified with its users and to realise this through art.



Figure 30: Yalı Neighbourhood Maps

Yalı Neighbourhood is a densely populated and dynamic area in Karşıyaka district of İzmir, inhabited by various social and economic groups. The urban structure of this neighbourhood has a wide demographic diversity and includes individuals from different age groups, income levels and cultural backgrounds. This demographic diversity of the neighbourhood reveals the need to view urban design processes from a broader perspective.

The main problems of Atakent Neighbourhood are lack of green areas, traffic density and insufficient public spaces. Residents of the neighbourhood complain about the lack of green areas and inadequacy of existing public spaces in their daily lives. Traffic density makes the daily lives of both pedestrians and vehicle users difficult. It has been observed that these problems have negative effects on the physical and psychological health of the individuals living in the neighbourhood. Analyses were carried out to determine the public spaces where these problems come together. Firstly, large-scale land use, traffic flow, gathering points, vehicle and human movements were observed.

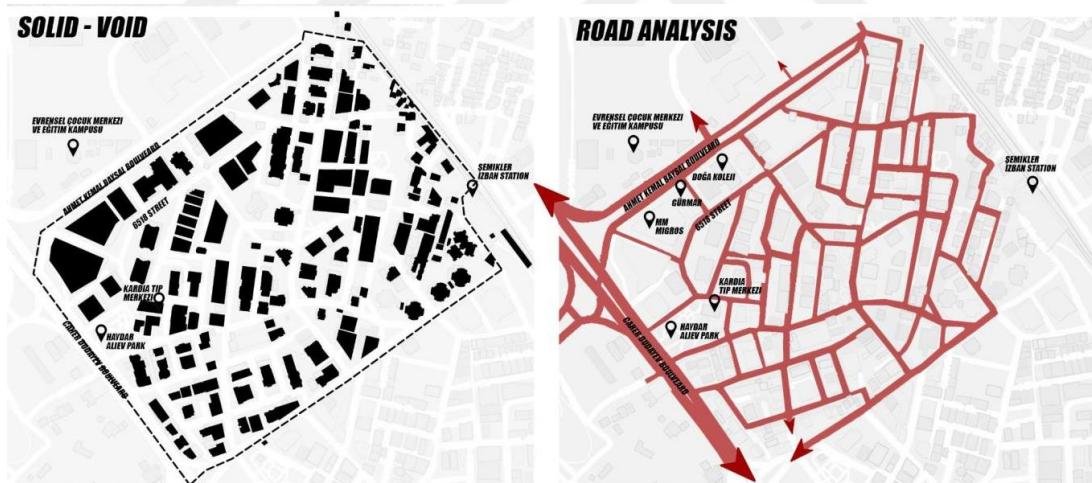


Figure 31: Yalı Neighbourhood Solid-Void Analysis and Road Map

The Solid-Void Analysis reveals that the ground floor layout in Yalı Neighbourhood does not have a clear pattern. Although the neighbourhood is newly built, the ground floor layout of the buildings is irregular and does not show a harmony. This irregularity creates chaos in the neighbourhood in terms of both aesthetics and functionality. When we look at the road analysis, we observe that the roads do not have

a clear hierarchy, some roads are not directly connected to each other and road widths change randomly. This irregularity creates difficulties in access and transportation within the neighbourhood, as well as negatively affecting safety and traffic flow. These analyses clearly show the main problems in the urban texture of Yali Neighbourhood.

The analysis of the storey heights shown in Figure 32 reveals that the buildings in the area examined in Yali Neighbourhood are predominantly 7-8 storeys. It is seen that these high-rise buildings do not create sufficient shade areas to block the sun, especially in summer. This situation causes the roads between the buildings to create wide gaps and volumes, which prevents the urban texture of the neighbourhood from emerging clearly.

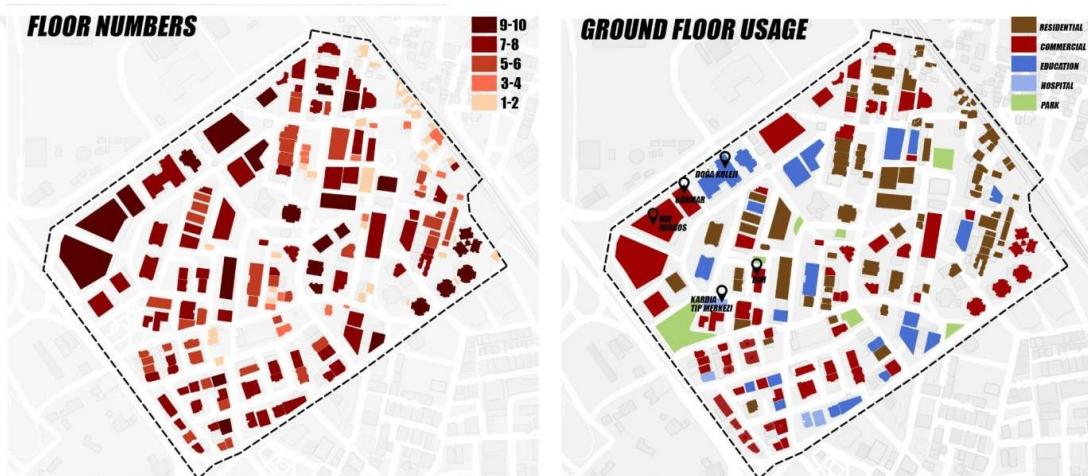


Figure 32: Yali Neighbourhood Floor Number and Ground Floor Land Use Analysis

When the ground floor usage analysis shown in Figure 32 is examined, the diversity of uses on the ground level draws attention. There are different functions such as retail, school, health and private education centres on the ground floors. This diversity shows that the people using this area need various public spaces. The density of commercial areas, education and health services emphasises the importance of social and public spaces that individuals living and working in the neighbourhood need in their daily lives. These analyses reveal the critical points that should be taken into consideration in the urban design of Yali Neighbourhood.

In Figure 33 various analyses such as social use of the area, pedestrian and vehicle mobility, entrances of the buildings and parking areas are given. As a result of these analyses, it has been observed that people prefer certain shadow points for

socializing, but there are no suitable places to sit or stand in a healthy way in these areas. People in the neighbourhood try to meet their needs with their own resources.

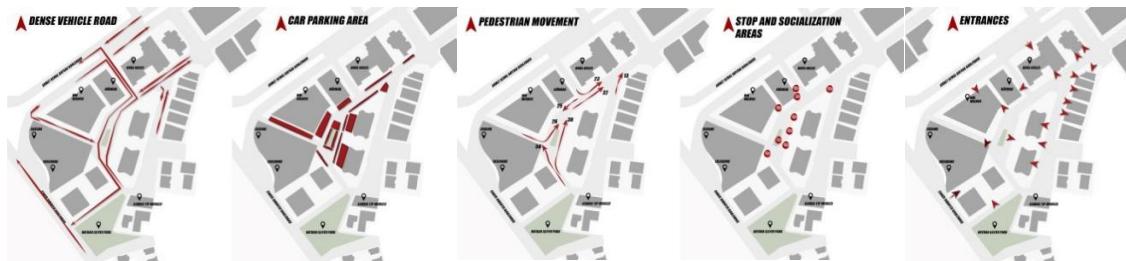


Figure 33: Yali Neighborhood Detailed Analyses

In addition, since there are no separating signs on the road, pedestrian sections are ignored and car owners park their vehicles at every point they find on the road. This situation negatively affects pedestrian mobility and pedestrians have difficulty in walking safely on the road. When the traffic flow is analysed, it is determined that there are blind spots on the roads. This situation was also mentioned by the residents of the neighbourhood and it was emphasised that road arrangements should be made to prevent accidents. These analyses reveal the need to improve the social and physical dynamics in the neighbourhood and the importance of the arrangements to be made in this direction.



Figure 34: Study Site Problem and Potential Analysis

As a result of these observations, the street numbered 6518, which has a variety of land use, where people prefer certain points for socialising, where the vehicle and pedestrian hierarchy needs to be regulated, and which has potential spaces and surfaces for urban design, has been selected to be examined in more detail. This street offers a great potential both in terms of solving existing problems and the applicability of new design ideas.

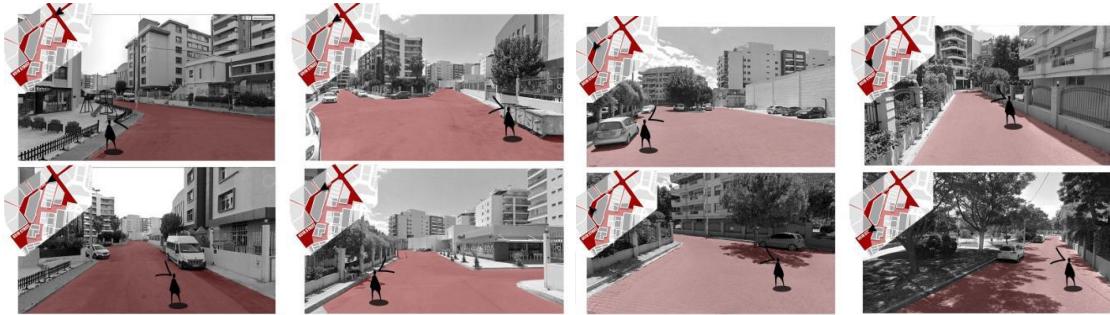


Figure 35: Study Site Photo Sequence

A photo sequence study was carried out every 5 metres on the selected street. In this study, as you can see in the Figure 35 the place where the photo was taken is shown both on the map and with a human icon in the viewpoint. The travelled surface is painted in red. In line with the study, it has been determined that the street section shown in the Figure 36 has suddenly expanded; the area has become undefined and has created an unidentified public space that does not direct the user.

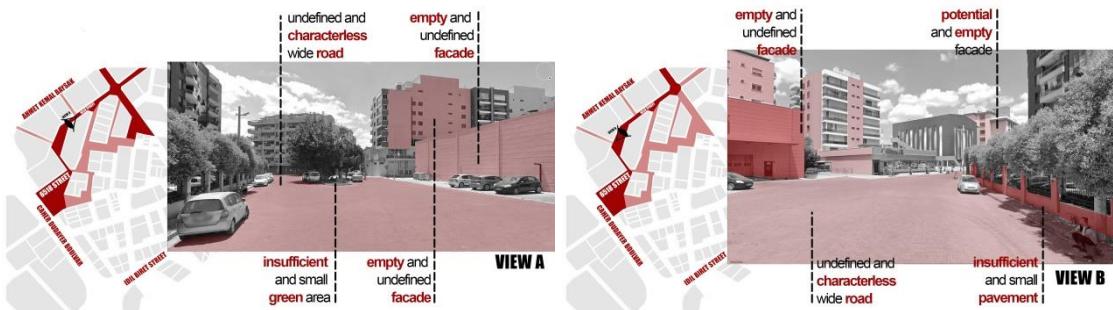


Figure 36: Case Study I, Site Problem and Potential Analysis II

After the determinations made, panoramic images were prepared on the determined street section and analysed as two different visuals. In this process, the identified public space was evaluated with SWOT analysis. As a result of these analyses, many problems such as undefined and characterless roads, insufficient and small green areas, empty and uncertain facades, insufficient and small sidewalks were identified in the selected public space. These findings provide important information about the current state of the area and the aspects that need to be improved.

3.1.2. Tool Description

In order to investigate the area in detail, area analyses were conducted in the urban context. According to the need, the scale of the analyses was used as province, district, neighbourhood and/or street. In order to understand the dynamics of Yali neighbourhood and to decide where to conduct the study, field studies were conducted again 3 times. In the field studies, pedestrian movements, vehicle circulation were analysed and the user profile changing hourly during the day was noted.

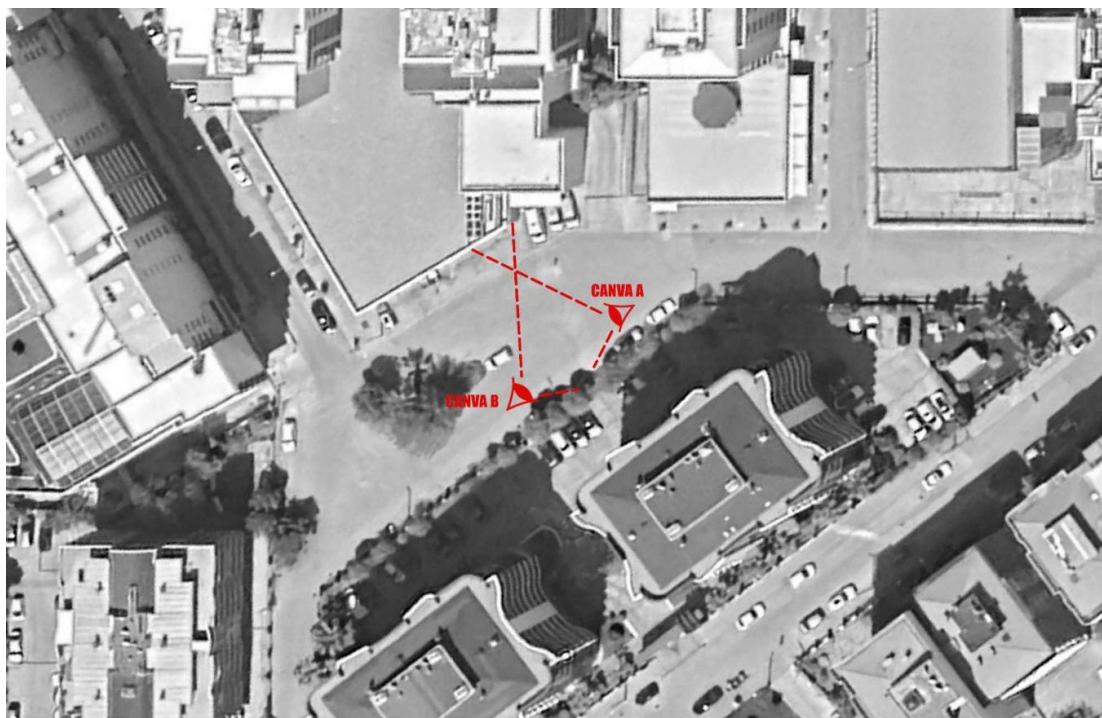


Figure 37: Coverage Area of Prepared Canvas A and B

Afterwards, various spatial analyses such as land use, traffic density, building heights were also made. As a result of the detailed analyses, 6518 Street in Yali Neighbourhood, which has an undefined street section with unclear boundaries, causes chaos and disorder in traffic during the day, and has ground floor uses such as commerce, housing and education in the nearby environment, has been determined as the place where the participatory urban design application will be carried out.

A panoramic image of the designated area was taken at a time when the user was not present. The captured image was divided into 2 parts and turned into two different canvases as A and B (Canvas images are in the attachments).



Figure 38: Canvas A and Canvas B

The captured images are perspective and scaled to 2D ground via Photoshop 2019 programme. A high-resolution participant design kit interface was prepared from the prepared canvases with a size of 100 * 70 cm.



Figure 39: Sample Object Descriptions

The next stage is to determine the urban furniture suitable for the selected area in line with the analyses made. In addition to the determined urban furniture, the concept of art was added to create a different dynamic between the public space and the user of the space. In this direction, a total of 17 different urban elements were prepared under 5 different headings. For each urban element, a representative visual and a template showing what it represents was prepared. The representative image is the most primitive form of the urban furniture it represents. A minimum of 20 copies of each representative image were printed on thick textured cardboard.

iZMİR INSTITUTE OF TECHNOLOGY FACULTY OF ARCHITECTURE
UD 502 URBAN DESIGN STUDIO II
PARTICIPATORY URBAN DESIGN WORKSHOP - APPLICATION DIRECTIVE

[- The design proposal you will prepare within the scope of this study will be used as "design science data" in the design process of the master's thesis research project titled "User Experience Based Participatory Urban Design practices: Case of Izmir".
 - For research purposes, your design actions may be recorded anonymously, you agree to share this data by continuing to apply.
 - You can place the design objects you choose on the application area as you wish.]

OBJECTS

NATURAL ELEMENTS	ART DESIGN ELEMENTS	URBAN FURNITURE ELEMENTS	MOBILITY ELEMENTS	TEXTURE ELEMENTS
 TREE	 IMAGE	 CANOPY	 NO ENTRY	 GREEN
 FLOWERPOT	 MUSIC	 BANK	 CYCLING	 STONE
 IVY	 ACTIVITY	 BARRIER	 PEDESTRIAN CROSSING	 WOOD
 VERTICAL GARDEN	 JOKER OBJECT			

EXAMPLES OF JOINT USE

 +  = 	 +  = 	 +  = 	 +  = 	 +  = 
ARTISTIC TREE	PAINTED IVY	COLORFUL PEDESTRIAN CROSSING	FUN BANK	GAME BARRIER

Figure 40: Pre-test Study I - Yalı Neighborhood Implementation Guidelines (Appendix A)

An A4 size directive was prepared to inform the people who will participate in the participatory design workshop. Within the scope of the scientific study, it was stated that the data will be used by protecting personal information. This directive was printed in 35, A4 size copies. At the end of the workshop, an experience questionnaire with qualitative interviews was prepared in order to get the opinions of the participants, to evaluate the process and to get the sensory experiences of the participants regarding the study. The questionnaire consists of 5 pages and 35 questions.

The assistance of İzmir Karşıyaka Municipality Urban Design Unit and Citizen Participation Unit was obtained for materials such as tables, shades and chairs to be used in the field work and for the support team to help the workshop.

3.1.3. Findings & Results

In this section, the findings and results of the field study conducted in Karşıyaka, Yalı Neighbourhood will be examined in detail. Firstly, the fieldwork and application phase will be explained, and then the object statistics, participant information and joker object analyses prepared for the identified urban furniture will be mentioned.



Figure 41: The Place Where the Work was Carried Out and The Stand Set Up

After the pre-field preparation was completed, the stand was set up at 09.00 on 19 June 2023 at the designated location (Photographs of the fieldwork are included in the appendices). For the purpose of the participatory design approach, participants who spontaneously passed around the stand were studied. The minimum sample size was determined as 20. The study lasted until 19.00 in the evening.

In this pretest study, it was examined how neighbourhood residents perceive urban problems and how they develop solutions. Throughout the participatory design process, active participation of neighbourhood residents was ensured and solutions were developed in accordance with their needs. In this process, neighbourhood residents were invited to the participatory design workshop and encouraged to express their ideas. The workshop was organised with a total of 21 participants.



Figure 42: Images Taken During Case Study I (Pre-test Study I)

The participatory design kit took an average of 7 minutes. Filling out the questionnaires took an average of 16 minutes. On average, 23 minutes were reserved for each participant. After the field study was completed, the statistical analysis, graphical analysis and sensory analysis stages, which were determined as the analysis method of the project, were started. In this direction, statistical data were obtained using excel. Statistical data in experience surveys were prepared together with the object statistics used on the participatory design kit.

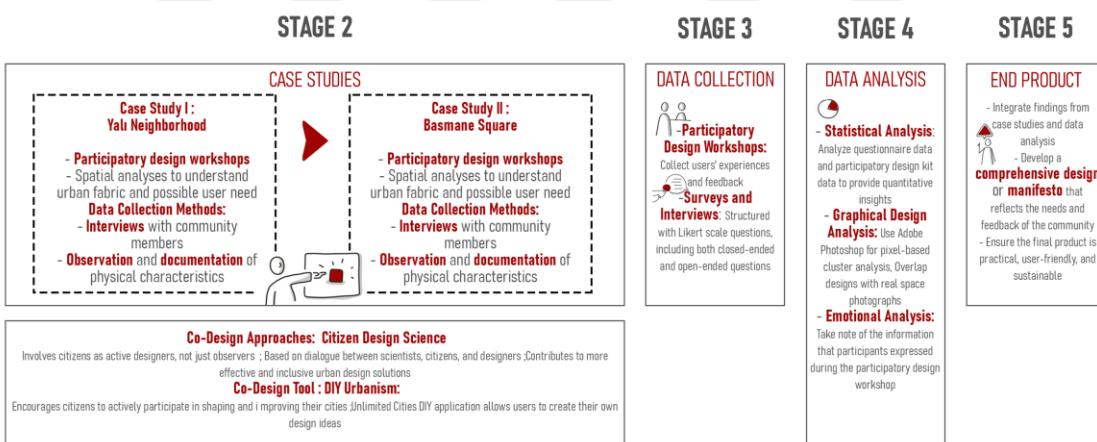


Figure 43: Analysis Methods to be Used for Pre-Test Study I

For the pixel-based density analysis, the 2019 version of the Photoshop programme was used. In order to perform this analysis, during the fieldwork period, when each user finished interacting with the Canvas And the time was stopped, a flat photograph was taken from the top to grasp the entire surface. These photographs were superimposed on top of each other using the Adobe Photoshop programme and

punctuation maps were created for each object. 17 canvases were created for 17 objects (a sample punctuation study is in the appendix).

The emotions and opinions described by the users in the questionnaires and during the workshop were combined with the related urban object and evaluated together. A persona was created in order to visualise the data obtained in the study. The wishes and dreams about the related object were expressed with that persona. As the last step, the expert designer realised the design process through the data obtained. All collected data were synthesised on graphical analysis.

Under this title, the results of the analyses performed will be examined in detail. Firstly, the findings of statistical analyses will be discussed, followed by graphical analyses and sensory analyses. Finally, the design results for the first case study, Yalı Neighbourhood, will be discussed.

3.1.3.1 Questionnaire Data

In this section, the analyses and results of the workshop conducted in Karşıyaka Yalı Neighbourhood will be examined in detail. The workshop was conducted with the participation of the residents of the neighbourhood and a comprehensive evaluation was made by taking into account the demographic characteristics, educational status and occupational distribution of the participants. Firstly, the general structure and participant profile of the workshop will be discussed, followed by statistical analyses, graphical analyses and sensory analyses.

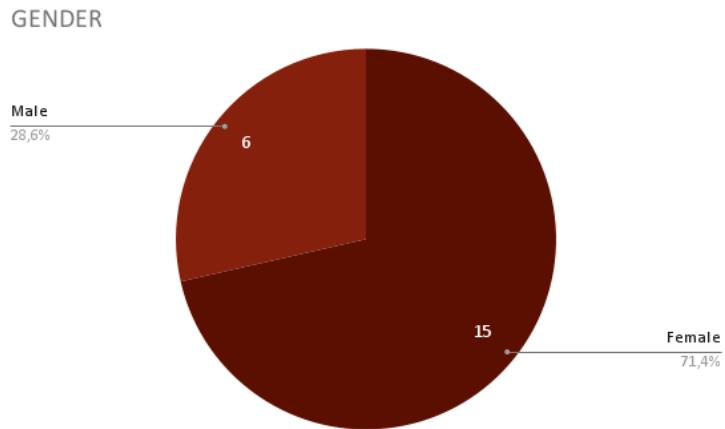


Figure 44: Case Study I, Gender Distribution

The workshop was conducted with a total of 21 participants. When the demographic distribution of the participants is analysed, it is seen that 6 of them are male and 15 of them are female. This situation enabled the study to include different perspectives and experiences.

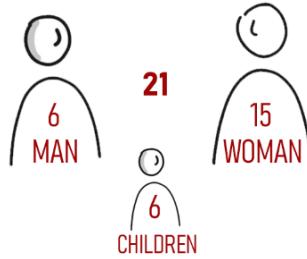


Figure 45: Case Study I, Total Number of Children of Participants

The age distribution of the participants also spread over a wide range: 15-24 years old, 25-34 years old, 35-44 years old, 45-54 years old and 55-64 years old. This helped to better understand the needs and expectations of different age groups. In addition, 6 of the participants had children, which is an important detail for the study to appeal to users of all ages.

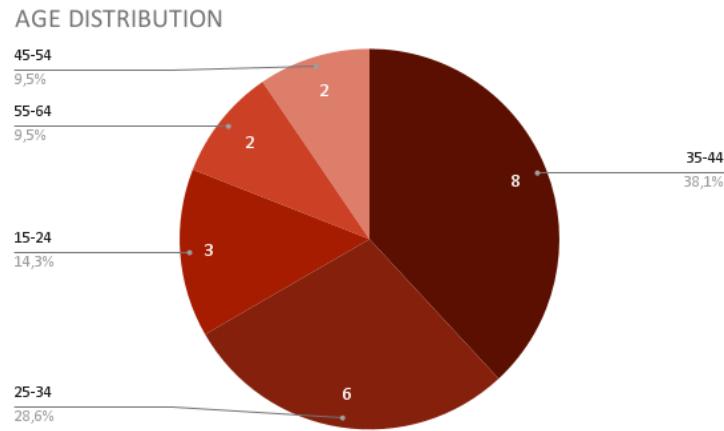


Figure 46: Case Study I, Age Distribution

When the education level of the participants is analysed, it is seen that the majority have high school education and above. Most of the participants are high school graduates, followed by bachelor's degree and above. The occupational distribution of the participants is quite diverse: 1 Student, 1 OPEX Engineer, 1 Sustainability Expert, 1 Architect, 1 Geophysical Engineer, 1 Restoration Expert, 1 Sports Instructor, 1 Textile Engineer, 1 Labourer, 1 Marketer, 2 Housewives, 3 Industrial Engineers and 5 Salesmen. This professional diversity has enabled different perspectives to be included in the urban design process.

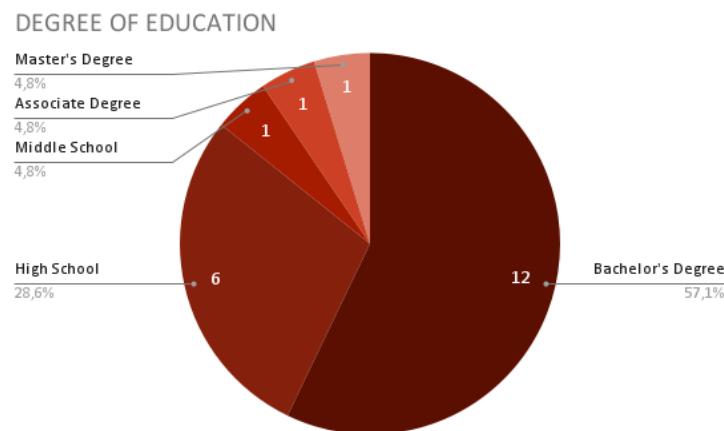


Figure 47: Case Study I, Degree of Education Distribution

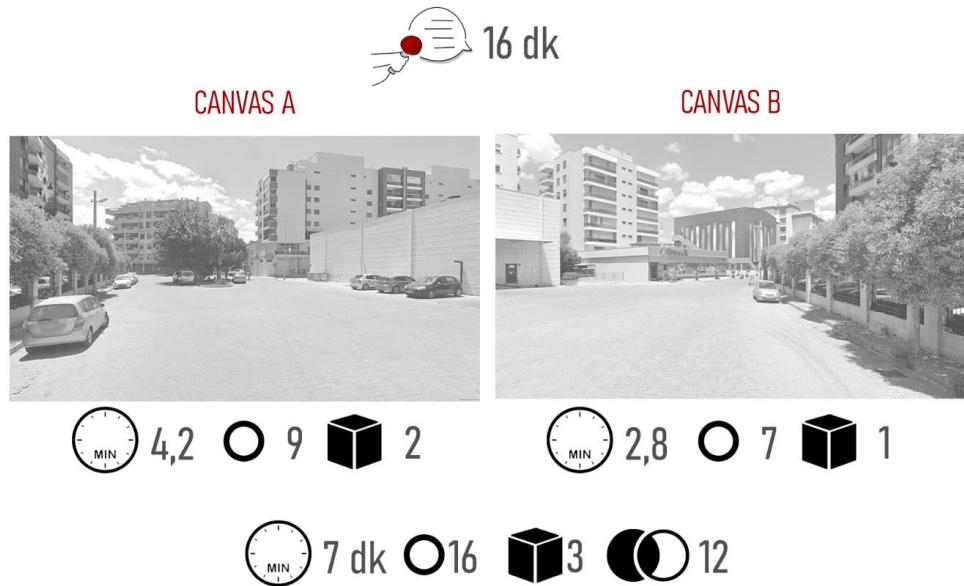


Figure 48: Case Study I, Implementation Times and Average Number of Objects Used for Canvases A and B

The participant design kit used during the workshop took 7 minutes on average. Participants spent an average of 4.2 minutes for Canvas A and 2.8 minutes for Canvas B. Filling out the participant experience questionnaires took an average of 16 minutes. Thus, an average of 23 minutes was allocated for each participant. This time allowed the participants to fully participate in the design process and provide detailed feedback. Considering the statistics given above, this workshop has gained a rich perspective thanks to its diverse participant group and the views of individuals from different age groups and professions.



Figure 49: Case Study I, Canvas A and Canvas B Photograph of Participant 2

In the remainder of this section, the statistical analyses of the canvases, which are the final products of the workshop, will be discussed. Canvas A total of 21 different works was made for 21 participants. Since each work contains 2 different canvases, a total of 42 canvases will be analysed. The general distribution of the objects used will be analysed separately and together for both canvases A and B. The participants mostly used different objects for both canvases and analysing these differences will help us to better understand their preferences and needs. Firstly, an in-depth assessment of the workshop outcomes will be made by analysing the distribution of objects under the identified urban furniture group headings. The wildcard object was left for the end as it was evaluated differently.

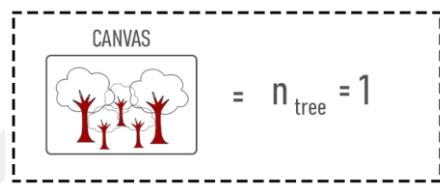


Figure 50: Case Study I, Object Statistics Calculation Formula

When evaluating the object statistics, regardless of the number of objects used for each canvas, if there were 1 or 5 tree objects in a canvas, this was reflected in the statistics as 1 for that canvas. Since there were 21 participants and 2 canvases in total, it is possible for an object to be used at most 42 times in total. In other words, an object can reach a maximum of 42 uses in total.

When the themes are analysed, there are 4 objects under the title "Natural Urban Elements", 4 objects under the title "Art Design Elements" (1 of which is a wildcard object), 3 objects under the title "Urban Furniture Elements", 3 objects under the title "Mobility Elements" and finally 3 objects under the title "Texture Elements". These objects help us to understand the preferences of the participants and their priorities in the design process.

		Number of objects used		%
Natural objects		71		26.01%
Tree	32			
Flowerpot	13			
Ivy	18			
Vertical garden	8			
Art Design Objects		66		24.18%
Image	21			
Music	7			
Activity	8			
Joker	30			
Urban Furniture Objects		54		19.78%
Canopy	18			
Bank	35			
Barrier	1			
Mobility Objects		44		16.12%
No Entry	8			
Bicycle	16			
Pedestrian Cros	20			
Texture Objects		38		13.92%
Green	16			
Stone	12			
Wood	10			
TOTAL		273	273	100.00%

Figure 51: Case Study I, General Distribution of Objects Used According to Themes

Natural objects constitute 26.01% of the total number of objects used and the most commonly used object in this category is wood (32). Art Design Objects constitute 24,18% of the total number of objects used. The most used object in this category was joker (30). Urban Furniture Objects constitute 19,78% of the total number of objects used. The most used object in this category is benches (35). Mobility Objects constitute 16,12% of the total number of objects used. In this category, bicycle (16) was the most used object. Texture Objects constitute 13,92% of the total number of objects used. The most used object in this category is green texture (16).

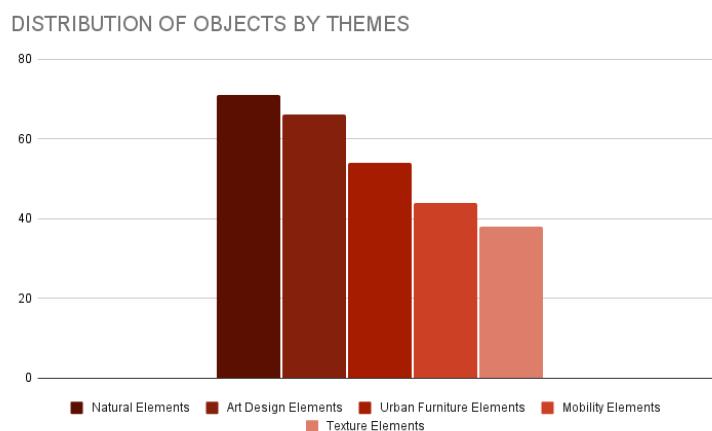


Figure 52: Case Study I, General Distribution of Objects Used According to Themes

The most preferred object group is natural elements. The least preferred object group was textural elements. When the overall total for the two canvases is considered, Art design elements representing art in the public space come second. In general, the preferences of the participants are concentrated on green areas and natural elements, art and cultural objects, seating and resting areas, mobility elements and textural diversity. These findings reveal the important points and user needs that should be taken into consideration in public space design.

According to the data obtained from the table, the frequency of the objects used in the workshop and the participant preferences were distributed as follows: The most preferred object among the participants was the bench (35 times). This shows the importance of sitting and resting needs in public spaces. The tree in the natural elements category was the second most popular object (32 times). Emphasising the participants' need for green space, the tree object was widely accepted. The third most popular object was the wildcard (30 times). The flexibility and different usage areas of the wildcard object allowed the participants to develop creative solutions.

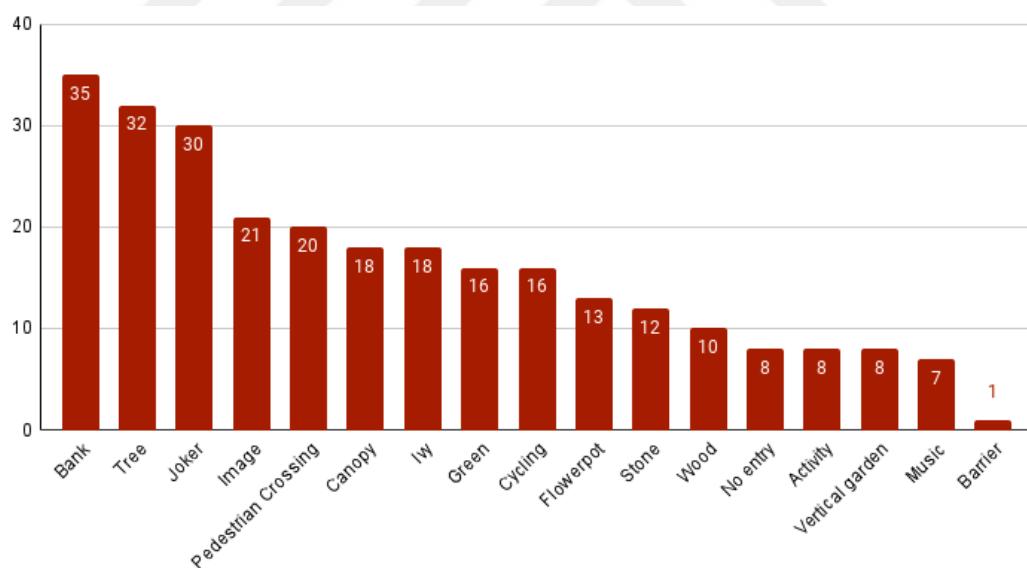


Figure 53: Case Study I, Object Statistics Canvas A and B

Moderately used objects include picture (21 times), pedestrian crossing (20 times), canopy (18 times), ivy (18 times), bicycle (16 times) and green (16 times). These objects reflect the safety, comfort and aesthetic needs of the users. Among natural elements, flower pots (13 times) and textural elements, stone (12 times) and wood (10

times) were frequently preferred. In addition, objects such as no trespassing sign (8 times), activity (8 times), vertical garden (8 times) and music (7 times) also have a certain usage rate.

The least used object was the barrier; only 1 person out of 21 participants preferred the barrier object. This shows that the participants have less need for barriers. In addition, 5 of the 21 participants who participated in the Karşıyaka Yalı study showed interest in the idea of using objects that were left open-ended in the instructions together. These participants produced new objects that were not shown in the instructions by using different objects side by side.

This creative approach led to the emergence of original and innovative design solutions that reflect the needs and imagination of the participants. Such creative initiatives once again emphasise the importance of participants taking an active role in the urban design process.

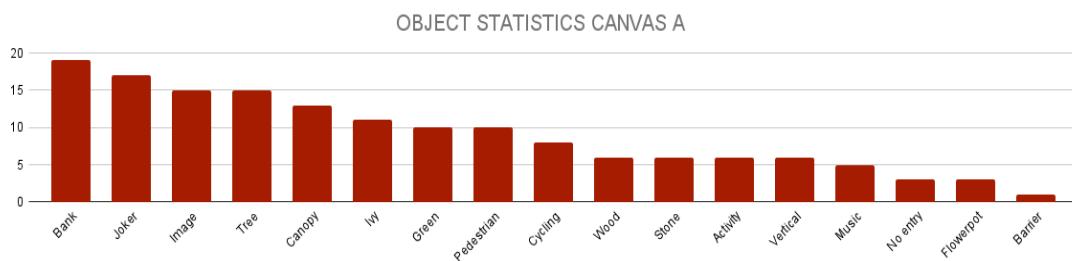


Figure 54: Case Study I, Object Statistics for Canvas A

Let us consider the two canvases separately. For Canvas A, the most used object was the bank object, which was preferred by 17 participants. This is followed by the joker object preferred by 16 participants. The least preferred object was the barrier object. For Canvas A, 5 out of 21 participants preferred to create a new object by combining two different objects as suggested in the instruction.

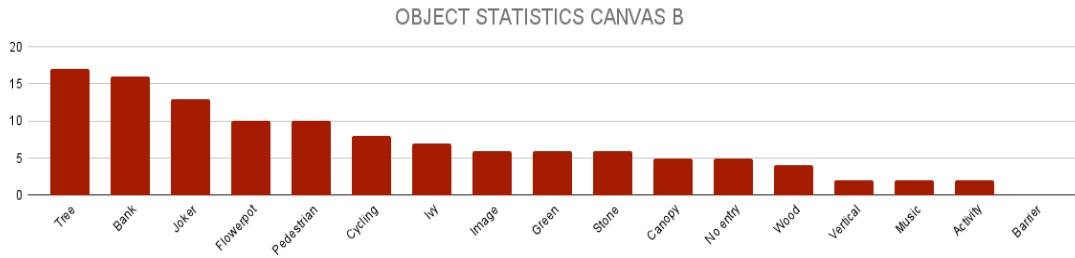


Figure 55: Case Study I, Object Statistics for Canvas B

The situation is different for Canvas B. For Canvas B, the most preferred object by the participants is the Tree object, which belongs to the Natural elements category. The second most preferred object is the bench object, which 16 participants prefer to use. The least preferred object was again the vertical garden from the category of natural elements. Only 2 participants used it. The barrier object has never been used by any participant. For Canvas B, 2 out of 21 participants created new meanings by using objects together as suggested in the instruction. The opinions of the participants who participated in the pre-test study about the area under study were also collected. After the object statistics, the results of these statistics will be explained.

According to the participant profile for the pre-test study conducted in Yali Neighborhood, the majority of participants 57.1% (12 participants) are locals. Tradesmen come in second at 28.6% (6 participants), followed by visitors at 14.3% (3 participants). Transference, the most popular use of the space with 15 participants, is followed by sport walking (8 participants) and pet walking (6 participants) as the main uses. Resting and other unclear goals are also important; they involve six and five people, respectively. A few people also utilize the space for socializing or meeting, emergency preparation and observation, all of which draw two people apiece.

The distribution of unfavorable views regarding the region highlights a few crucial problems. According to 14 participants, the most common issue is that the area is poorly maintained. Thirteen participants brought up the issues of incomplete or uncomfortable city furniture and the absence of shade. Twelve individuals characterize the area as unclear or non-functional, while seven participants characterize it as unclean.

PARTICIPANT PROFILE

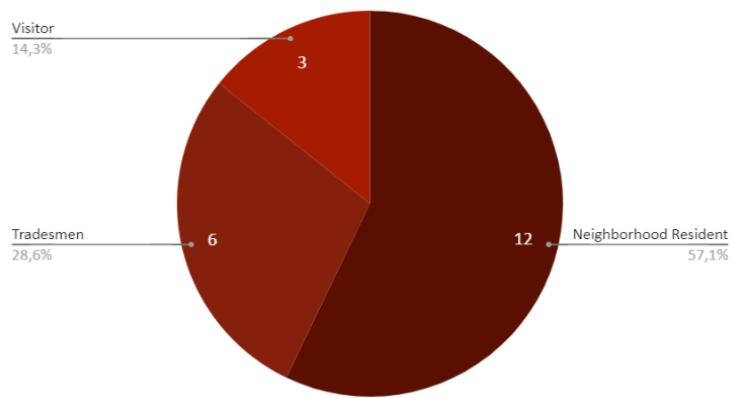


Figure 56: Case Study I, Participant Profile

Three people bring up the ground's unsuitability for seasonal conditions, while six participants express concerns about safety. A small number of participants have made vague concerns (2), and one person has each mentioned a minor problem, such as noise or darkness.

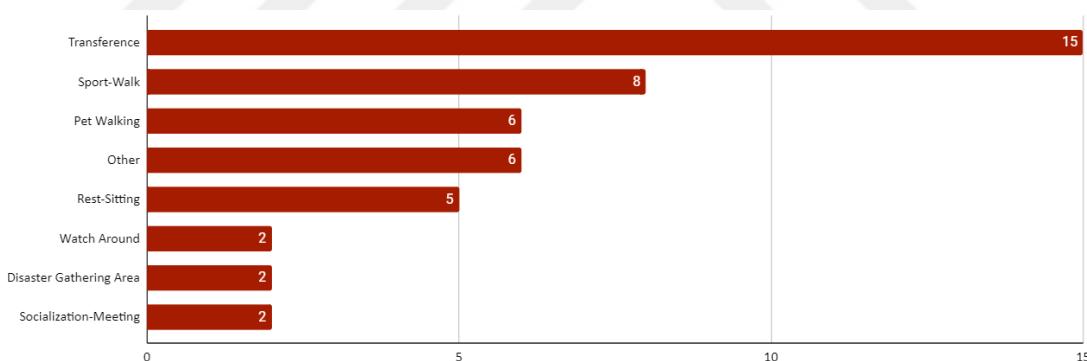


Figure 57: Case Study I, Area Usage Purpose

To summarize, the pre-test study data in Yali Neighborhood indicates that although the area is mainly used for sport-walking and transference, there are serious problems with regard to availability of shade, completeness, and comfort of city furniture, as well as maintenance.

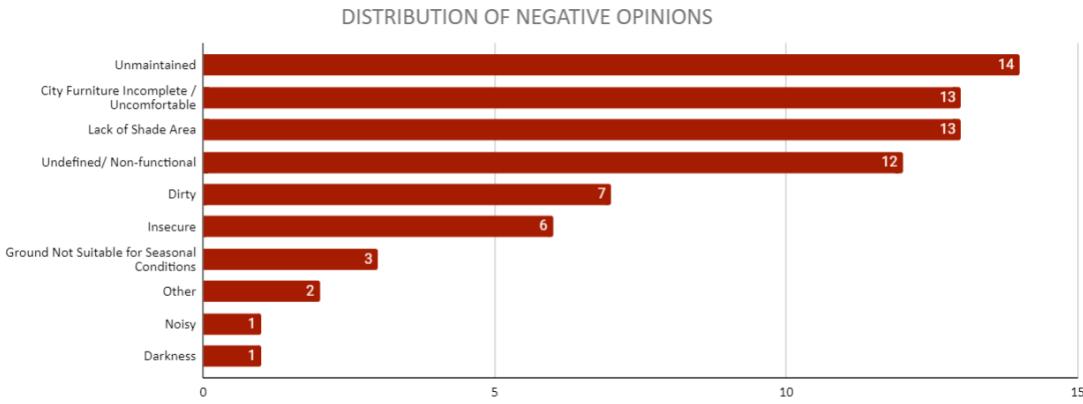


Figure 58: Case Study I, Distribution of Negative Opinions

The fact that most of the participants are locals suggests that the community is engaged with the location, but there are still certain things that may be done to improve the space's general use and appeal.

At the end of the questionnaire filled out by the participants after the application, there are 4 questions to measure the user experience. The answers given in this direction were analyzed.

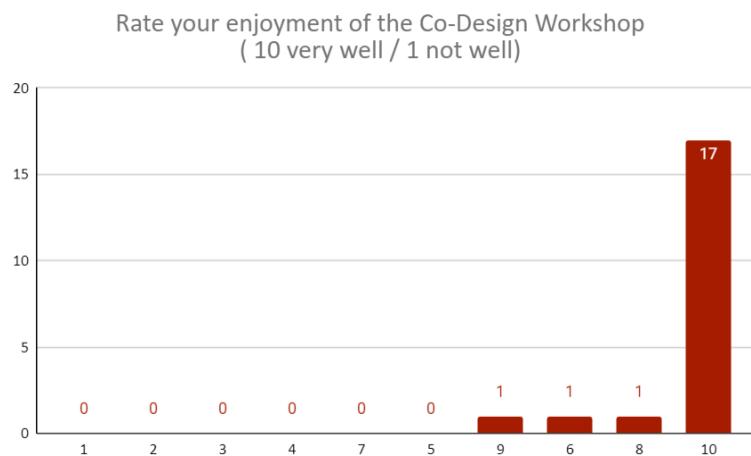


Figure 59: Case Study I, Enjoyment of Co-Design Workshop

The first graph analyses how much the participants enjoyed the co-design workshop. On a scale of 1 to 10, it is noteworthy that the majority of the participants (17 participants) stated that they were very satisfied with the workshop (10 points). A small number of participants gave 6, 8 and 9 points. This shows that the workshop was

generally received positively by the participants. At what level were you able to express yourself in the Co-Design Workshop (10 very well / 1 not well).

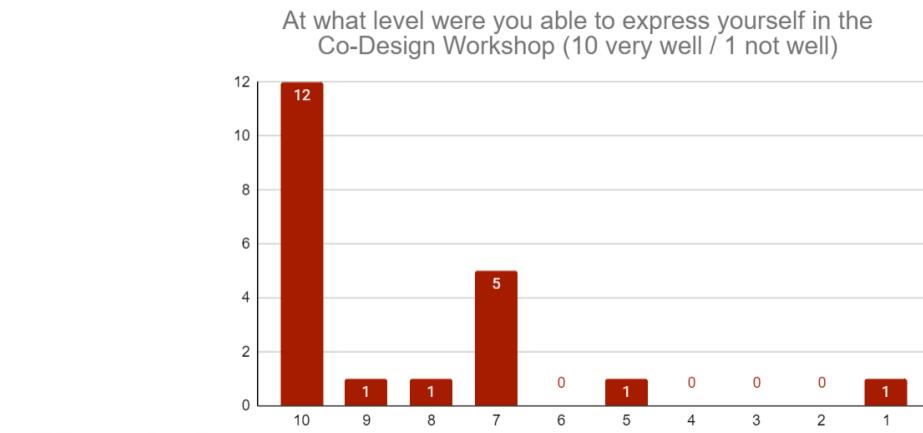


Figure 60: Case Study I, Level of Expression in Co-Design Workshop

In the second graph, how well the participants were able to express themselves in the co-design workshop was evaluated. The majority of the participants gave 9 and 10 points (7 participants each), indicating that they were able to express themselves very well. This shows that the workshop environment offered freedom of expression for the participants and encouraged participation.

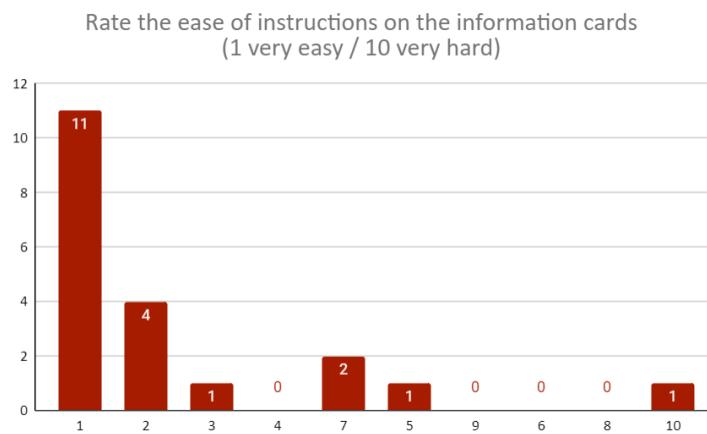


Figure 61: Case Study I, Ease of Designing in Co-Design Workshop

The third graph analyses how easy it is to understand the instructions on the information cards. The majority of respondents (11 respondents) indicated that they found the instructions very easy (1 point). A small number of participants found the instructions difficult (7 and 10 points), indicating that in general the instructions are clear and understandable, but for some participants there is room for improvement.

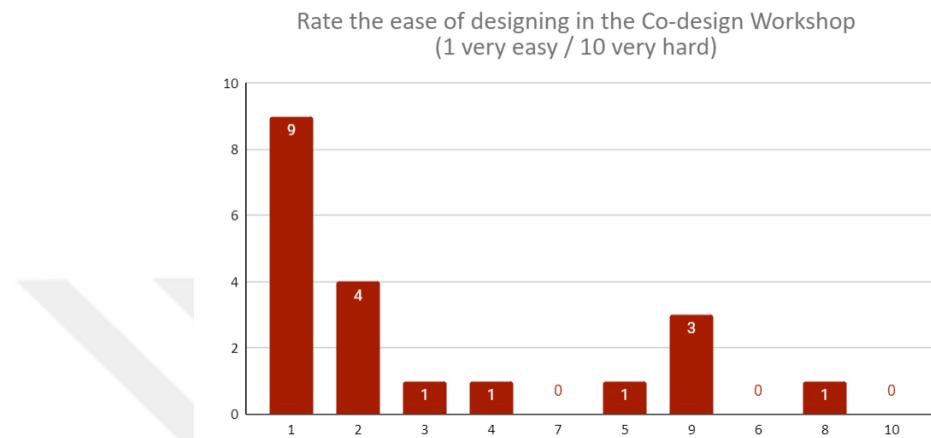


Figure 62: Case Study I, Ease of Understanding Instructions

In the fourth graph, how easy it was to design in the co-design workshop was evaluated. The majority of the participants (9 participants) found the design very easy (1 point) and few participants found it difficult. This shows that the tools and methods used during the workshop were generally user-friendly.

When examining the user experience, when looking at the values, the values of enjoyment and expression are close to 10. Participants found two-dimensional work enjoyable. However, they had difficulty in understanding and making the design easily. As seen in Figure 63, the values in the second part, which move away from the value 1, show us this.

The fifth graph analyses whether the participants have participated in similar projects before. Half of the participants stated that they had participated in similar projects before, while the other half stated that they did not have such an experience. This shows that the experience levels of the workshop participants vary and this diversity adds different perspectives to the design process.

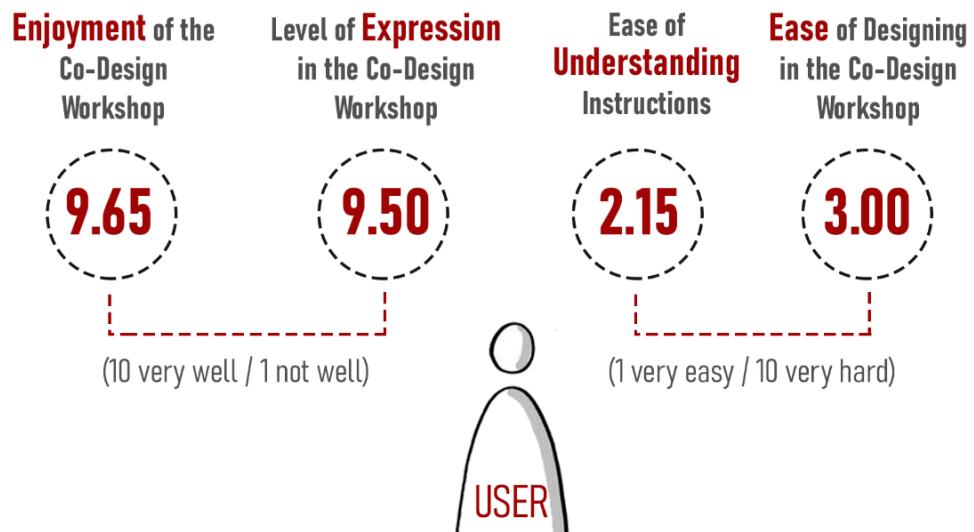


Figure 63: Case Study I, Overall Averages of User Experience Analysis Values

These data show that the co-design workshop organised within the scope of Karşıyaka study was generally successful. Most of the participants were satisfied with the workshop and were able to express themselves. The instructions on the information cards and the design process were generally easy to understand. The diversity of the participants' experience levels enriched the workshop process. These results provide valuable insights for similar future studies.

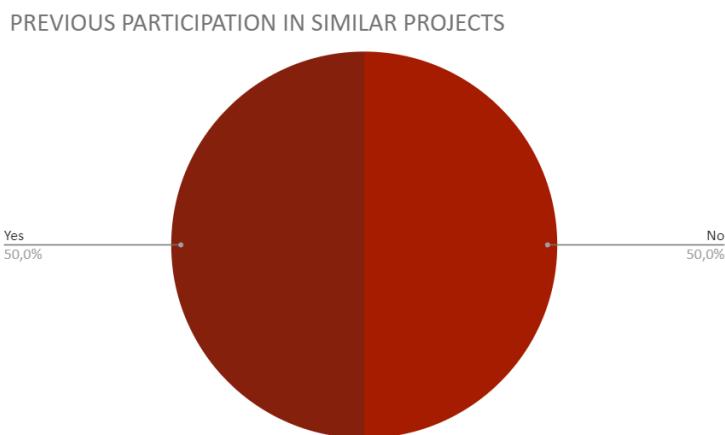


Figure 64: Case Study I, Rate of Previous Participation in Similar Projects

Statistical evaluations of the participatory design kit and questionnaires applied by the participants during the workshop are discussed in detail in this section. In these

analyses, user experiences and participants' opinions about the site were also statistically analyzed. Thus, user behavior and needs in the area will be better understood. More detailed information about the objects and pixel-based cluster analysis will be analyzed in depth in the next section.

3.1.3.2 Graphical Analysis

A total of 16 objects under 4 titles and one wildcard object were used for Atakent Yali neighborhood Participatory urban design study. In this section, first 16 objects will be analyzed graphically and statistically. Then the wildcard object will be explained in detail.

Natural Elements

1. Tree

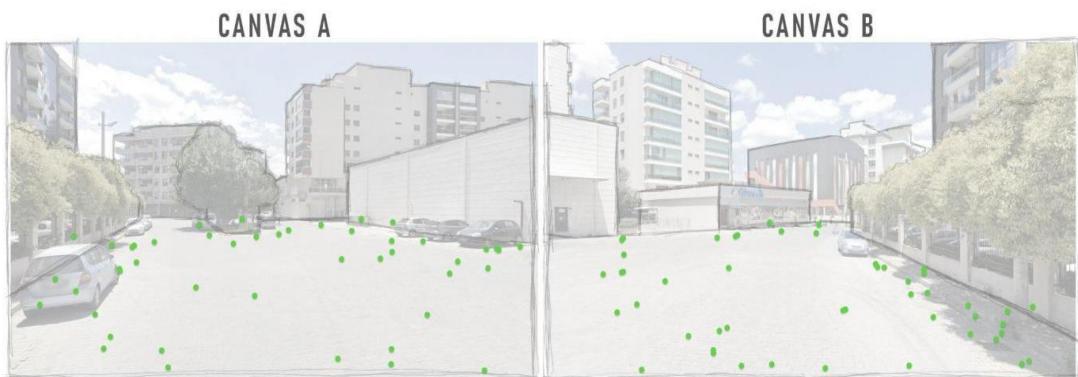


Figure 65: Case Study I, Pixel Based Cluster Analysis for Tree Object

It is the second most preferred object by the users. 15 people preferred to use the tree object for Canvas A and 17 people preferred to use the tree object for Canvas B. It appears scattered in the horizontal plane. However, for Canvas A, we observe that they

are clustered in front of the garden wall and in front of the Migros facade, for Canvas B, again in front of the site facade and differently from the Migros facade towards the middle point of the road. Considering the surveys (Appendix B) and qualitative interviews, we can say that the tree object was used as a boundary object to define the space.

2. Flowerpot

The flowerpot was used by 13 participants. 3 participants preferred to use it for Canvas A and 10 participants preferred to use it for Canvas B. It is one of the last objects preferred by the participants for Canvas A. While it is positioned on the roadside for Canvas A, the situation is different for Canvas B.

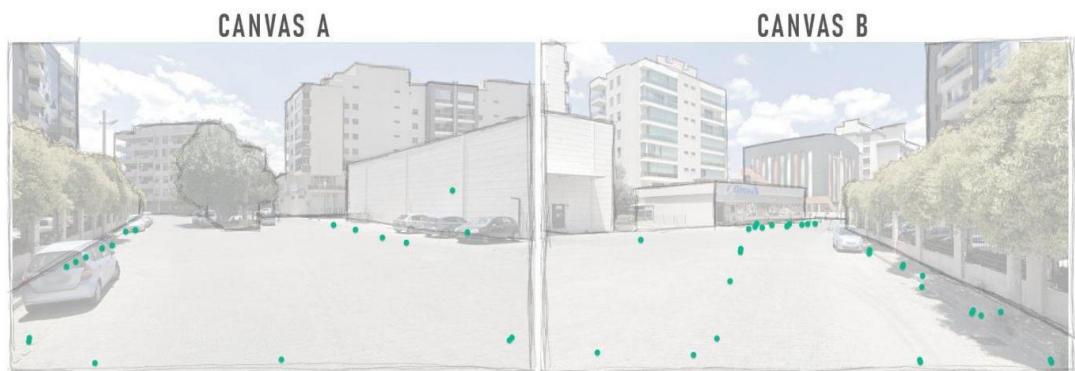


Figure 66: Case Study I, Pixel Based Cluster Analysis for Vase Object

Due to the width of the road surface, the participants used the flowerpot object to delimit the road and to determine the pedestrianised part. In addition, when the bench object analysis was overlaid for both canvases, the flowerpots on the roadside were generally positioned next to or in front of the bench object.

3. Ivy

The Ivy Object in the Natural Elements group was used by 11 participants for Canvas A and 7 participants for Canvas B. Totally it was preferred by 18 participants. The ivy object was mainly used on the Migros facade for Canvas A.

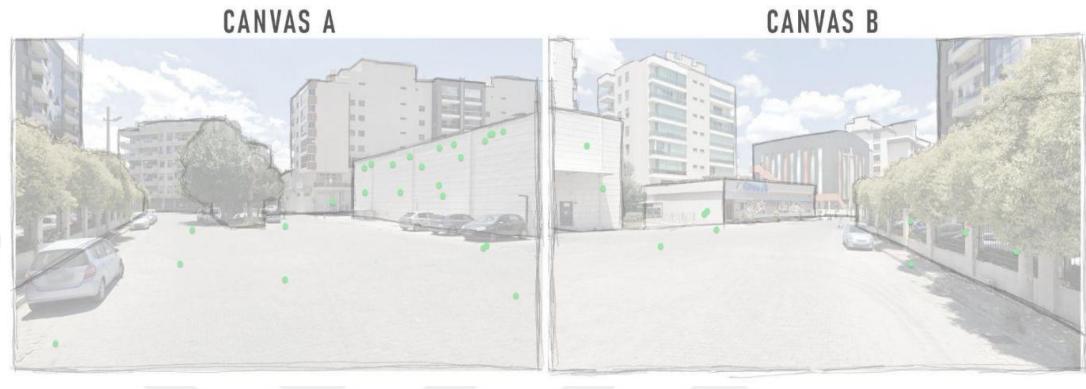


Figure 67: Case Study I, Pixel Based Cluster Analysis for Ivy Object

Likewise, it was preferred on the Migros facade for Canvas B. In other words, when we look at both canvases, it was used on vertical and empty surfaces. This situation is similar to the painting object used. The participants also preferred the ivy object as an object used together. In addition, the ivy object was used as grass. The uses we see on the ground on the canvas represented grass. We can say that this situation shows that the user is both creative and the interface is not clear.

4. Vertical Garden

8 out of 21 participants used the vertical garden object. While 6 users preferred the vertical garden object for Canvas A, 2 participants used the vertical garden object for Canvas B. The vertical garden object, which was perceived as a dividing element by the participants, was generally preferred as a limiting object in harmony with nature on the pavement edges. In some canvas works, it was used to separate the seating areas from the road or to separate the walkway and the green area.

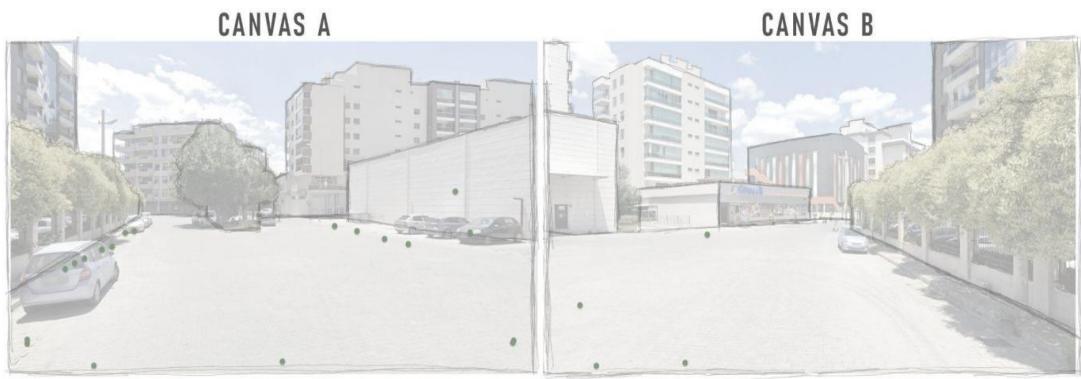


Figure 68: Case Study I, Pixel Based Cluster Analysis for Vertical Garden Object

Art Design Objects

5. Picture

While 15 of the 21 participants preferred to use the painting object for Canvas A, 6 of them used it for Canvas B. When we analyse Canvas A and Canvas B together for the surfaces used, the participants mainly preferred to use the painting object on the back facade of Migros. At the same time, it is observed that it is used together with ivy and joker object on vertical surfaces.

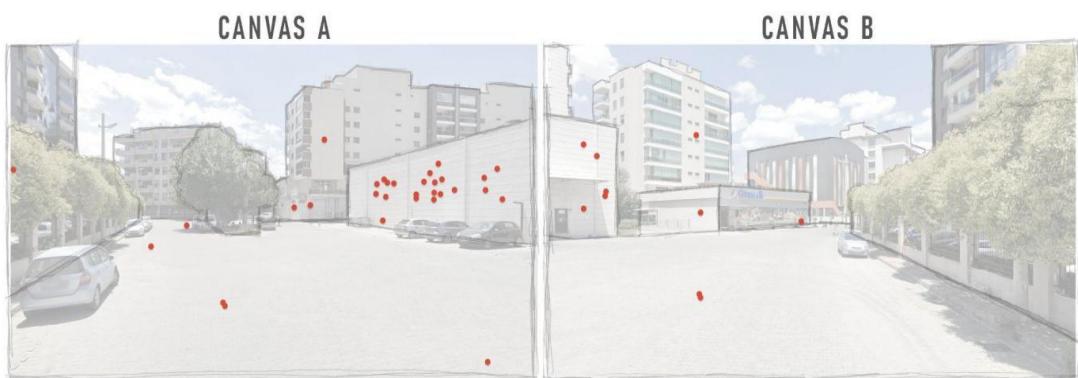


Figure 69: Case Study I, Pixel Based Cluster Analysis for Picture Object

This situation can be accepted as an indicator of the participants' desire to create a different creativity or belonging with art in the city on vertical urban surfaces used passively.

6. Music

The music object represents live performances, collective events, musical benches or street events that can potentially take place in public spaces. 7 out of 21 participants preferred to use the music object. For Canvas A, they generally positioned it in the part that the participants accepted as a square, i.e. at the centre point, and for Canvas B, they positioned it in front of the Gürmar Market.

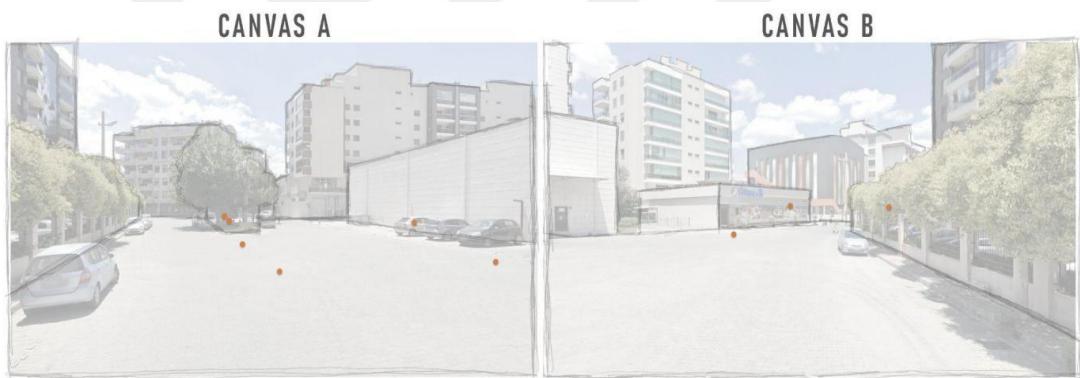


Figure 70: Case Study I, Pixel Based Cluster Analysis for Music Object

The music object was used together with the bench, canopy and wildcard object. The participants who did not use the music object thought that the music object which was evaluated under the concept of art, could only be noise and made verbal comments that it should not be music.

7. Activity

An activity object was designed to represent the artistic activities to be carried out using public spaces. 6 out of 21 participants preferred to use this object. While an activity was requested for Canvas A on the Migros facade, no activity was requested for Canvas B, that is, for the narrowing part of the road.

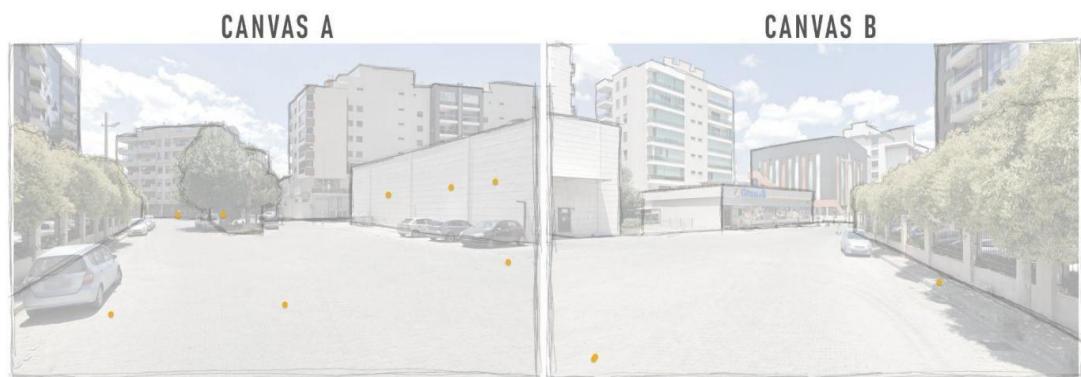


Figure 71: Case Study I, Pixel Based Cluster Analysis for Activity Object

Urban Furniture Elements

8. Canopy

The canopy is important furniture for public spaces. The canopy object, which usually points to seating areas, was used by 18 of the 21 participants. For Canvas A, it is clustered on the site facade, in the wooded part and behind the Migros facade. For Canvas B, it was clustered on the facade of Gürmar Market and on the site facade. Participants who generally used the bench object also used the canopy object.

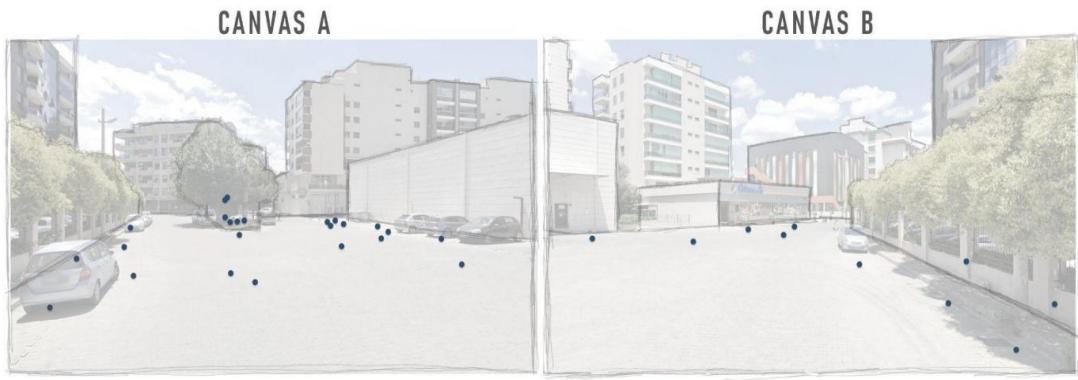


Figure 72: Case Study I, Pixel Based Cluster Analysis for Canopy Object

Although shadows were formed on the site facade and in the centre, the use of the shade element and the comments of the participants show that the shadow at this moment is insufficient or unqualified.

9. Bank

The bench object was used by 19 participants for Canvas A and 16 participants for Canvas B. In general, it was the most preferred object. For Canvas A, it is clustered in the middle wooded part and on the Migros facade. For Canvas B, it was mostly used on the site facade. This situation shows that the participants want to spend time and rest in the area.

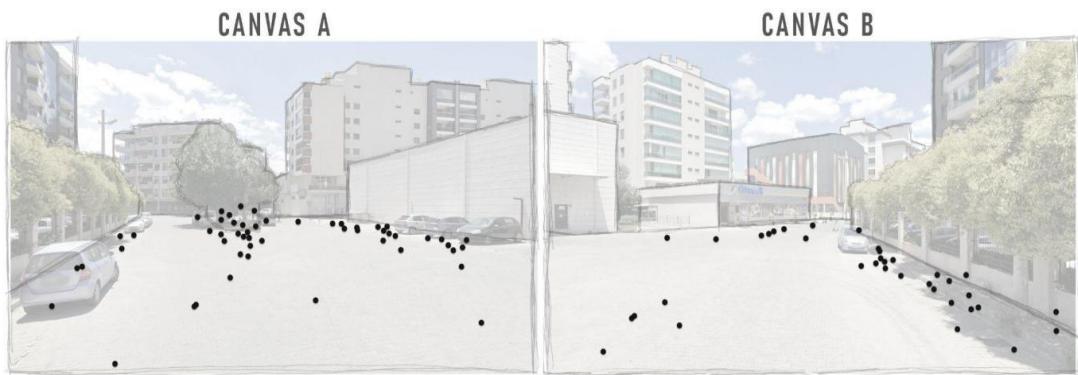


Figure 73: Case Study I, Pixel Based Cluster Analysis for Bank Object

10. Barrier

Barrier is the least used object among 16 objects. Only 1 participant used it for Canvas A. When we look at the area used, it was used as separator urban furniture to separate the pavement and the road in front of the Migros facade for Canvas A.

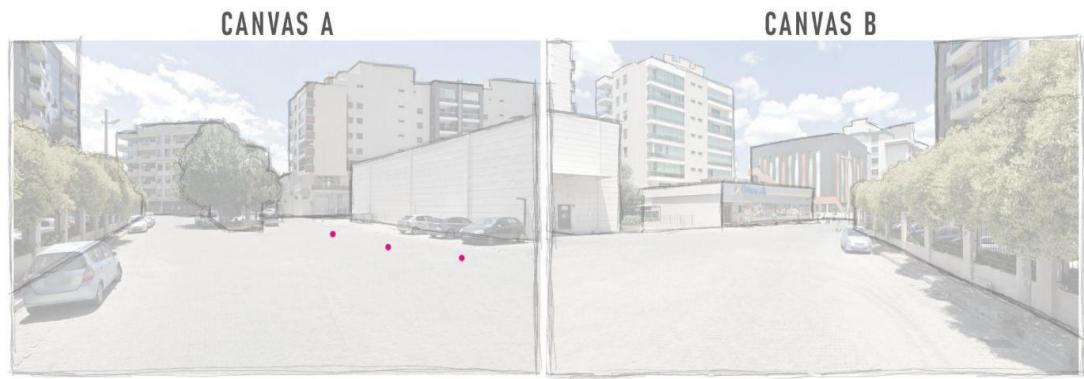


Figure 74: Case Study I, Pixel Based Cluster Analysis for Barrier Object

This situation shows us that it is not desirable to separate the areas to be reserved for pedestrians, cyclists or different uses in public spaces with classical barriers.

Mobility Elements

11. No Entry Sign

A no-entry object was positioned directly on the main roads entering the street. This is because the participants wanted to stop the circulation of vehicles in the public space intended for the study. Apart from the no-entry object, the qualitative interviews also indicated that the vehicle road should be organised. The no-entry object was used by 3 people for Canvas A and 5 users for Canvas B.

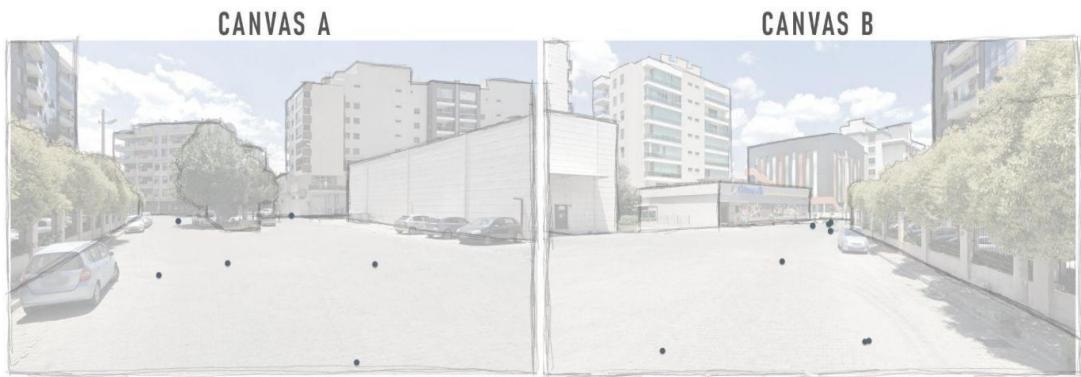


Figure 75: Case Study I, Pixel Based Cluster Analysis for No Entry Sign Object

12.Bicycle

The participants created a cycling route that travelled around the outer periphery of the site. 16 of the 21 participants as 8 for Canvas A 8 for Canvas B used the bicycle path object on the same route in this study, which they did at different times.

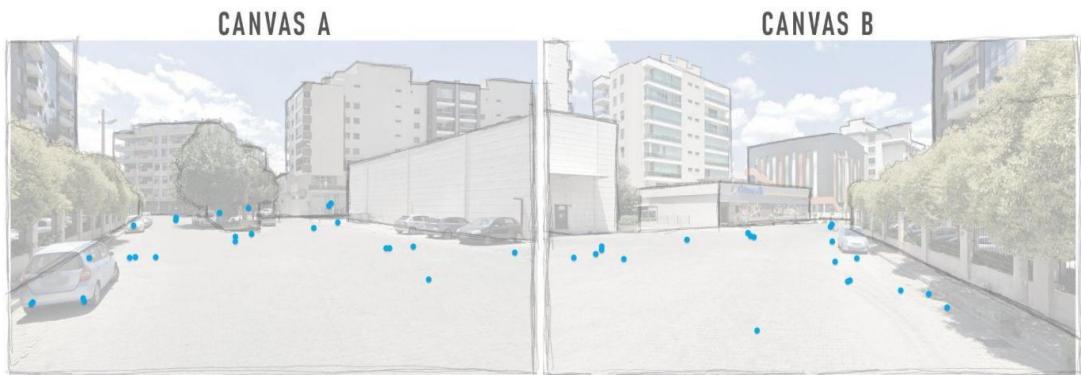


Figure 76: Case Study I, Pixel Based Cluster Analysis for Bicycle Object

13. Pedestrian Crossing

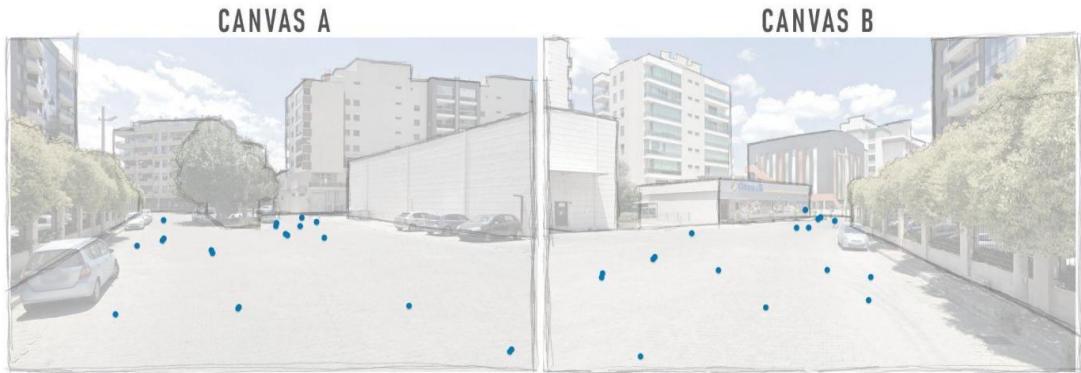


Figure 77: Case Study I, Pixel Based Cluster Analysis for Pedestrian Crossing Object

10 of the 21 participants preferred to use the pedestrian crossing object for Canvas A and 10 for Canvas B. In general, it was the 5th most preferred object. In the previous analyses, it has been observed that pedestrians have difficulty in walking due to the lack of certain boundaries of the roads in the area. Accordingly, the participants used the pedestrian crossing object in the section passing west of the Migros facade for Canvas A and for the road narrowing opposite the Gürmar facade for B canvas. In addition, the pedestrian crossing object was used together with the picture object.

Texture Elements

14. Green

Texture elements were generally the least preferred objects. However, despite this, the green floor object was used by 10 participants for Canvas A and 6 participants for Canvas B. Participants wanted the road to be organised with different floor coverings, not only stone. For Canvas A, the green ground object was usually clustered in the centre. For Canvas B, it is more scattered but it is a continuation of Canvas A.

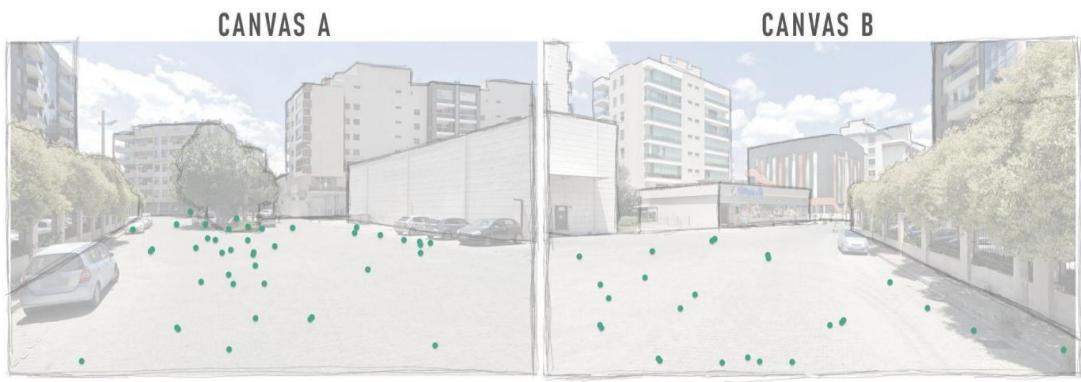


Figure 78: Case Study I, Pixel Based Cluster Analysis for Green Object

15. Stone

Stone ground object was preferred by 6 participants for Canvas A and 6 participants for Canvas B. Although the intensity of use is different, it shows a spatial distribution similar to the green ground object. In line with the data obtained from the qualitative interviews, it was generally used to define another path within the green ground.

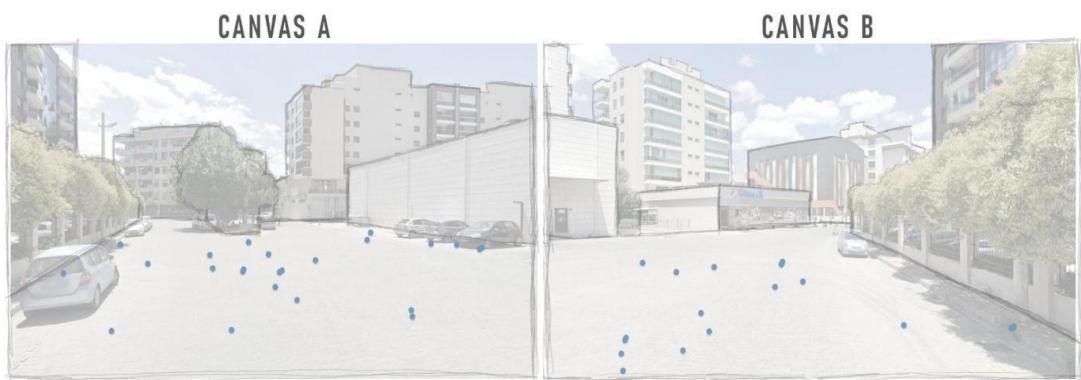


Figure 79: Case Study I, Pixel Based Cluster Analysis for Stone Object

16. Wood

The wooden floor object was used by 6 participants for Canvas A and 4 participants for Canvas B. This situation makes the wooden floor object the least preferred object among the texture elements. While it is preferred in front of the Migros facade for Canvas A, we see a majority at 2 points for Canvas B.

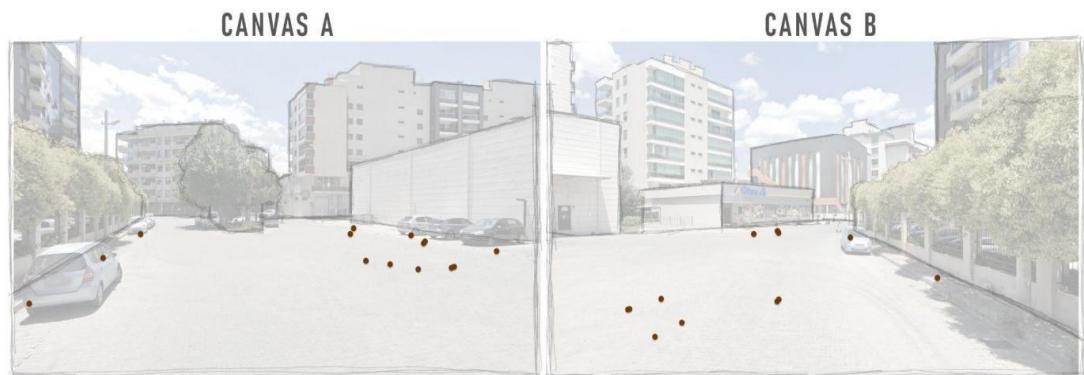


Figure 80: Case Study I, Pixel Based Cluster Analysis for Wood Object

Following the two a canvases, one is in front of the Migros facade and the other is in front of the Gürmar market facade. Considering the analyses made, it usually shows the points where the participants wait during the day.

17. Joker Object

Joker objects are the 3rd most used object by 21 participants. It was preferred by a total of 17 participants for Canvas A (2nd place) and 13 participants for Canvas B (3rd place). If we analyse them in order;

In the notes for the joker objects used for Canvas A;

- Objects positioned vertically are used to indicate the inadequacy of the lighting elements and/or the unqualified design of the lighting elements.
- The dots concentrated on the west corner of Migros street were used as joker objects to remove or hide the rubbish bins.

- The joker objects in the central below part of the a canvas were used to reorganise the road, to close the road to vehicles or to build a pavement.
- The joker objects on the pavement on the site facade were used to widen and rearrange the existing 90 cm pavements.
- Joker objects in the wooded area were used with requests such as lack of kiosks, lack of seating area, expansion of the green area, and an activity in this area.
- The joker objects located on the facade of Migros and on the facade of the opposite building were used for the facade arrangement and a suitable wall art.

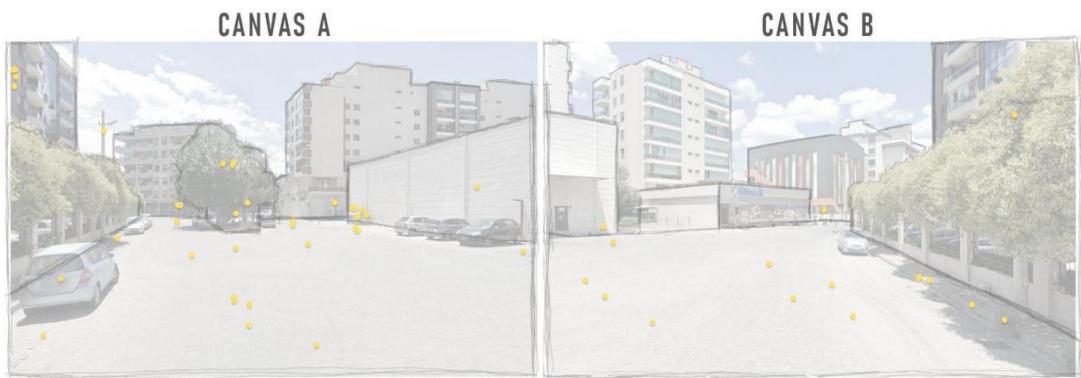


Figure 81: Case Study I, Pixel Based Cluster Analysis for Joker Object

The notes of the joker objects used for Canvas B are as follows;

- Joker objects scattered on the road have been used to reorganise the road, to close the road to vehicles and/or to open it to traffic only during certain hours.
- Joker objects on the pavement have been used to reorganise the pavement, create a bicycle path, place a kiosk and/or widen the pavement.
- The joker objects located on the Migros facade represent the need for a seating area as well as the desire to see an art painting on the wall.
- The joker object positioned on the tree on the site façade represents the lack of a lighting element.
- Finally, the joker object on the facade of the private school was used for the reorganisation of the entrance and exit of the school, the use of the school facade as art element and / or the arrangement of the road.

As a result of the analyses, 21 participants requested a total of 16 different joker objects for the two canvases. The requests specified by using joker objects can be listed

as; insufficiency of lighting elements, lighting element design, removal of garbage bins, design of garbage bins, rearrangement of the part of the road reserved for pedestrians and vehicles, closing the road to motor vehicles or opening the area to hourly traffic, pavement, kiosk, seating area, widening the pavements, adding pavements, expanding the green area, activity (performance) area, facade arrangement, facade art and finally rearranging the school entrance and exit gates.

We also see the joker object as an object used together. For urban activities or urban furniture that are difficult to imagine, the wildcard object and similar furniture are described by using them together.

In this section, pixel-based clustering analyses of objects were examined in detail. These analyses provided a deeper understanding of the preferences and usage habits of the participants. In the next section, the design study prepared within the scope of UD 502 Urban Design Studio II based on these analyses will be discussed in detail. This design study aims to be an example of how to produce innovative and belonging solutions that meet the needs and desires of neighbourhood residents by using the data obtained as a result of the participatory design kit.

3.1.4. Design Results

In line with the statistical, graphical and sensory analyses, a synthesis study was carried out within the scope of CP502 Urban Design Studio II. All graphically overlapped objects are shown in Figure 82. The data obtained without designing is brought together and we see the synthesised form of the requests requested by the participants in different ways on the canvas in Figure 83.

This synthesis is based on the overlay of the pixel-based cluster analyses and the survey questions answered by the participants. Canvases A and B visualise the various suggestions and design ideas of the residents. Both canvases are filled with different elements and spaces designed to meet the needs and desires of the participants.

In Canvas A, lighting elements are positioned at specific points; this was done in order to increase night safety and provide aesthetic lighting. The music area is conceived as an area where participants can socially interact and cultural activities can be organised. The activity area is designed as a zone where various events and sports

activities can be organised. The painting area has been designated as a space for artistic activities and murals, and this is intended to add aesthetic value.

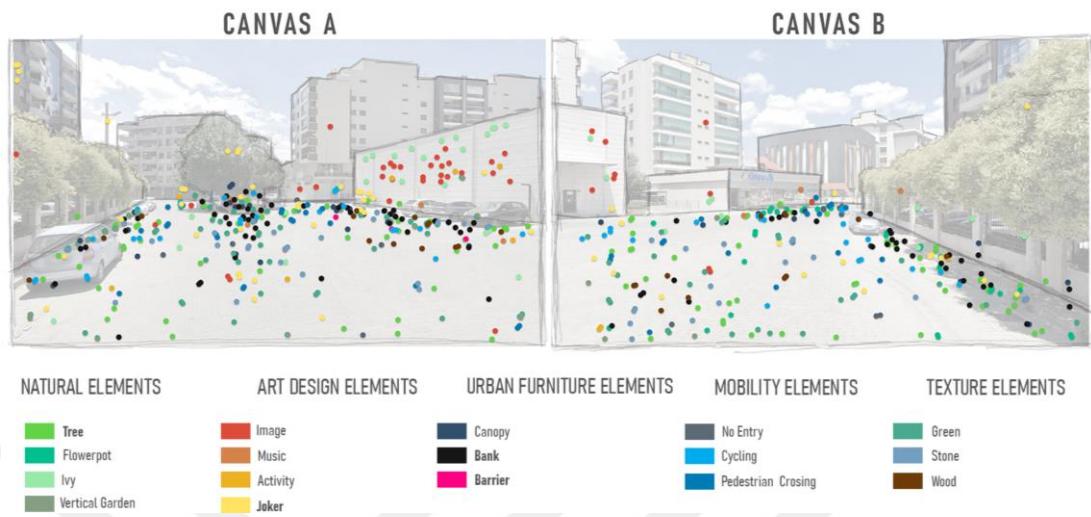


Figure 82: Case Study I, All Pixel Based Cluster Analysis for Canvas A and B

Vines aim to beautify and naturalise the environment by providing natural greenery. Permeable stone and timber surfaces are used as an environmentally friendly and sustainable floor material, which will improve stormwater management by allowing water to pass underground. The kiosk and café area is designed as a centre for social interactions and a place where residents can come together, relax and socialise.

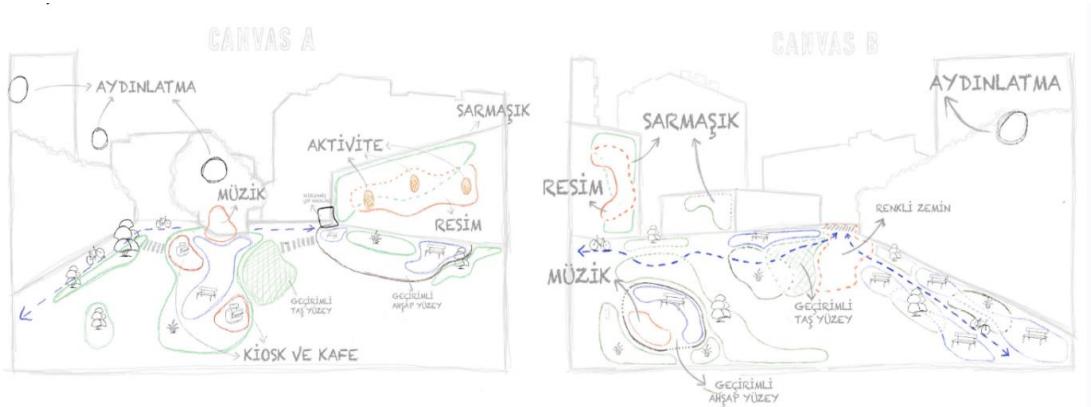


Figure 83: Case Study I, Synthesis of Canvas A and B

In Canvas B, lighting elements are positioned at certain points, similarly aiming to increase night security and aesthetics. The music area is reserved for cultural activities and social interactions. The painting area is conceived as a zone where artistic activities can be reflected on the wall. Ivy are used to provide naturalness and greenery. Permeable stone and wood surfaces have been identified as sustainable floor materials, allowing water to pass underground and providing an environmentally friendly solution. In addition, coloured floors are used to add aesthetic and visual interest, which contributes to making public spaces more attractive and inviting.



Figure 84: Case Study I, Playable Art Street Design Collage

These two canvases present a detailed synthesis that reflects the different urban design needs and aspirations of the participants. Elements such as lighting, music, painting, ivy and permeable surfaces add both aesthetic and functional value. This synthesis shows how creative and versatile the participatory design process can be. In line with the data obtained and the art concept determined, a concept design study was also carried out within the scope of UD502 Design Studio II. With the concept of "Playable Art Street", one scenario was produced with reference to the studies obtained in the synthesis. In the prepared urban design study, the scale of industrial design was descended and the dimensions of the planned urban furniture were described.

This design project is based on the results of synthesis and pixel-based cluster analyses. The aim is to create innovative and artistic public spaces that meet the needs and desires of neighbourhood residents and create a sense of belonging. The design aims to create recreational areas, art and event spaces that can be integrated into the daily lives of users, and green spaces that beautify the environment.

At the centre of the concept is "Playable Art Street". This concept aims to transform streets into artistic and playable spaces. Supported by key concepts such as identity, co-creator, collective intelligence, this design encourages active participation and co-operation of users. Enriched with art, music and other activities, the spaces offer a dynamic urban experience with both permanent and temporary elements.

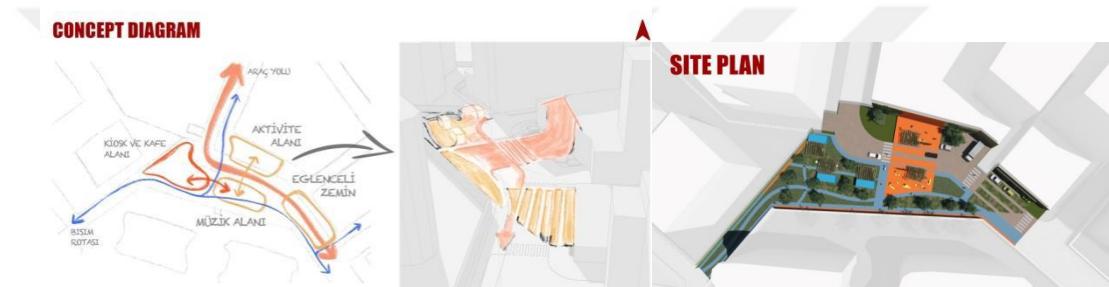


Figure 85: Case Study I, Playable Art Street Design Concept Diagram and Site Plan

As a first step, traffic calming has been implemented and sufficient space has been allocated for pedestrian and vehicular traffic. This arrangement aims to minimise the risk of accidents and create a safe pedestrian environment through traffic calming strategies. Distinctive games on the ground surface both add aesthetic value and increase safety by attracting the attention of users.



Figure 86: Case Study I, Playable Art Street Design Detail I

The art facade and activity areas increase the aesthetics and attractiveness of the area by providing visual continuity. The art facade on the Migros side continues on the ground surface and is combined with the activity area across the road. This is an important element that encourages social interaction of users and provides spatial integrity.



Figure 87: Case Study I, Playable Art Street Design Detail II

In order to create a sense of belonging, recreation areas have been organised for users to use in their daily lives. These areas offer suitable places for resting, socialising and various activities. For example, the kiosk and café area is designed as a place where users can relax and socialise and where they can get food and drinks. Green facades and street gardens are designed as elements that beautify the environment by providing natural greenery, as well as spaces for relaxation and social interaction. Green building facades continue on horizontal surfaces, thus creating a natural environment.



Figure 88: Case Study I, Playable Art Street Design Detail III

Fun floor games and interactive seating units are elements that encourage active participation of users and enable dynamic use of the space. These elements can be used

both permanently and temporarily, increasing the flexibility and versatility of the space. This design study used the data from the participatory design kit to provide innovative solutions that meet the needs and aspirations of neighbourhood residents and create a sense of belonging. In line with the feedback from the participants, elements such as traffic regulation, green spaces, art and event spaces were integrated into the design. This process enabled the creation of an urban space that enriches the daily lives of the users, increases their social interactions and strengthens their attachment to the neighbourhood. This design endeavours to provide an exemplary participatory design option in which the participants take an active role in creating a common vision and expressing themselves.

3.2. Case 2: Basmane Square

The second field study was carried out in Basmane Square within the scope of the 4th "Engelsizİzmir" Congress with the assistance of İzmir Metropolitan Municipality and Pedestrian Association. This study process was also carried out with a detailed and systematic approach. Firstly, field analyses were conducted to understand the existing urban fabric and historical-cultural structure of Basmane Square. These analyses revealed the physical, social and economic dynamics of the square and provided the necessary data to determine the area to be studied.

The participatory urban design kit designed in this space was prepared for pedestrians using Basmane Square. Basmane Square is a square where it is difficult to walk and navigate as a pedestrian, where vehicle traffic motorised is complicated and especially for disabled citizens it is an extra challenging square. For this reason, the historical texture of the place, the use of space, pedestrian and traffic flow and daily usage patterns were analysed and the necessary objects for pedestrian and traffic circulation were determined. In this direction, a participatory design kit was created.

The kit includes tools that participants can easily use and express their opinions. In addition, field questionnaires were prepared to collect the opinions and suggestions of the participants in a systematic way. The field studies carried out with the participatory design kit ensured the active participation of the participants and valuable data were obtained from their perspectives.

The data obtained from field studies and questionnaires were meticulously analysed and the priority needs and expectations of the users of the area were determined. In the light of these data, with the help of İzmir Metropolitan Municipality and Pedestrian Association, basic data were provided for the design work to be carried out within the scope of the 4th "Engelsizİzmir" Congress. During the design process, problems were identified for the square where the fieldwork was carried out and a pioneering report was planned to be prepared to share the results.



Figure 89: Case Study II, An Image from Basmane Square Study

This systematic and participatory process has shown how urban design in Basmane Square can be made more inclusive and sustainable, and aims to be a valuable guide for future urban design projects. These studies aimed to represent the effectiveness of the participatory design process and its contribution to sustainable urban development and increased ownership of the area.

3.2.1. Study Site

Basmane Square, one of the busiest and historical squares of İzmir, was chosen as the study area. Basmane Square, located in the heart of İzmir, was built in the 19th century and still serves as an important transport and trade centre of the city.

İzmir's deep-rooted historical and cultural past includes Basmane Square. Basmane became a center of industry and commerce throughout İzmir's history, especially towards the end of the 19th century. Built in 1876, Basmane Station served as the starting point of the İzmir-Turgutlu railway line, which helped increase the region's trade volume. Basmane increased the efficiency of İzmir's exports in the transportation of products from the fertile plains of Western Anatolia to Europe.

At the turn of the century, the area around Basmane Square was used for both residential and commercial purposes. In this era, hotels in the vicinity often stand out as structures built from residential buildings.



Figure 90: Picture of Basmane Square

For example, the Sadık Bey Hotel⁶⁹, built in the late 19th century and converted into a hotel in the first quarter of the 20th century, is a typical example of this transformation. The Tevfik Paşa (Akseki) and Emniyet (Cihan Palas) hotels, which were converted from other residences into hotels, also contributed to the development of

the Basmane-Tilkilik area as a street of hotels.⁶⁹ Basmane Square is an important transportation hub as it is one of the oldest and most historic neighborhoods in İzmir. It has a strategic location as it has İzmir's İZBAN, train station, metro and tram stops and is connected to main transportation routes such as Konak and Bornova.⁷⁰ Therefore, the square is at the center of İzmir's transportation network and is better connected to other parts of the city.

Basmane Square is the center of İzmir's social and cultural life. The square has a number of important buildings reflecting its historical and cultural heritage. Basmane Train Station and the main entrance gate of İzmir Fair, built in 1887, stand out among these structures. Its proximity to shopping centers such as Kemeraltı also makes the square stand out. The many restaurants, cafes and shopping areas around the square make it an attractive destination for both locals and tourists.⁶⁹ However, Basmane Square also faces problems such as heavy motorized vehicle traffic as well as the inability of pedestrians to walk and move freely, creating more obstacles, especially for disabled citizens. The square's historical fabric, existing land use, pedestrian and traffic flows, and daily usage patterns were analyzed to address these issues. These analyses identified what was needed to improve pedestrian and traffic flows and created a participatory design kit. Participants can clearly express their ideas using the tools included in this kit. In addition, field surveys were prepared to get the opinions and suggestions of the residents of the square.

The square is home to many important buildings reflecting the historical and cultural heritage of İzmir. Among these buildings are Basmane Train Station and the main entrance gate of İzmir Fair, which was built in 1887.

Basmane Square is also an important centre of social and cultural life of the city. Around the square, there are numerous restaurants, cafes, shopping areas (kemeraltı) as well as important public transport network stops.

Basmane Square attracts attention due to the complexity of motorised vehicle traffic, the difficulty for pedestrians to walk and move around comfortably and the extra obstacles it creates especially for disabled citizens. In order to address these issues, the historical fabric of the square, existing land use, pedestrian and traffic flows and daily usage patterns have been analysed in detail. As a result of these analyses, the necessary objects to improve pedestrian and traffic circulation were identified and a participatory design kit was created. This kit includes tools that participants can use easily and express their ideas clearly. In addition, field surveys were prepared to collect the

opinions and suggestions of the residents of the square. The field studies carried out through the participatory design kit ensured the active participation of the residents of the square and valuable data was obtained from their perspectives.

Field analyses were conducted in order to develop design solutions to make the square pedestrian friendly. These analyses revealed the physical, social and economic dynamics of the square and provided the necessary data to determine the area to be studied. Large-scale observations of land use, traffic flow, gathering points, vehicular and human movements were carried out to identify the existing problems of the square and the aspects that need to be improved.

According to the Solid-Void, It has been observed that the ground floor layout in Basmane Square forms a set and only pavements are left for pedestrian use. The square does not have a specific order or pattern at the proportions of full and empty around the square. This irregularity creates chaos in the square in terms of both aesthetics and functionality. When we look at the road analysis, it is observed that the roads do not have a clear lane separation, and at some points, 4 lane lines suddenly turn into 3.

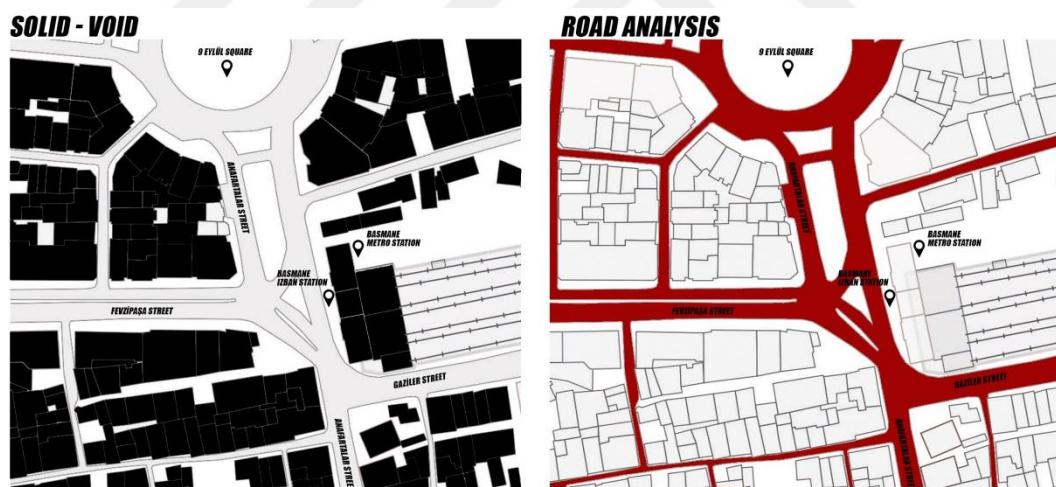


Figure 91: Basmane Square Solid-Void Analysis and Road Map

This irregularity creates difficulties in access and transportation around the square, as well as negatively affecting safety and traffic flow. These analyses clearly show the main problems in the urban fabric of Basmane Square in terms of pedestrian circulation and the need to solve these problems.

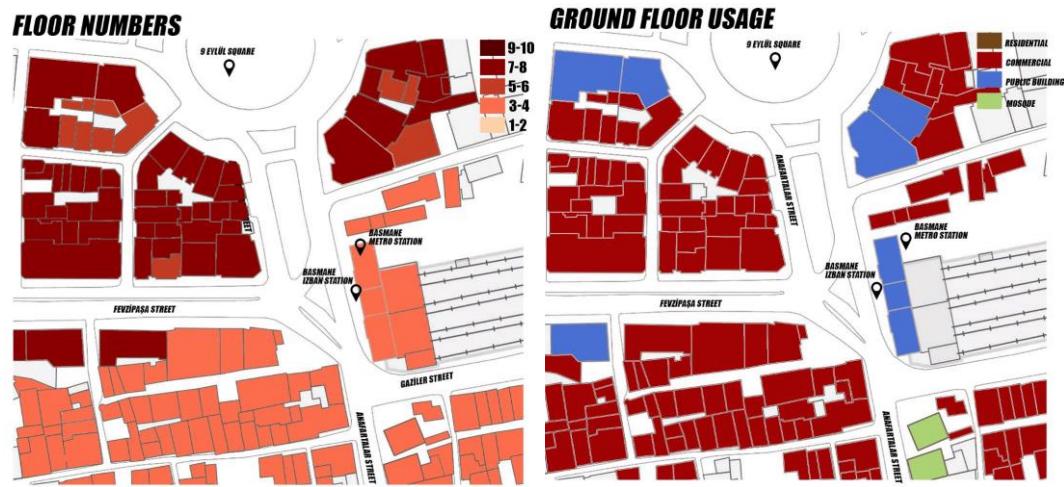


Figure 92: Basmane Square Number of Floor Analysis and Land Use Analysis

Floor height analysis showing the storey height reveals that the buildings in Basmane Square are predominantly 7 storeys and above. It is seen that these high-rise buildings do not create sufficient shade areas to block the sun, especially in summer. This situation shows that the users of the area stay under the sun while travelling to Kemeraltı, Basmane Station, Metro or Kültür Park and causes an uncomfortable pedestrian circulation.

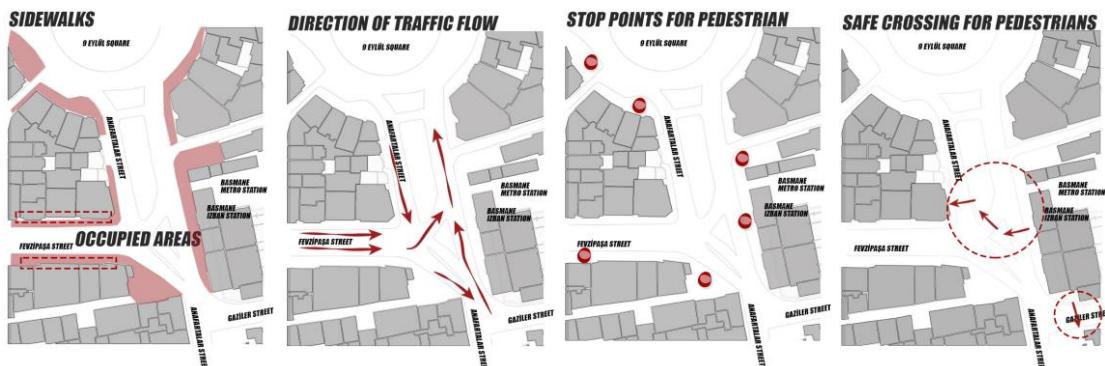


Figure 93: Basmane Square Detailed Analyses

When the landuse analysis is examined, the diversity of uses on the ground level draws attention. There are different functions such as trade, cafes, restaurants, cultural activity areas and public transport nodes on the ground floors. This diversity shows that the people using this area have an intense pedestrian circulation in this area during the

day. The density of commercial areas and restaurants emphasises the need for a safe and legible pedestrian circulation in this area in the daily lives of individuals living and working in the square. These analyses reveal the critical points to be considered in the urban design of Basmane Square.

In addition, since there are no distinctive signs on the road, the parts reserved for pedestrians are ignored. On the pavements, raising the tree bases that disrupt the continuity, excessive use of the pavement by tradesmen, manhole covers or manholes elevation differences and the lack of ramps make pedestrian circulation more difficult.

This situation negatively affects pedestrian mobility and pedestrians have difficulty walking safely on the road. In terms of vehicular mobility, it was determined that there are blind spots on the roads. This situation has been emphasized by the users of the square area that road arrangements should be made to prevent accidents. These analyses reveal the need to improve the social and physical dynamics in the square and the importance of the arrangements to be made in this direction.

As a result of these observations, Basmane Square which has a variety of land use, which people use as a transit passage to use public transport or to go to places such as Kemeraltı Kültürpark, where the vehicle and pedestrian hierarchy needs to be regulated, and which has potential spaces and surfaces for urban design, has been selected to be examined in more detail.



Figure 94: Case Study II, Study Site Problem and Potential Analysis II

This square offers a great potential both in terms of solving existing problems and the applicability of new design ideas. The circulated surface is painted in red. In line with the study, it was determined that the square suddenly expanded, the area became undefined public space without identity that does not direct the user.

After the determinations made, the participatory design kit production process started over the determined square section. In this process, the public space was evaluated with SWOT analysis. The analyses revealed many problems such as undefined and characterless roads, inadequate and small green areas, empty and uncertain facades, inadequate and small pavements in the selected public space. These findings provide important information about the current situation of the area and the aspects that need to be improved.

3.2.2. Tool Description

The study for Basmane Square started with detailed site analyses. In order to understand the dynamics of Basmane Square, which is an important historical and cultural node of İzmir, area analyses were carried out at various scales.

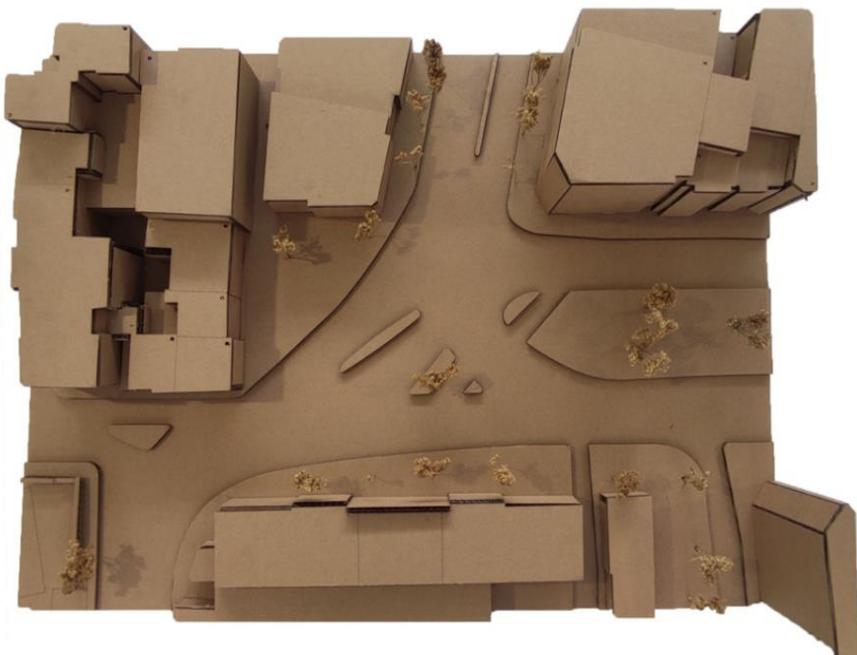


Figure 95: Picture of Basmane Square Model

The current condition of the square, daily usage patterns, pedestrian and vehicle traffic, and the difficulties faced by disabled citizens were observed. As a result of these analyses, participatory design kit objects that can be used for the necessary arrangements to make the square more useful and accessible have been identified.

Within the scope of the Basmane Square participatory design process, it was aimed to carry out the study as a mainologue in order to proceed within the framework of design for all and to enable the participants to easily express their spatial suggestions. Within the scope of the first case study, it was concluded that 2D participatory design kit base reduces spatial perception. Taking this information as a reference, 1/200 scale 3D cardboard model was prepared for the study.

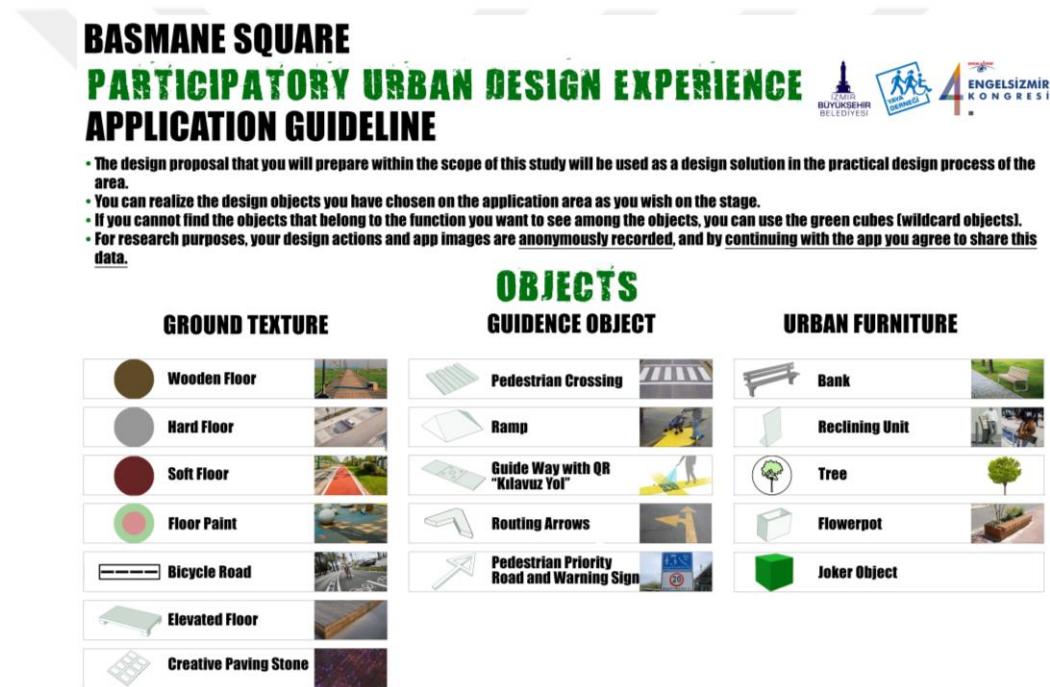


Figure 96: Basmane Square Participatory Urban Design Experience Application Guidelines (Appendix C)

A4 size instructions were prepared to inform the participants of the participatory design workshop. In these instructions, it is stated that the data will be used within the scope of scientific study by protecting personal information. The prepared guidelines were distributed to the participants and their conscious participation in the workshop process was ensured. In addition, urban elements suitable for the area and theme were determined and placed in these instructions. The simplest representations of the objects belonging to the urban elements depicted in these instructions were taken as basis. In

the production processes, 3D printer and laser cutter were used with the help of İzmir Metropolitan Municipality Vocational Factory.

Unlike the first study, the objects were produced in 3D and embossed so that visually impaired participants could be included in the process. The scale of the produced objects was prepared in a smaller scale in accordance with the model in order to increase the perception of the participants.



Figure 97: Model of Urban Objects

The urban furniture objects produced are divided into 3 main themes. A total of 16 objects and 1 wildcard object were produced, including 7 objects under the title of Floor Covering, 5 objects under the title of Directional Tools and 4 objects and 1 wildcard object under the title of Urban Furniture and Landscape Elements.

At the end of the workshop, experience questionnaires with qualitative interviews were prepared to get the opinions of the participants and to evaluate the process. Consisting of 24 questions, these questionnaires were designed to cover the sensory experiences of the participants and to include questions to measure the user experience.

A stand was set up at the İzmir fairground to facilitate the fieldwork of the participants. This workshop was organised with the support of İzmir Metropolitan Municipality and the Pedestrian Association. This comprehensive and participatory process aimed to develop solutions to improve the accessibility of Basmane Square.



Figure 98: Case Study II, Survey Study

3.2.3. Findings & Results

In this section, the findings and results of the fieldwork conducted in Basmane Square will be analysed in detail. Firstly, the fieldwork and the implementation phase will be explained, then the object statistics, participant information and joker object analyses prepared for the identified urban furniture will be discussed.



Figure 99: Case Study II Basmane Square Workshop

After the pre-field preparation was completed, a stand was set up on 3 December 2023 at 10:00 at the İzmir Fairgrounds within the scope of the 4th "Engelsiz İzmir" Congress. For the purpose of the participatory design approach, participants spontaneously passing around the stand were studied. The minimum sample size was determined as 20 participants. The study lasted from 10.00 in the morning until 17.00 in the evening.



Figure 100: Case Study II, Workshop

This pretest study analysed how the participants perceived urban problems and how they developed solutions. Throughout the participatory design process, active participation of the participants was ensured and solutions were developed in accordance with their needs.

The workshop was realised with a total of 21 participants. The participatory design kit took 13.29 minutes on average. Filling out the questionnaires took an average of 16 minutes. In other words, approximately 30 minutes were allocated for each participant.

After the field work was completed, the statistical analysis, graphical analysis and sensory analysis stages, which were determined as the analysis method of the project, were started. In this direction, statistical data were obtained using Excel. Statistical data were prepared together with the object statistics used on the participant design kit in the experience surveys (Appendix E).

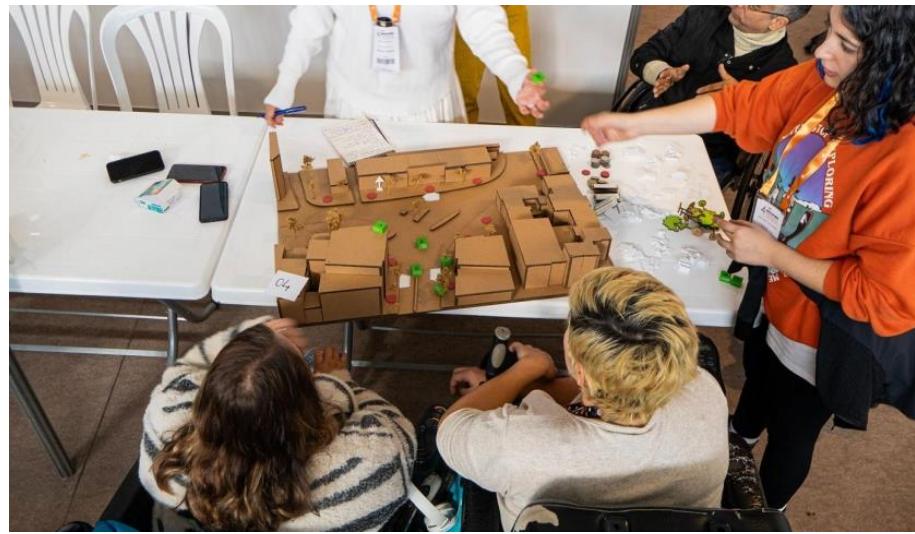


Figure 101: Case Study II Basmane Square Workshop Participant 5

The 2019 version of Photoshop programme was used for pixel-based cluster analysis. In order to perform this analysis, during the fieldwork, when each user finished interacting with the Canvas And the time was stopped, a flat photograph was taken from the top to cover the entire surface. These photos were superimposed using Adobe Photoshop software and cluster maps were created for each object. 17 canvases were created for 17 objects.



Figure 102: Basmane Square, Canvas of Participant No. 2

The emotions and opinions described by the users in the questionnaires and during the workshop were combined with the related urban object and evaluated together. A persona was created in order to visualise the data obtained in the study. The wishes and dreams about the related object were expressed with this persona. As the last

step, the design process was carried out through the design science data obtained. All collected data were synthesised on graphical analysis.

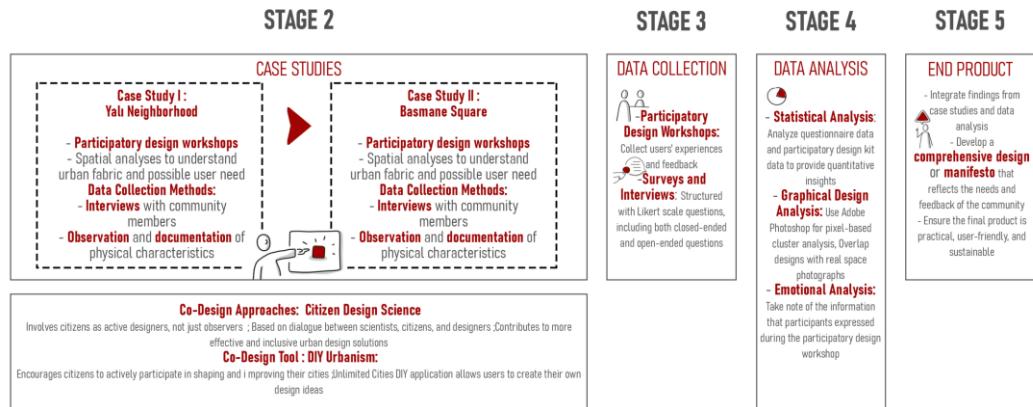


Figure 103: Basmane Square, Case Study Approaches

Under this title, the results of the analyses performed will be examined in detail. Firstly, the findings of statistical analyses will be discussed, followed by graphical analyses and sensory analyses. Finally, the design results for the second case study, Basmane Square, will be discussed.

3.2.3.1 Questionnaire Data

In this section, the findings and results of the field study conducted for Basmane Square will be analysed in detail. Firstly, the fieldwork and implementation phase will be explained, then the object statistics, participant information and joker object analyses prepared for the urban furniture will be discussed.

After the pre-field preparation was completed, the stand was set up in the designated location. For the purpose of the participatory design approach, we worked with participants who spontaneously passed around the stand. The minimum sample size was determined as 20 participants and the study lasted throughout the day. In this study, the users of Basmane Square and how the participants perceive urban problems and how they develop solutions were analysed. Throughout the participatory design process, active participation of the users was ensured and solutions were developed in accordance with their needs.

The workshop was conducted with a total of 21 participants. When the demographic distribution of the participants is analysed, it is seen that 6 of them are male and 15 of them are female.

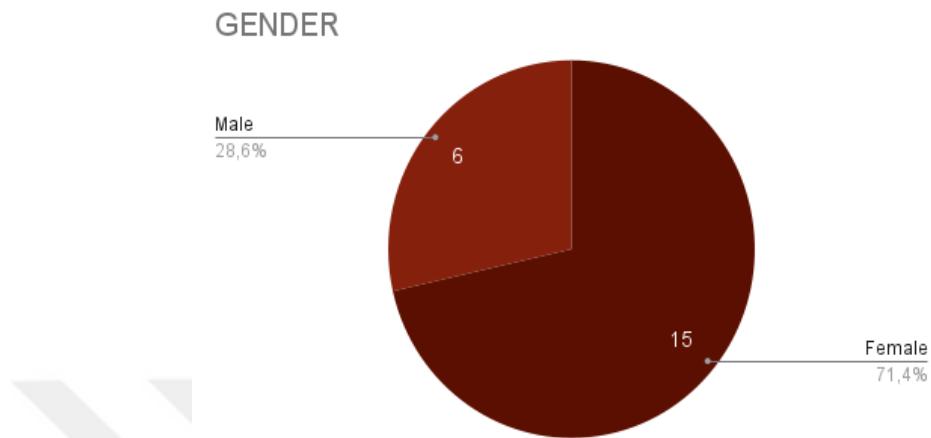


Figure 104: Basmane Square, Gender Distribution

This enabled the study to include different perspectives and experiences. The age distribution of the participants is also spread over a different spectrum: 12 people aged 15-24, 3 people aged 25-34, 1 person aged 35-44, 4 people aged 45-54 and 1 person aged 55-64. This helped to better understand the needs and expectations of different age groups. In addition, 4 of the participants have children, which is an important detail for the study to appeal to users of all ages.

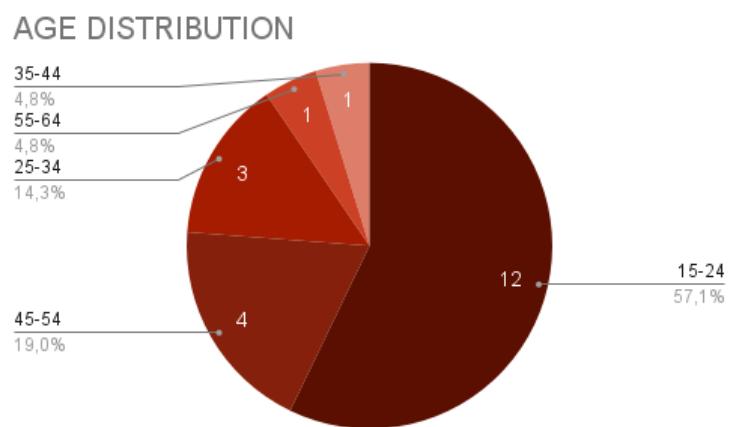


Figure 105: Basmane Square, Age Distribution

When the educational level of the participants is analysed, it is seen that the majority have high school education and above. Most of the participants are high school graduates (8 participants), followed by bachelor's degree and above.

The occupational distribution of the participants is quite diverse: 10 students, 3 retired, 1 unemployed, 1 industrial engineer, 1 furniture maker, 1 agricultural engineer, 1 engineer, 1 licensed athlete, 1 health officer and 1 psychological counsellor. This professional diversity enabled the inclusion of different perspectives in the urban design process.

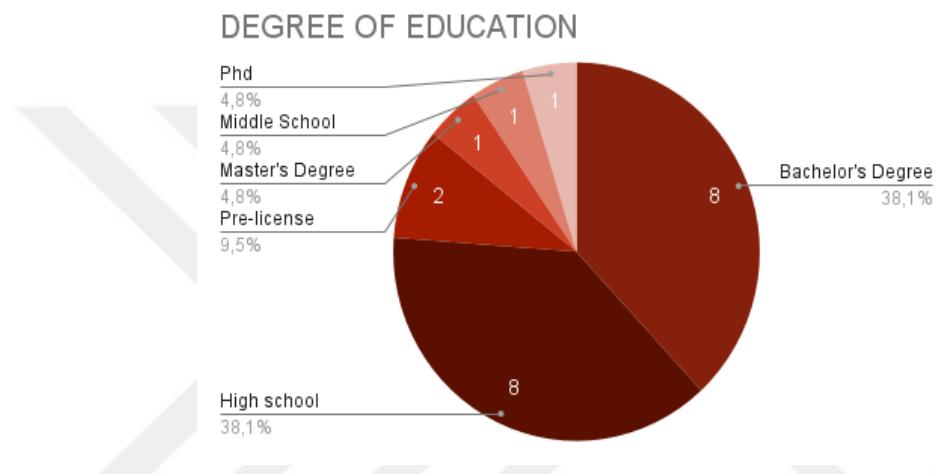


Figure 106: Basmane Square, Degree of Education

The pie Figure 107 showing the distribution of physical conditions in the study conducted in Basmane Square determines the proportions of users according to their physical conditions. According to the graph, the majority of the participants, 71.4% (15 people), are individuals without any disability. However, a certain segment faces various physical challenges. The rate of wheelchair users is 9.5% (2 people), the rate of people with temporary walking difficulties is 9.5% (2 people), the rate of visually impaired individuals is 4.8% (1 person) and the rate of individuals with orthopedic disabilities is 4.8% (1 person). This distribution shows that the majority of the respondents are non-disabled, but a significant number of them experience various physical disabilities. This situation emphasizes the importance of arrangements for accessibility and user needs in the square.

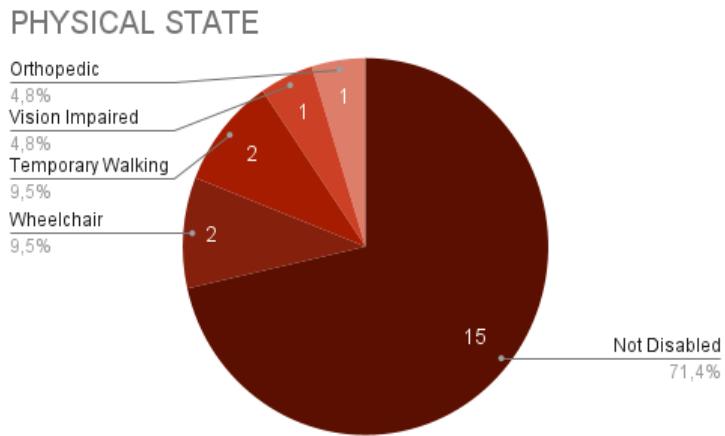


Figure 107: Basmane Square, Physical State

Considering the statistics given above, this workshop included the views of individuals from different age groups and professions with a diverse participant group. This provided a rich perspective to the design process of the study.

As a result, in this section, the profile of the individuals participating in the workshop is detailed. In the remainder of this section, the statistical analyses of the canvas, which is the final product of the workshop, will be discussed. A total of 21 different works were made for 21 participants. The general distribution of the objects used will be analysed. The participants mostly used different objects on the Canvas And analysing these differences will help us better understand the preferences and needs of the participants.



Figure 108: Basmane Square, Workshop, Moment of Application

The participant design kit took 9.61 minutes on average. It took an average of 16 minutes to complete the questionnaires. In other words, an average of 25.61 minutes was allocated for each participant.



Figure 109: Picture of Basmane Square Model and Workshop Application Durations

In the workshop, an average of 9.61, i.e. approximately 10 objects were used for each canvas. Again, averages of 2.81, i.e. approximately 3 joker objects were used for each canvas.



Figure 110: Journey of Participant 11's Canvas in the Graphical Analysis Process

For the pixel-based density analysis, the 2019 version of the Photoshop programme was used. In order to perform this analysis, during the field study, when each user stopped interacting with the Canvas And the time was finished, a flat photograph was taken from the top to comprehend the entire surface. These photographs were superimposed using Adobe Photoshop software and punctuation maps were created for each object. 17 canvases were created for 17 objects. When we move on to the detailed statistics of the objects used, they will be analysed first as a group under the determined themes and then individually. An in-depth evaluation will be made about the outputs of the workshop. The joker object is left to the end as it is analysed differently. When evaluating the object statistics, regardless of the number of objects used, if there are 1 or 5 tree objects in a canvas, these statistics are reflected as 1 for the relevant canvas. Since there were 21 participants and only one canvas, it is possible for an object to be used a maximum of 21 times in total.

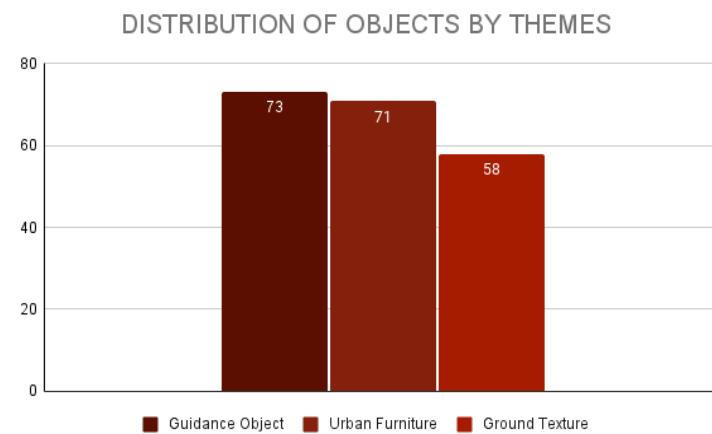


Figure 111: Case Study II, General Distribution of Objects Used According to Themes

As seen in Figure 111, the distribution of the objects used in the participatory design study in Basmane Square according to the themes is as follows: Guidance Objects (5), Urban Furniture (4+1) and Floor Textures (7). Guidance Objects category was the most preferred theme with 73 objects in total. The Urban Furnishings category ranks second with a total of 71 objects. Ground Textures was the least preferred theme with 58 objects.

Guidance Object	Number of Objects Used	%
Guide Way with QR "Kılavuz Yol"	19	
Pedestrian Crossing	15	
Ramp	15	
Pedestrian Priority Road and Warning Sign	13	
Routing Arrows	11	
Urban Furniture	71	35,15%
Tree	17	
Joker Object	16	
Bank	14	
Reclining Unit	12	
Flowerpot	12	
Ground Texture	58	28,71%
Bicycle Road	17	
Floor Paint	13	
Creative Pavement Stone	13	
Soft Floor	9	
Hard Floor	4	
Wooden Floor	2	
Elevated Ground	0	
TOTAL	202	100,00%

Figure 112: Case Study II, General Distribution of Objects Used According to Themes

From the Figure 112, we can observe the frequency of object use and participant preferences in the workshop. The most preferred object among the participants is the Guideway with QR (19 times). This shows that there is a strong need for wayfinding assistance in the area. It is closely followed by the Bike Path and the Tree with 17 preferences each. The Joker Object, known for its versatility and multiple uses, was selected 16 times. Other frequently used objects include Pedestrian Crossing and Ramp, each selected 15 times, emphasizing the importance of accessibility and safe pedestrian movement.

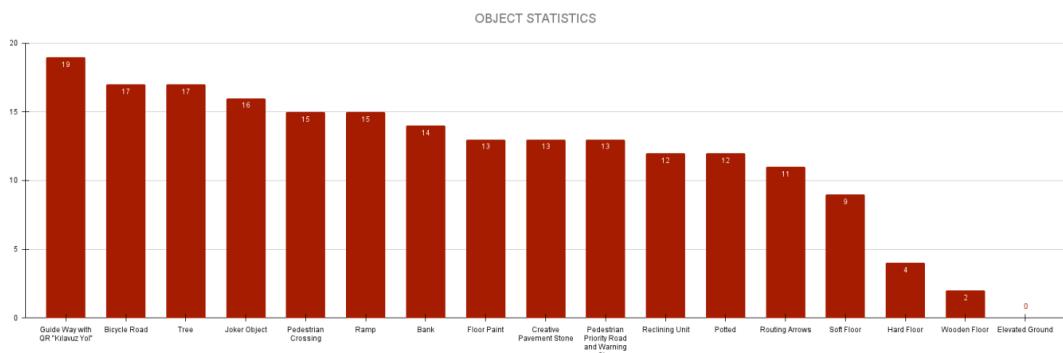


Figure 113: Case Study II, General Object Statistics

The Bench was chosen 14 times, demonstrating the need for seating and resting areas. Floor Paint and Creative Pavement Stone were each selected 13 times, indicating a preference for visual and functional enhancements to the ground surface. Pedestrian

Priority Road and Warning Sign, and Reclining Unit were chosen 12 times, emphasizing the need for pedestrian safety and comfort.

Potted objects were also chosen 12 times, suggesting a demand for greenery and plant life within the space. Routing Arrows, used for guiding pedestrian movement, were selected 11 times. The Soft Floor was chosen 9 times, while the Hard Floor and Wooden Floor were chosen 4 and 2 times, respectively. The Elevated Ground was not chosen at all, indicating that participants did not see a need for raised surfaces in this context. They also creatively combined objects 6 times to create new, unlisted objects, showcasing their innovative approach and emphasizing the flexibility of the design kit to accommodate unique ideas and solutions.

Additionally, during the prosthesis study, specific circumstances were noted: In study number 10, the ground was considered level, and therefore, ramps were not utilized. Similarly, in study number 12, the road was closed to vehicles and treated as a level surface, resulting in the absence of elements such as pedestrian crossings and ramps. This indicates that participants tend to exclude certain urban elements during spatial arrangements and develop alternative solutions. Specifically, by treating certain areas as level ground and not using elements like ramps or pedestrian crossings, participants reflect their preference for making the area more accessible and user-friendly.

In the questionnaires filled out by the participants after the workshop, information about their views on Basmane Square and user profiles were also collected. This information will also be analyzed statistically.

PARTICIPANT PROFILE

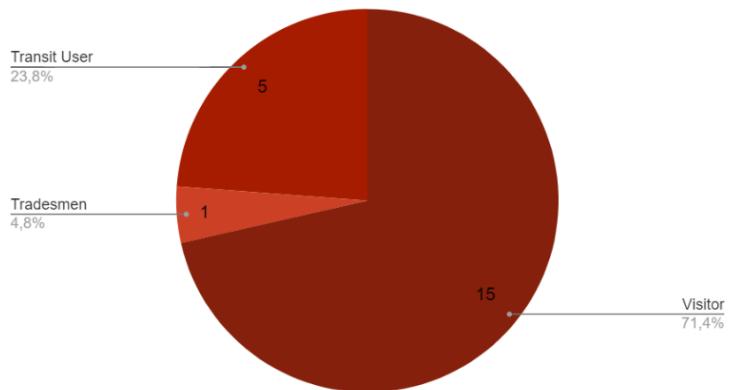


Figure 114: Basmane Square, Participant Profile

Figure 114 shows the participant profiles in the Basmane Square study. 71.4% (15 people) of the participants are visitors. The rate of transit users is 23.8% (5 people), while the rate of shopkeepers is 4.8% (1 person). This shows that Basmane Square is largely used by visitors, but transit users and shopkeepers also have a significant share.

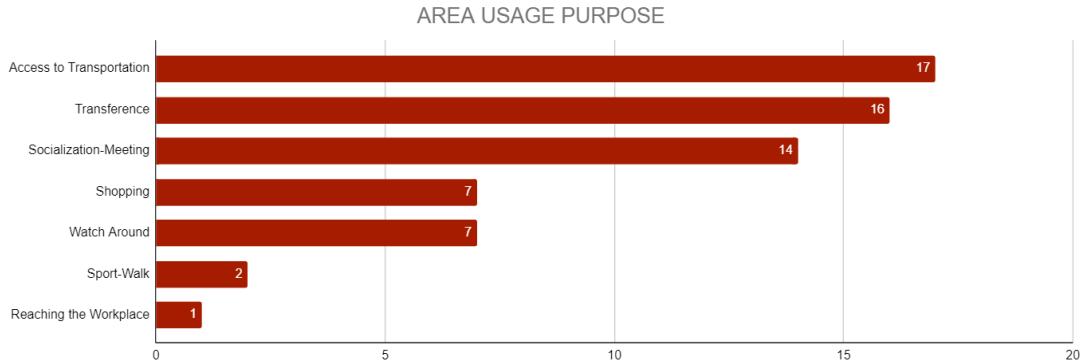


Figure 115: Basmane Square, Area Usage Purpose

Figure 115 shows the purpose of use of Basmane Square by the participants in the Basmane Square study. The most common purpose of use is transportation access with 40.5%, followed by transfer with 38.1%. The rate of those who use the square for socializing and meetings is 33.3% (14 people), while 16.7% (7 people) use it for shopping and sightseeing.

Those who use the square for sports and walking are 4.8% (2 people) and those who use it to reach their workplace are 2.4% (1 person). This distribution shows that the square is mostly used for transportation and transfer purposes.

Figure 116 shows the distribution of negative opinions about Basmane Square. The most common negative opinion is the noise problem with 42.9% (18 people). Poor maintenance and lack of disabled friendliness were mentioned by 38.1% (16 people). Insecurity stands out as another important problem with 38.1% (16 people). Lack of shade and lack of/uncomfortable urban furniture were mentioned by 33.3% (14 people) each. Lack of informative and warning elements was mentioned by 31% (13 people), unsuitability of the ground for seasonal conditions by 28.6% (12 people) and unsuitability for walking by 26.2% (11 people).

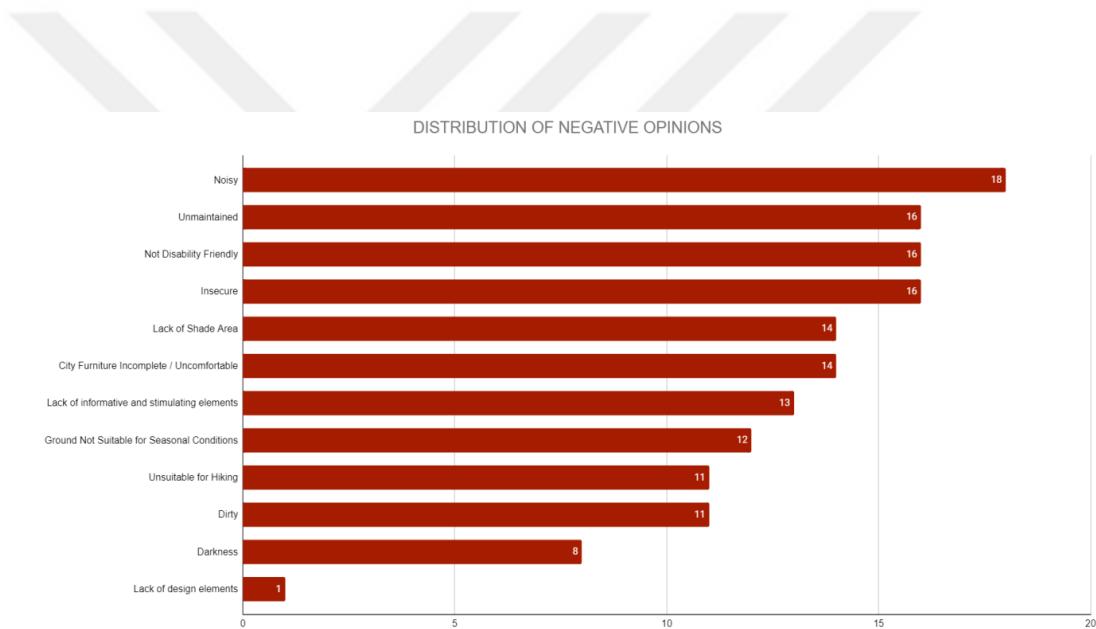


Figure 116: Basmane Square Distribution of Negative Opinions

In addition, 26.2% (11 people) stated that the square was dirty, 19% (8 people) stated that it was dark and 4.8% (1 person) stated that it lacked design elements. These data show that the square received negative feedback due to various infrastructure and safety issues. At the end of the questionnaire filled out by the participants after the application, there are 4 questions to measure the user experience. The answers given in this direction were analyzed.

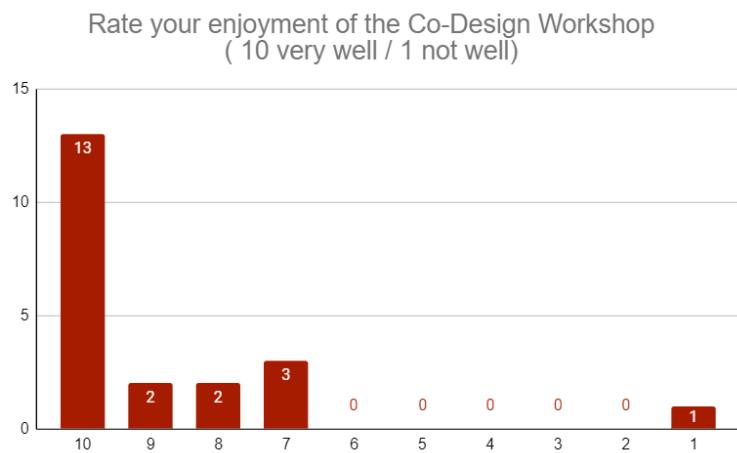


Figure 117: Case Study II, Rate Your Enjoyment of the Co-Design Workshop

The Figure 117 showing how much the participants enjoyed the Co-Design Workshop shows that 13 people gave 10 points, 2 people gave 9 points, 2 people gave 8 points, 3 people gave 7 points and 1 person gave 1 point. The average enjoyment score of the participants from the workshop is 8.95. 61.9% of the participants (13 people) received the highest enjoyment from the workshop. These results show that the majority of the participants liked and enjoyed the workshop.

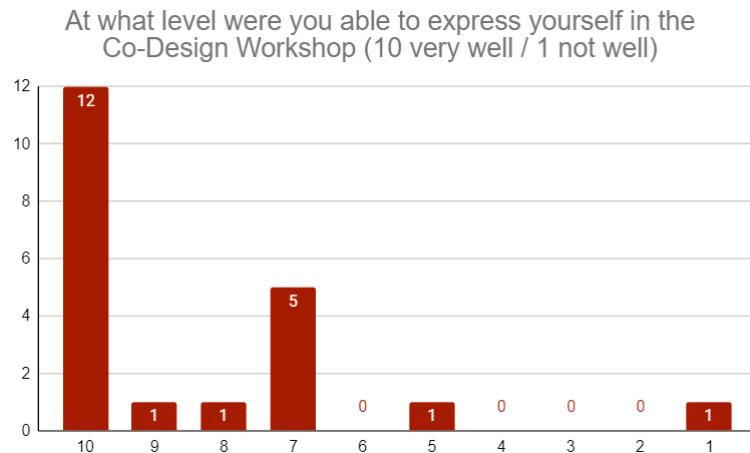


Figure 118: Case Study II, Rate Your Express of the Co-Design Workshop

The graph 26 evaluates how well the participants were able to express themselves during the workshop. 12 of the participants gave 10 points, 1 gave 9 points, 1 gave 8 points, 5 gave 7 points, 1 gave 5 points and 1 gave 1 point. The average self-

expression level of the participants is 8.57. 57.1% of the participants (12 people) were able to express themselves in the best way. This shows that the majority of the participants were quite satisfied with their self-expression.

The Figure 118, which evaluates how easy it is to understand the instructions on the flashcards, shows that 13 of the participants gave a score of 1, 3 of the participants gave a score of 2 and 5 of the participants gave a score of 3. The average score of the participants in understanding the instructions on the flashcards is 1.67. 61.9% of the participants (13 people) found the instructions very easy. This shows that the flashcards are generally user-friendly and understandable.

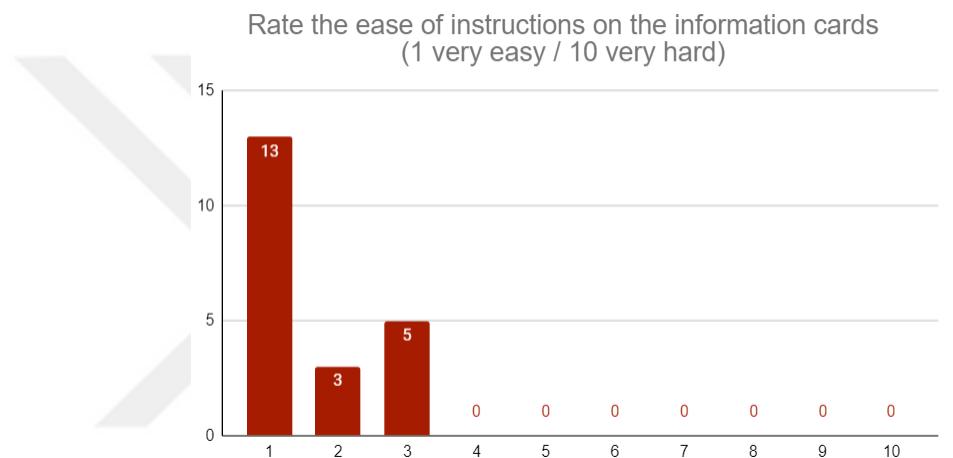


Figure 119: Case Study II, Rate the Ease of Instructions on the Information Cards

The Figure 119 evaluating how easy it was to design in the workshop shows that 8 of the participants gave a score of 1, 9 of the participants gave a score of 2, 2 of the participants gave a score of 3 and 2 of the participants gave a score of 4. The average score of the participants for the ease of designing is 2.10. 38.1% of the participants (8 people) found it very easy to design. This graph shows that the design making process of the workshop was largely user-friendly. These graphs show that the Co-Design Workshop was generally positively evaluated by the participants and provided an easy to understand, expressive and user-friendly experience.

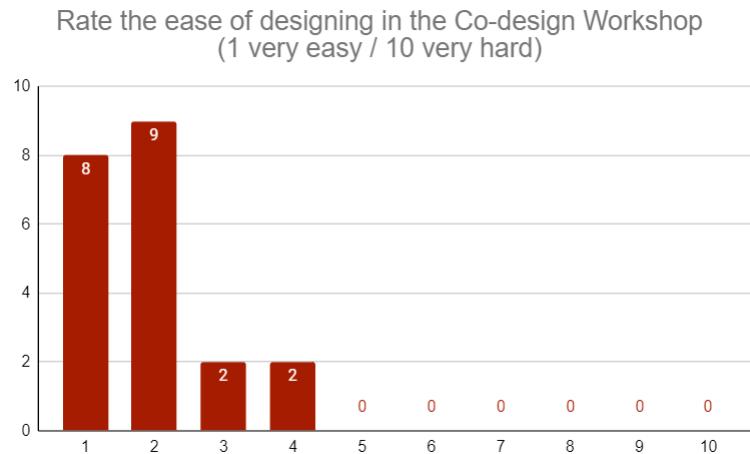


Figure 120: Case Study II, Rate Your Ease of Designing in the Co-Design Workshop

It shows the rate of participants' previous participation in similar projects in the Second Pre-Test Study conducted for Basmane Square. The graph indicates that 23.8% (5 people) of the participants have participated in similar projects before, while 76.2% (16 people) have no such experience. This result reveals that the majority of the participants are new participants in such projects. This information will provide important clues on how the project execution process can be shaped according to the previous experiences of the participants and strategies can be developed to address the needs of new participants.

PREVIOUS PARTICIPATION IN SIMILAR PROJECTS

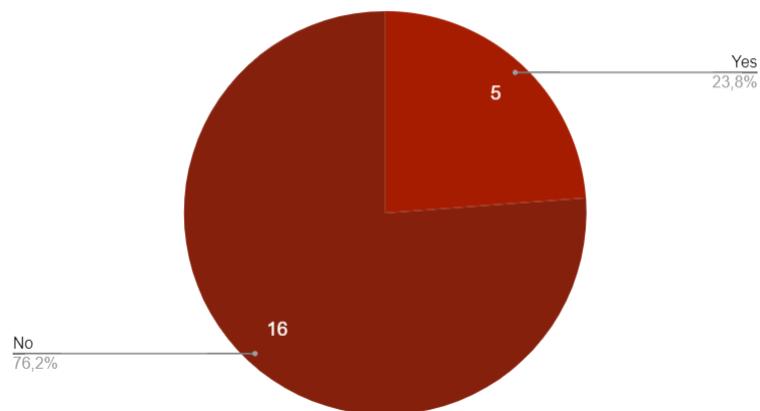


Figure 121: Case Study II, Rate of Previous Participation in Similar Project

Statistical evaluations of the participatory design kit and questionnaires applied by the participants during the workshop are discussed in detail in this section. In these analyses, user experiences and participants' opinions about the site were also statistically analyzed. This will provide a better understanding of user behavior and needs in the area. More detailed information about the objects and pixel-based cluster analysis will be analyzed in depth in the next section.

3.2.3.2 Graphical Analysis

For the participatory urban design study carried out in Basmane Square, a total of 16 objects and one joker object were used under 3 main themes. In this section, firstly 16 objects will be analyzed in detail within the scope of graphical and statistical analysis. Then, the joker object will be analyzed comprehensively and the innovative solutions and unique applications proposed by the participants will be highlighted.

Surface Covering Material

1. Wood Surface

Among the different floor textures, the wooden floor object was the least preferred object by the users. When the cluster analysis of the wooden floor element is analysed, it shows that this object is concentrated around the northern pavement of Fevzipaşa Boulevard and Basmane Metro exit.



Figure 122: Case Study II, Pixel Based Cluster Analysis for Wood Surface Object

2. Concrete Surface

Hard floors in urban areas provide safe and comfortable movement of people and vehicles. It also contributes to the aesthetic appearance of urban areas. The hard floor object in the floor coverings class represents hard surface textures such as concrete, cement or stone.



Figure 123: Case Study II, Pixel Based Cluster Analysis for Concrete Surface Object

This object ranks 3rd among the least used elements. The hard surface object is scattered on the map. However, users generally positioned this object in the areas where roads are located. In addition to roads, the hard surface object can also be used in other public spaces such as parks, gardens and squares. The correct use of this object can help to improve the quality of life in urban areas.

3. Soft Surface

Preferred by 9 out of 21 users, Soft Floor is a type of floor that allows people and animals to move comfortably and safely. Soft floors are more impact absorbent than hard floors and therefore reduce the risk of injuries. When we look at the distribution of soft ground, we observe that it is concentrated on the pavement extending from Fevzipaşa Boulevard to 9 September Square. In addition, users also preferred soft ground on the pavement in front of Basmane Station and in the urban space.



Figure 124: Case Study II, Pixel Based Cluster Analysis for Soft Surface Object

4. Colored Surface

The floor paint object was preferred by 13 of the 21 users. In the qualitative interviews, the users stated that the purpose of using the floor paint object was to make the floor fun, to guide the circulation and to strengthen the perception of direction. When we look at the distribution of the floor paint, although it seems to be concentrated on the pavements around the buildings and the basmane metro exit, it is scattered throughout the area.



Figure 125: Case Study II, Pixel Based Cluster Analysis for Colored Surface Object

5. Bicycle Road

Cycle paths allow people to travel faster, healthier and more environmentally friendly ways of travelling around the city. For İzmir, cycle paths are one of the important elements that make it a more attractive place for both locals and tourists. It is a great way to explore the historical and cultural places of İzmir. There is no bicycle path in Basmane Square. This deficiency was observed by 13 out of 21 users. When we look at the distribution of bicycle paths, bicycle path objects were used on all pavement walls in the area. In addition, some joker objects were used with the request to

reorganise the pedestrian and vehicle circulation in order to be able to construct a bicycle path.



Figure 126: Case Study II, Pixel Based Cluster Analysis for Bicycle Road Object

6. Raised Floor



Figure 127: Case Study II, Pixel Based Cluster Analysis for Raised Floor Object

Although the use of raised floors is considered an effective way to improve the safety, accessibility, aesthetic appearance and sustainability of urban areas, it has been

identified by users as a barrier to circulation. The difference in elevation makes it difficult for people with disabilities or people who use assistive devices while walking. Taking this idea from the qualitative interviews as a reference, when the distribution of the raised floor is analysed, it is seen that none of the 21 users used this object.

7. Innovative Paving Stone

In addition to existing designs, furniture and materials that offer innovative solutions in urban areas are also presented to users. One of these objects is an innovative paving stone with light beams that will appear faintly during the day but vividly at night and can create a sense of direction. By enabling users to imagine this object, it is aimed to make wayfinding in urban areas easier and more enjoyable.



Figure 128: Case Study II, Pixel Based Cluster Analysis for Innovative Paving Stone Object

The representative object reflecting this aim was preferred by 13 out of 21 users. When we look at the distribution of the innovative paving stone on the map, it is seen that it is mostly concentrated around Basmane Station for orientation to Basmane Station and Fuar.

Guiding Materials

8. Crosswalk

Basmane Square is an area where both vehicle and pedestrian traffic is very busy during the day. However, there is no pedestrian crossing in the area. This situation puts pedestrian safety at risk. The users preferred to use the pedestrian crossing object especially at junctions and turning areas where traffic is intense. 15 out of 21 users used the pedestrian crossing object, and there were also users who wanted it to be closed to traffic as a joker object. In this direction, it was clearly observed that pedestrians were requested to be prioritised.

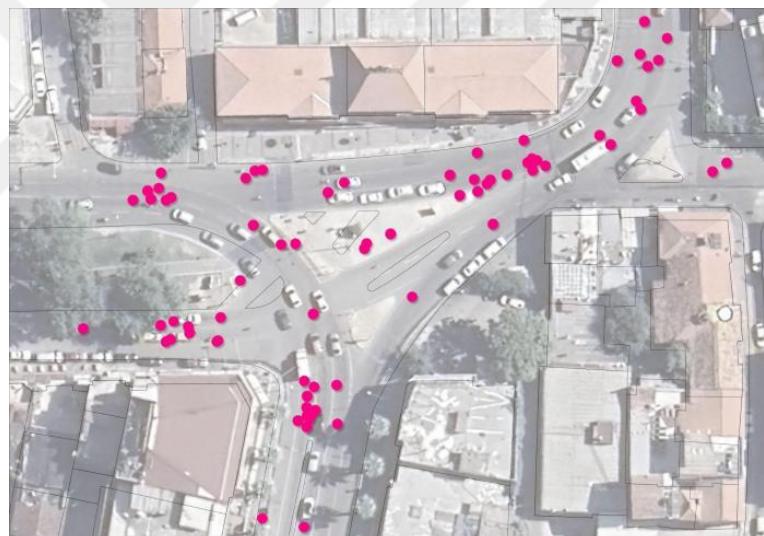


Figure 129: Case Study II, Pixel Based Cluster Analysis for Crosswalk Object

9. Ramp

Ramps in urban areas are very important to enable people with disabilities to move around the city independently and safely. Ramps are not only useful for people with disabilities, but for everyone. Pregnant women, the elderly and people without disabilities can also move more easily and safely using ramps.



Figure 130: Case Study II, Pixel Based Cluster Analysis for Ramp Object

However, ramps are not an ideal solution in all cases. For example, it is not possible to put ramps at every doorway. In addition, ramps do not always enable individuals to move independently and safely. In the study conducted in this direction, 15 out of 21 users wanted to use ramps. However, during the qualitative interviews and the use of joker objects, it was requested to design a flat public space instead of using a ramp. When we look at the areas where the ramp object is used, it is generally preferred to be placed in front of the pavement in places corresponding to building entrances.

10. Yellow QR

Guideways are an important accessibility element that enables visually impaired people to move independently and safely in public spaces. In this direction, guideways have been selected as another public element in order to add an innovative approach to the designs to be made in the public space. Here, it is planned to place a QR system on some parts of the classical guideway used for the visually impaired. The purpose of the "Yellow QR" object developed for the visually impaired is to help the visually impaired better understand their environment and move more freely by further strengthening the function of the guideways. The wand used by the visually impaired to perceive the guideway will detect the QR and provide an audio introduction. If we take this example for Basmane square, there will be an audio guidance such as "300 meters ahead is the

entrance to Basmane Station". This object was preferred by 19 out of 21 people and was the most preferred object. When we look at the distribution of the object usage on the map, we see that they are positioned approximately every 100 metres on the pavements.



Figure 131: Case Study II, Pixel Based Cluster Analysis for Yellow QR Object

11.Rotating Arrow



Figure 132: Case Study II, Pixel Based Cluster Analysis for Rotating Arrow Object

Basmane Square is one of the busiest squares of İzmir. In the square, where both vehicle and pedestrian traffic is intense, a chaotic circulation is experienced during the day as the circulation is not clearly defined. This situation increases the risk of accidents in the square and threatens pedestrian safety. Against this problem, directional arrows for both vehicles and pedestrians that can be created in 2D with ground paint are proposed. Directional arrows will facilitate access to important points in the square and help to organise traffic. Directional arrows were preferred by 11 out of 21 people. This number shows that there is a potential in the use of directional arrows. Directional arrows are positioned on the road, especially to organise vehicle traffic.

12. Pedestrian Priority Road and Warning Sign



Figure 133: Case Study II, Pixel Based Cluster Analysis for Pedestrian Priority Road and Warning Sign Object

It has been observed that the pedestrian priority road application, which was implemented in Turkey in 2022, has positive effects on increasing pedestrian safety and regulating traffic flow. Pedestrian Priority Road and Warning Signs object was prepared as an urban element to regulate traffic and pedestrian flow in Basmane Square, one of the busiest squares of İzmir, and to make it safer. 13 out of 21 users preferred it. When

we look at the distribution of usage on the map, it is concentrated at the point where the Basmane metro exit is located.

Urban Furniture and Landscape Elements

13. Bench / Seating Furniture

Basmane Square is one of the busiest squares in İzmir, used intensively by both local and foreign visitors. Although the circulation in the square is fast, there are some urban gaps. There are no seating units in these areas.



Figure 134: Case Study II, Pixel Based Cluster Analysis for Bench/ Seating Furniture Object

According to researches, it has been observed that people need a place where they can rest and breathe even when they are on the move. For this reason, it was deemed appropriate to propose a bench object as a seating unit in Basmane Square. Of the 21 people who participated in the research, 14 preferred to use the bench object. It has been observed that the bench object is especially concentrated in the refuge area where the wooded area is located and in the corner where the urban space is located. This creates a potential for the use of the bench object.

14. Recline Unit

12 of the 21 participants preferred to use the leaning unit object. The areas where the leaning unit is used are located around the basmane Station and basmane metro exit. It is also positioned in front of the facades that can be considered as squares in the area. The factor affecting the preferences of the participants is to create an area where people can rest when they get tired on their way to public transport routes.



Figure 135: Case Study II, Pixel Based Cluster Analysis for Recline Unit Object

15. Tree

17 out of 21 participants used the tree object. This makes it the 2nd most used object. When we look at the places where the tree object is positioned on the canvas, we see that it is mostly used on the Basmane metro exit road and in the separate refuge in the middle of the road, and the third object is used for the public space created by creating a pocket in front of the building facades in the lower right part of the canvas. Some participants also used the tree object on the roofs of buildings. They added that there could be green roofs for this use.



Figure 136: Case Study II, Pixel Based Cluster Analysis for Tree Object

16. Flowerpot

The use of flowerpot in public spaces is an effective way to increase the amount of green space and make cities more liveable. Flowerpot can add colour, texture, borders or movement to public spaces. They also provide fresh air and oxygen, help reduce noise pollution and can help reduce urban heat islands. In this direction, 12 out of 21 users preferred the proposed flowerpot object.



Figure 137: Case Study II, Pixel Based Cluster Analysis for Flower Pot Object

When we look at the distribution map of flowerpots, we see that they are concentrated in areas with wide pavements. There are also opinions supporting this data in qualitative interviews. Although the flower pot is seen as useful urban furniture, it is not desired to be used in narrow areas due to the height difference it creates and the narrowing of the pavement.

17. Joker Object Data

In the participatory urban design study in Basmane Square, a total of 24 different joker objects were defined by 16 participants. Looking at the location preferences on the canvas, kiosks were generally requested for the urban space in front of Basmane Station,

Basmane Metro Exit and building facades. It was stated that these kiosks should be for promotional purposes or with a food and beverage concept. Joker objects positioned on the roofs were suggested for green roof applications. Located on the road were suggested for closing the road to pedestrians, reorganising the vehicle and pedestrian roads and rebuilding the lighting. Joker objects located on the pavement include arrangements such as level ground, no front overhangs on building facades, ramps in front of all pavements, widening of pavements or leveling of tree bases.



Figure 138: Case Study II, Pixel Based Cluster Analysis for Joker Object

The most frequently used joker object was kiosk, which was preferred 7 times. This is followed by the digital help panel and road divider objects, which are preferred 5 times each. Other frequently used joker objects include building facade arrangement, wheelchair charging station and level arrangement of tree bases, which were used 4 times. Objects such as disabled toilet, no parking in front of ramps and audible traffic lights were used 3 times each.

Among the less preferred objects, there are objects such as undergrouding the road, lighting and closure to traffic. The least used joker objects are bicycle parking, public transport fixed line, shaded area, roof gardens, cat house, taxed road, bookstore and guidance, which are preferred 1 time.

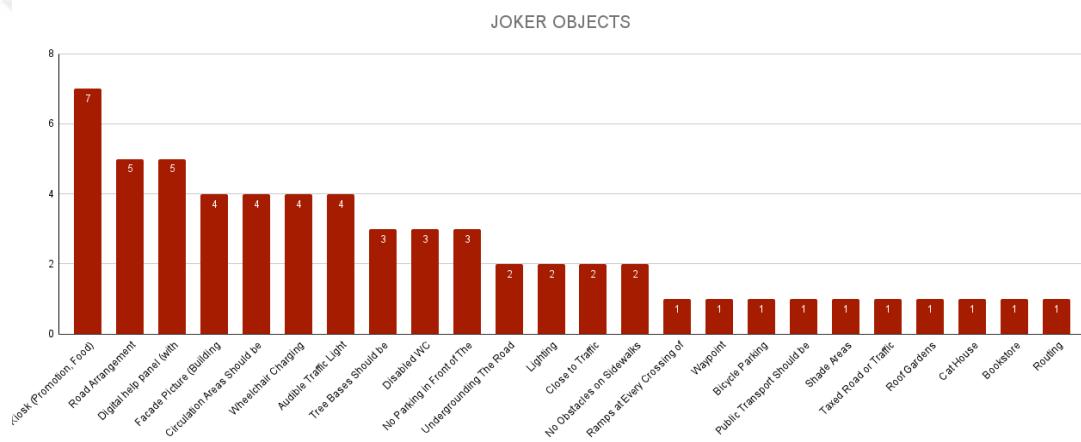


Figure 139: Case Study II, Distribution of Joker Object

When we categorise these joker objects, objects that aim to facilitate access for pedestrians and people with disabilities stand out. Objects such as kiosks and digital help panels have been proposed to provide information and guidance. There are also suggestions to improve traffic regulation and safety, such as audible traffic lights and road divider objects. Overall, participants suggested a variety of innovative and creative solutions to increase accessibility, improve aesthetics and functionality, and create a user-friendly space in Basmane Square. These suggestions reflect the participants' awareness of the current needs and problems of the square and their solution-oriented approach.

3.2.4. Design Results

In line with the statistical, graphical and sensory analyses, a synthesis study was carried out within the scope of the participatory urban design study in Basmane Square. All graphically overlapped objects are shown in Figure 140. This synthesis is based on the overlay of the pixel-based cluster analyses and the survey questions answered by the participants. The canvas visualises the various suggestions and design ideas of the participants. The canvas is filled with different elements and spaces designed to fulfil the needs and desires of the participants.

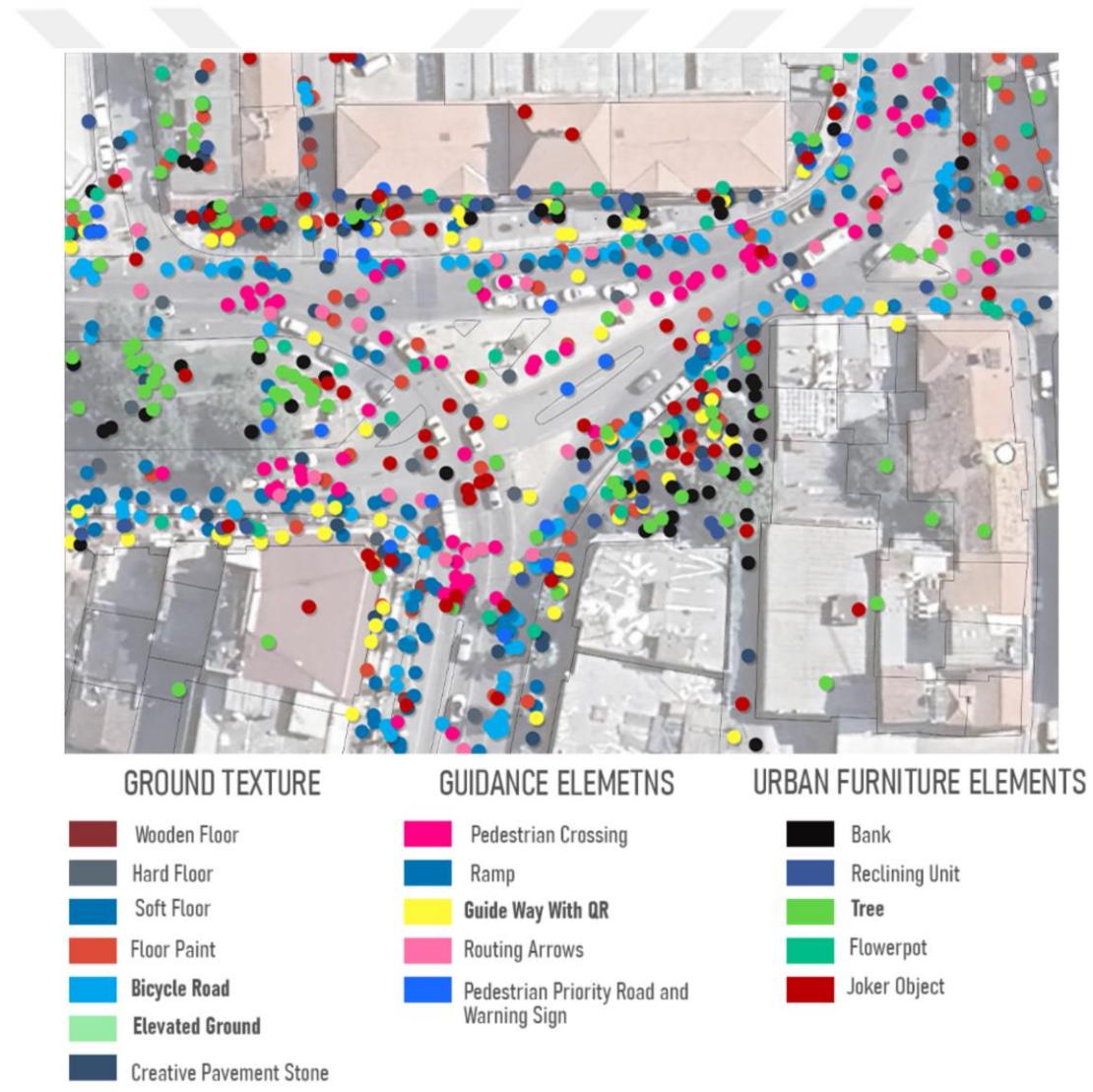


Figure 140: Case Study II, All Pixel Based Cluster Analysis

As a result of the statistical analyses, the most preferred objects include elements such as guideway, bicycle path and tree. It was observed that joker objects were used by the participants to offer creative and innovative solutions. Participants suggested various innovative and creative solutions to increase accessibility improve aesthetics and functionality and create a user-friendly space in Basmane Square.

A manifesto was prepared for the Pedestrian Association in line with the data obtained and the feedback of the participants. This manifesto aims to make the urban design of Basmane Square more inclusive, accessible and sustainable.

The manifesto aims to create a square where pedestrians and people with disabilities can move more easily, social interactions will increase and aesthetic values will be prioritised. The manifesto also serves as a guide for future urban design projects.

In line with the data obtained in the manifesto, it was decided to be shaped on 5 basic headings;

- **Accessibility:** All pedestrian roads, ramps and transition points in the square will be made suitable for disabled individuals. An area where visually impaired people can easily navigate will be created with guideways and audio guidance systems.
- **Security:** Lighting elements will be placed in the square to ensure day and night security. Traffic arrangements will be made for the safety of pedestrians and pedestrian crossings will be created.
- **Social Interaction:** The square will be equipped with cafes, seating areas, cultural activity areas such as music and painting, where social interactions will be increased. These areas will be designed as places where people can come together and socialize.
- **Green Areas:** Elements such as trees, planters and green roofs that provide natural greenery will be used in the square. This will increase the aesthetic value of the environment and provide a spacious and natural environment for users.
- **Aesthetics and Functionality:** Aesthetic and environmentally friendly materials such as floor paint and permeable surfaces will be used. These materials will both add aesthetic value and provide environmentally friendly solutions.

This manifesto, which sets out the basic principles of the urban design works to be carried out in Basmane Square, aims to make the area more livable, accessible and

user-friendly. This manifesto, created in line with the feedback and needs of the participants, will set an example for future urban design projects.

Basmancı Square Participatory Urban Design Manifesto

Basmancı Square has an important position as one of the historical and cultural centers of Izmir. However, the square is currently not pedestrian friendly due to the chaos of motorized vehicle traffic and difficulties in pedestrian circulation. This manifesto includes recommendations to make Basmancı Square a more accessible, aesthetic and functional public space.

1 PEDESTRIAN PRIORITY DESIGN	2 ACCESSIBILITY	3 GREEN AREAS AND LANDSCAPING	4 URBAN FURNITURE AND RECREATION AREA	5 FLOOR COVERINGS AND VISUAL ARRANGEMENTS	6 PARTICIPATORY AND SUSTAINABLE DESIGN
Pedestrian safety should be ensured by creating pedestrian crossings and sidewalks should be widened. Ramps should be placed in front of the sidewalks or level surfaces should be provided. When the latter is preferred, important directional and organizational objects should be developed and incorporated into design practices. For the visually impaired, QR-coded guidance paths, digital help panels and directional arrows should facilitate circulation in the square.	Implement practices for the use of persons with disabilities, such as wheelchair charging stations, disabled restrooms and audible traffic lights. Roads should be closed to pedestrians and/or vehicular traffic should be reorganized to improve access for people with disabilities. The roads around the square should be restructured to regulate pedestrian and vehicle traffic. Traffic should be made safe and smooth with pedestrian priority road applications.	Green areas should be increased through afforestation works in the square, and building roofs should be equipped with green roof applications. Vegetative arrangements should be made by using dividing and well-designed urban furniture.	Benches and reclining units should be placed in public spaces to meet the resting needs of users. Kiosks with promotional or food and beverage concepts should be placed at various points in the square. In addition, urban furniture such as bicycle parking spaces and shaded areas should be added to meet the needs of users.	The floors should be improved both aesthetically and functionally with floor paints and innovative paving stones. These arrangements will help make the area more attractive and useful. Soft surfaces should be used especially on pedestrian paths, while hard surfaces should be preferred on main roads.	Throughout the entire design process, participants should be consulted and solutions should be developed in accordance with their needs. This will ensure that the space is more embraced by users. All arrangements should be realized in line with the principles of sustainability.

Figure 141: Basmancı Square Participatory Urban Design Manifesto (Appendix D)

The reorganisation of Basmancı Square in line with this manifesto aims to make the square a more accessible, aesthetic and functional public space while preserving Izmir's historical and cultural heritage. This process sets an example for more effective and sustainable solutions with the active participation of the participants.

3.3. Results and Discussion

As part of this study, two pre-tests were conducted in two different public spaces in Izmir, Karşıyaka/Yalı Neighborhood and Konak/Basmancı Square. These case studies aimed to evaluate the effectiveness of participatory urban design practices and examine the tools used to facilitate community engagement. This section discusses how the two case studies were conducted, the similarities and differences between them, and the commonalities and divergences in the findings.

First of all, one of the main focal points of the thesis is to examine the effects of the variations of the participatory design kit on the study results and participants. In this context, the research and evaluations focused on participants' interactions with the design kit. Due to the fact that the study was a pre-test and limited to 21 samples, as well as time constraints, the roles of the participants in the design process were not examined in detail. Therefore, the final products should be evaluated within this framework.

For the two pre-test studies, the Citizen Design Science (CDS) approach was chosen among the co-design approaches. The main reason for choosing this approach is that it makes the role of participants more active. CDS integrates citizens' observations, experiences and local knowledge into urban planning, design and management processes. It combines active co-design techniques and crowdsourcing to ensure direct public participation in the urban design process. CDS has three main components: Citizen Science, Citizen Design and Design Science. These components make it possible for non-expert citizens to actively contribute to data collection, analysis and design solutions. This approach not only increases citizen engagement, but also ensures that urban design is aligned with the needs and preferences of the community. It also encourages innovative design ideas and fosters a sense of ownership in citizens, thus promoting the creation of more sustainable and inclusive urban environments. These features of the Citizen Design Science approach were chosen as they are in line with the aim of this thesis.

Within the scope of the thesis, "D.I.Y. Unlimited Urbanism" is taken as an example as a Co-Design tool. The selected D.I.Y. application enables participants to take an active role in urban design processes. "Unlimited Cities D.I.Y." and analog modification methods make it possible for citizens to express their own design ideas and share feedback, which encourages the participation of particularly vulnerable groups. Participants are actively involved in the process, not only providing information but also offering creative solutions for the redesign of urban spaces. In this way, community participation is increased, making urban design processes more equitable and inclusive. The D.I.Y. exercise collects participants' experiences and suggestions, providing both qualitative and quantitative data. This allows urban planning to be shaped according to the real needs and preferences of the community. Thus, participants are placed at the center of the process, rather than being mere observers, and a more democratic urban design process is created. Due to the inclusiveness of the study, the methods of analysis

and the active role of the participant, it also serves as an example for the two case studies to be conducted in the context of this thesis. However, analog rather than digital methods were preferred in this study. The reason for this is that disabled citizens can also actively participate in this study and to create a kit that can be produced more economically and quickly. As a result, the same toolkit approach was adopted for future studies.

When the selected spaces were analyzed, it was seen that both spaces are public spaces that have the potential to be transformed and have been identified by users as problematic in various issues. Both of these spaces are located in İzmir. The first space is a wide street section in Yalı Neighborhood of Karşıyaka district, which, despite being reorganized, fails to create a sense of belonging. The second space is Konak Basmane Square. This square is another wide street cross-section that is historic and important for İzmir, but has a chaotic transportation system for pedestrians and vehicles. The urban structures of the two study areas are different, but both stand out as problematic public spaces that need to be addressed through a participatory design approach. One reason for choosing different spaces was to observe how the participatory design kit or the objects used would change for different spaces. Factors influencing this change include the profiles of the participants and the urban fabric of the spaces. Secondly, different concept titles are required for different spaces, leading to changes in the content of the participatory design kits. Furthermore, in order to carry out this kind of work, it is necessary to find spaces where the community and local authorities will allow these processes to take place.

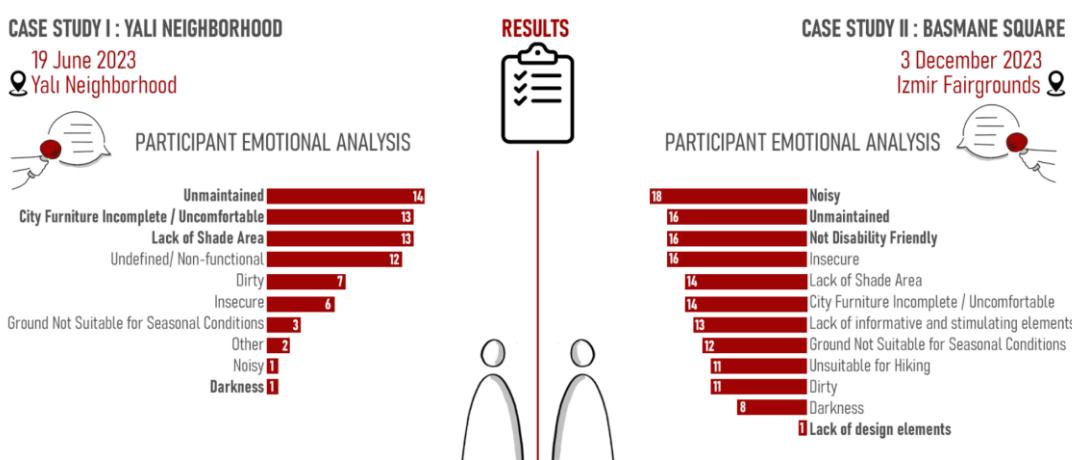


Figure 142: Two Pre-Test Studies; Participant Emotional Ananlysis

As a result of the surveys conducted during the workshop, the emotional analysis and opinions of the participants about the areas studied reaffirm that the selected areas are problematic and require solutions. In both studies, different spaces were identified as having their own problems and these problems were expressed by the participants at various intervals. As can be seen in Figure 142, different problems were expressed with different intensities. In this context, the participatory design studies were developed to address these problems mentioned by the participants. The studies aimed to produce solutions appropriate to the needs of the area based on the views of the participants. The consent and cooperation of the community and/or local authorities is critical to the success of the participatory design process. This cooperation increases participation and makes urban regeneration projects more inclusive and sustainable.

CASE STUDY I : YALI NEIGHBORHOOD

19 June 2023

Yali Neighborhood



CASE STUDY II : BASMANE SQUARE

3 December 2023

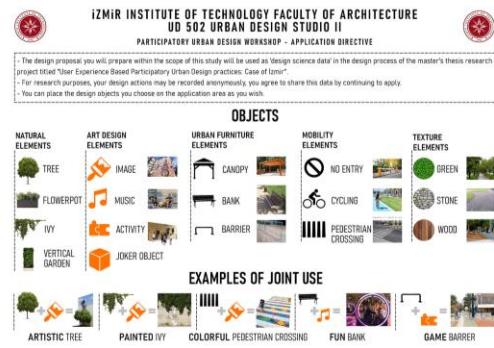
Izmir Fairgrounds



Figure 143: Two Pre-Test Studies; Photos from the Workshop Day

The Karşıyaka/Yalı Neighborhood study was conducted on June 19, 2023 and fieldwork was carried out directly in the field. 2D canvas models and 2D objects were used in this study. The rapid production of the toolkit made this method time efficient for pre-testing. However, it was suggested to add more attractive elements to keep participants engaged while waiting. The Konak/Basmane Square study was carried out on December 3, 2023, and more time was needed to introduce the space as the application was carried out in the fairground. Both studies were conducted as an empirical study with 21 random passersby.

CASE STUDY I : YALI NEIGHBORHOOD



CASE STUDY II : BASMANE SQUARE



Figure 144: Two Pre-Test Studies; Applications Guideline

As mentioned above, two different themes were adopted for two different studies and two different toolkit interfaces were created accordingly. For the first study (Case Study 1), the theme was “Art”. It was thought that belonging in public space could be achieved through art and a design studio was created in this context. In this direction, it was examined how the theme of art could be transformed into an urban object or an urban idea in public space. Art was considered as elements such as painting, activity and music in urban spaces. A total of 5 titles, 16 objects and a wildcard object were identified under the art theme. The second study (Case Study 2) was shaped around the theme of “Accessibility”. For an accessible and disabled-friendly concept, innovative objects and signs that facilitate transportation and access in the city were considered and 16 objects and 1 wildcard object were identified under 3 headings. These themes and the objects under them are explained in detail in the implementation guide (Figure 144).

Several similarities and differences were observed between the tools used in the two pre-test studies. Both studies used Participatory Design Kits, which provided participants with a variety of tools to express their ideas and preferences. In addition, both studies used questionnaires, workshops and interviews to collect data, enabling participants to better express their views. Another prominent commonality is that both studies were conducted with random participants passing through the neighborhood. However, the type of instruments and methods of implementation differed. As can be seen in Figure 145, the canvas for Case Study 1 is a 2D surface consisting of two parts and presenting a perspective image. Similarly, the objects were also designed in 2D.

The data obtained from the first study revealed that the 2D canvas reduced spatial perception. Participants had difficulty perceiving the space despite the fact that the study was conducted directly on site in Yali Neighborhood.

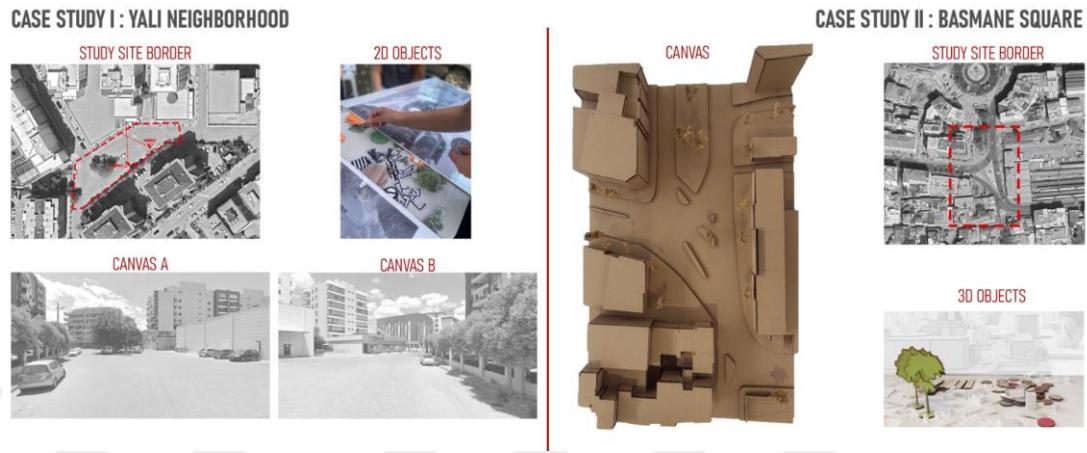


Figure 145: Two Pre-Test Studies; Canvas And Objects

Accordingly, the Canvas And objects prepared for Case Study 2 were designed in 3D. The aim was to observe how the spatial perception would change and to analyze how the participants were affected while designing. Accordingly, in the second study, it was observed that a participant with 70% visual impairment easily perceived the model with his hands. How the studies using 3D and 2D canvases affected the designs made by the participants will be explained in the following paragraphs.

Considering the production time of the canvases prepared for the two studies, the production time of the 2D canvas was shorter and the cost was lower. However, the production time of the 3D Canvas And 3D objects for Case Study 2 took about three times longer than the 2D canvas, which increased the canvas costs. This suggests that while 2D canvases can be quickly and easily implemented for preliminary test studies, 3D canvases may be more appropriate for more extensive and budgeted projects.

Since the Basmane Study took place in the fairground, it took longer to introduce the space to the participants and explain the model than Case Study 1. As can be seen in Figure 146, the time to complete the design study for Case Study 1 was 7 minutes excluding filling out the questionnaire, while in Case Study 2 this time increased to approximately 10 minutes.

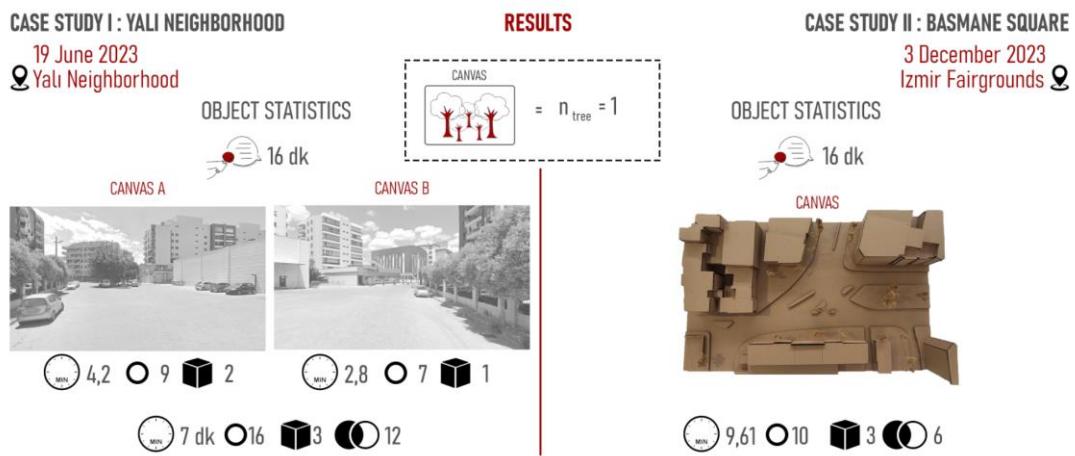


Figure 146: Two Pre-Test Studies; General Information about the Workshops

In Case Study 1, the completion time was 7 minutes and the average participant used 16 objects. Participants used an average of 3 wildcard objects per canvas. In total, there were 12 objects used together in Case Study 1. In Case Study 2, the average time spent was 10 minutes and a participant used about 10 objects for one work. Participants preferred to use an average of 3 wildcard objects for a study. The number of objects used together in this study was 6 in total. The duration of the survey for both studies was 16 minutes, with the difference that in Case Study 1, the surveys were conducted analogically, i.e. in the form of a physical copy. In Case Study 2, in order to ensure the active participation of disabled citizens, the surveys were applied digitally and conducted with the help of a facilitator.

One of the main differences between the two studies concerns the objects used together. In Case Study 1, the objects defined by the art theme offered a suggestion for joint use and this suggestion was indicated on the objects distributed to the participants. The aim of this approach was to prevent the application of the art theme in public space from remaining an abstract concept. Accordingly, the art theme was reduced to three main topics: painting, music and activity. Participants were told that these three objects can form a creative and artistic object when used side by side with objects such as benches, trees or vines. Accordingly, the first pre-test study received a total of 12 requests to use objects together. In the second Case Study, it was not mentioned that there was an object that could be used together; however, in the second pre-test study, a total of 6 objects were used together and a new productive urban work was requested by the participants. According to this data, it was observed that in both studies the

participants were willing to use the objects together. In the first study, the participants imagined urban furniture that did not exist, following the guideline of using objects together. The art theme and 2D production enabled the participants to think more creatively and uniquely. In the second study, due to the clarity of the 3D objects, there were only 6 requests from the participants to use objects together. The reason for this low number may be the lack of examples of co-use in the manual. It should also be taken into consideration that due to the clarity of 3D objects, participants preferred to design by thinking functionally and did not want to imagine a new object.



Figure 147: Two Pre-Test Studies; Object Statistics

When object statistics were compared, the objects used were thematically differentiated and specific sub-headings were created for each study. The five main topics identified in Case Study 1 are: Natural Elements, Art Design Elements, Urban Furniture Elements, Mobility Elements and Texture Elements. The most used object category under these headings was Natural Elements. Looking at the objects individually, the most used object was the bank. On the other hand, a total of three sub-headings were identified in Case Study 2: Guidance Objects, Urban Furniture Elements and Ground Elements. In this study, the most used sub-heading was Guidance Objects and the most used object was Yellow QR objects. The themes, selection and frequency of use of these objects varied according to the needs of each space and the perception of the participants. In Case Study 1, natural elements and artistic design elements were more preferred, indicating that participants thought that natural and aesthetic elements were more important in this space. On the other hand, the preference for wayfinding

objects and place elements in Case Study 2 reflects the participants' perception that this space requires more organization in terms of accessibility and wayfinding. This analysis suggests that the selection and use of objects are shaped by the needs of the space and how participants perceive those needs.

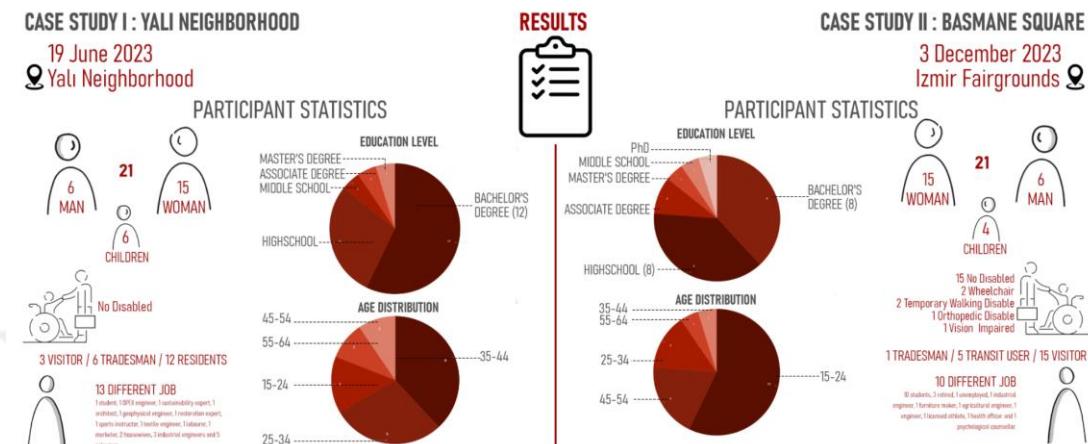


Figure 148: Two Pre-Test Studies; Demographic Data

When we examine the demographic information of the two studies, we see that both are empirical studies conducted with 21 participants. In Case Study 1, there were 15 women and 6 men; there were no disabled people among the participants. The age distribution of the participants is predominantly in the 35-44 age range and the most common education level is bachelor's degree. Participants came from 13 different occupational groups. In Case Study 2, there were a total of 21 participants, 6 men and 15 women. In this study, the education level of the participants was high school and bachelor's degree. The age distribution of the participants was predominantly in the 15-24 age range and there were participants from 10 different occupational groups. In addition, 6 disabled individuals were among the participants in this study. It should be noted that this study was a pre-test study and the results may not be fully representative of the general population due to the limited demographic diversity. These demographic differences show that participants were diverse in terms of age, gender, education and occupation, and how this diversity contributed to shaping the tools and methods used in the studies according to the needs and expectations of the participants.

The profile of the participants had an impact on their design during participation. In the first study (Case Study 1), the majority of the participants were people working in commercial enterprises in the vicinity of the site. This created an awareness among the other participants who were waiting in line to participate in the study; they recognized the need for seating for those working in the neighborhood and reflected this in their designs. For example, a participant in the queue used the bench object for Yali Neighborhood, saying that “those working in this area need shade to sit” and incorporated this need into the design. In the second study (Case Study 2), the first participants were disabled citizens. This had an impact on the other participants who were waiting to participate; they observed the need for a guideway for disabled people and took this into consideration in their own designs. As a result, each participant expressed the importance of the guideway and actively used it in their designs. As a result of these two examples, the object statistics also confirm this. While the most preferred object in Case Study 1 was the bank, the most preferred object in Case Study 2 was the yellow QR. The profile and observations of the participants had a significant impact on the objects they preferred during the design process, leading to different priorities in their design proposals.

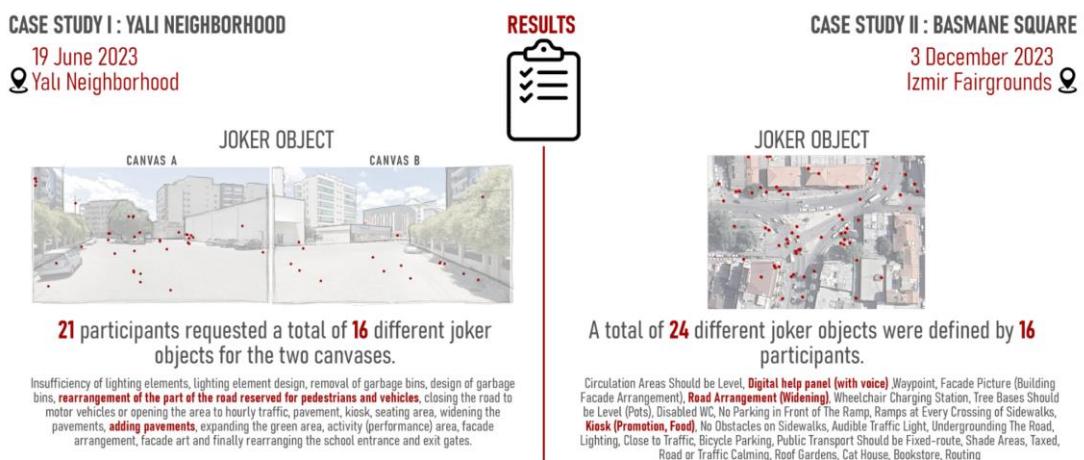


Figure 149: Two Pre-Test Studies; Joker Object Statistics

The function of the wildcard object defined for the two participatory design kits is the same: To enable the participant to articulate an urban need that was overlooked or unforeseen during the preparation of the kit. For this purpose, participants can use the

wildcard object to express any urban need or request they wish. These requests are noted down for each participant. In the first study (Case Study 1), 21 participants used a total of 16 different wild cards. In the second study (Case Study 2), 16 users mentioned 24 different wildcard objects. These data show that the participants have different needs and expectations in urban areas and express these needs by using the wildcard object.

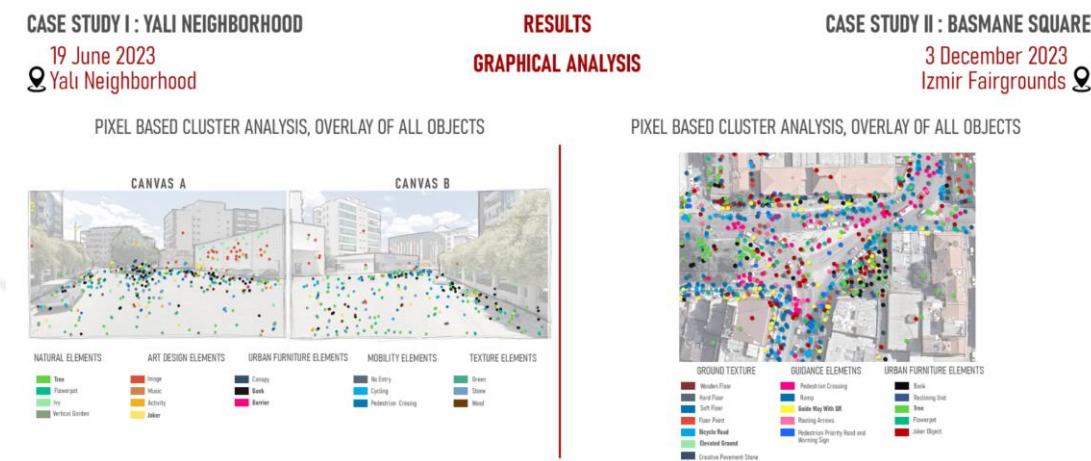


Figure 150: Two Pre-Test Studies; Pixel-Based Cluster Synthesis

As a result of the two studies, pixel-based point analysis was used instead of traditional spatial analysis. This approach has both advantages and disadvantages. As a disadvantage, the design data obtained from pixel-based analysis does not provide precise coordinate data in terms of location. This can make it difficult to determine the precise locations of the design data from the participants. However, as an advantage of this method, the fact that the data does not draw clear boundaries in terms of location can increase creativity in the design process and create more flexible spaces. This flexibility allows participants and designers to explore different possibilities in urban spaces and produce more original solutions.

In a general evaluation, the comparison of the two studies is as shown in Figure 151. In comparing the two case studies, several key differences emerge, particularly concerning the use of 2D versus 3D elements. In Case Study 1, the use of 2D elements was found to strain the user's spatial perception, resulting in a lower resolution of spatial understanding. Despite this limitation, the 2D toolkit's production was notably quicker, making it beneficial for rapid prototyping and preliminary testing phases.

CASE STUDY I : YALI NEIGHBORHOOD	RESULTS	CASE STUDY II : BASMANE SQUARE
<p>19 June 2023</p> <ul style="list-style-type: none"> Using 2D elements strains the user's perception. Spatial perception resolution is low. 3D is potentially better. Ease of time for prosthetic studies, toolkit is produced fast Point spatial data cannot be detected, only graphical data can be detected. There is a pixel reading. Participants are more creative, they use their imagination to imagine 2D objects. Spatial data weakness should be given as a result of the thesis It does not provide design data but leaves the opportunity for creativity for the designer after analysis. 	<p> 3D possible spatial perception of the application model and objects</p> <p>Toolkit production is slower than 2D work.</p> <p>Since the objects representing the warning signs are visual, visually impaired citizens cannot distinguish these objects and place them in the right place</p> <p>Since the application does not take place in the site area, it takes longer to describe the space and the duration of the workshop is longer.</p> <p>It limits the creativity of the participants because they think functionally instead of using creativity for a 3D object.</p>	<p>3 December 2023</p>

Figure 151: Two Pre-Test Studies; Comparison of Results

However, a significant drawback was the study's inability to capture precise spatial data, as the pixel-based analysis only provided graphical data. This limitation was somewhat offset by the participants' heightened creativity, as they used their imagination to interpret and visualize the 2D objects, suggesting that such a format could encourage creative thinking even without providing detailed design data.

CASE STUDY I : YALI NEIGHBORHOOD	RESULTS	CASE STUDY II : BASMANE SQUARE
<p> 19 June 2023</p> <p> Yali Neighborhood</p> <p> 2D Model and 2D Objects</p> <p> 21 Participant  More Fun</p> <p> 7 min  16 min = 23 min</p> <p> 16 Objects</p> <p> 3 Joker Objects</p> <p> 12 Object Used Together</p>	<p> DISCUSSION</p>	<p> 3 December 2023</p> <p> Izmir Fairgrounds</p> <p> 3D Model and 2D,3D Objects</p> <p> More Easy  21 Participant</p> <p> 30 min =  16 min  9,61 min</p> <p> 10 Objects</p> <p> 3 Joker Objects</p> <p> 6 Object Used Together</p>

Figure 152: Two Pre-Test Studies; Overall Comparison

In contrast, Case Study 2 utilized 3D elements, which enhanced the potential for spatial perception. However, the production of the 3D toolkit was slower, indicating a trade-off between detail and preparation time. Additionally, the study highlighted

accessibility issues, particularly for visually impaired participants who struggled to interact with visual warning sign objects. The off-site nature of this application also meant that more time was needed to describe the space, extending the overall workshop duration. Unlike the first study, the detailed 3D representations appeared to limit creativity, as participants tended to focus more on functional design aspects rather than imaginative use, possibly due to the realism of the 3D objects. Overall, while the 2D elements in Case Study 1 fostered creativity and were quicker to produce, they lacked in providing detailed spatial data. On the other hand, the 3D elements in Case Study 2 offered better spatial perception but at the cost of slower production and potentially limited creativity among participants. These findings underscore the importance of balancing detail and creative freedom in participatory design processes.

CASE STUDY I : YALI NEIGHBORHOOD
19 June 2023
♀ Yali Neighborhood

DESIGN RESULT

PLAYABLE ART STREET
IDENTITY, CULTURE, SUSTAINABILITY, INCLUSIVENESS, INTEGRATION, PLANNING, DESIGN, CONSTRUCTION, OPERATION, MAINTENANCE, MONITORING, EVALUATION, FEEDBACK, FEEDFORWARD

RESULTS

CASE STUDY II : BASMANE SQUARE
3 December 2023
Izmir Fairgrounds ♀

DESIGN RESULT

Basmane Square Participatory Urban Design Manifesto

Basmane Square has an important position as one of the historical and cultural centers of Izmir. However, the square is currently not pedestrian friendly due to the share of motorized vehicle traffic and difficulties in pedestrian circulation. This manifesto includes recommendations to make Basmane Square a more accessible, aesthetic and functional public space.

1 PEDESTRIAN PRIORITY DESIGN	2 ACCESSIBILITY	3 GREEN AREAS AND LANDSCAPE	4 URBAN FURNITURE AND RECREATION	5 FLOOR COVERINGS AND VISUAL AMBIENCE	6 PARTICIPATORY AND SUSTAINABLE DESIGN
Pedestrian safety should be ensured by prioritizing pedestrian crossings and sidewalks. Shelters should be provided for users. Benches should be placed in front of the entrance of the square. The entrance should be prioritized when the entrance is the most important directional and organizational objects should be developed to incorporate and design spaces for people with disabilities. The space should be impeded. Off-coded guidelines, symbols, and directional arrows should facilitate orientation in the square.	Implement practices for the needs of people with disabilities, such as wheelchair accessibility. Charging stations for electric vehicles should be provided. Restrooms and available public spaces should be closed to prevent misuse. The entrance should be prioritized to improve access for people with disabilities.	Green areas should be developed and redeveloped units should be created to accommodate spaces to meet the varying needs of users. Kiosks with green roofs and applications should be developed. Beverage concepts should be developed and implemented in the square. In addition, bicycle parking spaces and shaded areas should be developed to meet the needs of users.	Benches and reclining units should be developed and redeveloped units should be created to accommodate spaces to meet the varying needs of users. Kiosks with green roofs and applications should be developed. Beverage concepts should be developed and implemented in the square. In addition, bicycle parking spaces and shaded areas should be developed to meet the needs of users.	The floors around the entrance should be restructured to regulate pedestrian traffic. Traffic should be made safe and smooth with priority and applications.	Throughout the entire process, participants should be consulted and solutions should be developed in accordance with their needs. The space is more accessible and functional, especially on pedestrian paths, while hard surfaces should be preferred in areas.

Figure 153: Two Pre-Test Studies; End Products

The difference in the final products produced as a result of the two studies shows that such participatory design processes are not limited to achieving design solutions, but can also become a manifesto for civil society organizations or communities. This highlights the potential of the study and the far-reaching impact of the ideas generated by the participants. The diversity of the final products demonstrates the flexibility and capacity of participatory processes to produce diverse outputs, providing a platform for communities to express themselves and voice their demands for their own space.

CASE STUDY I : YALI NEIGHBORHOOD19 June 2023
Yali Neighborhood**RESULTS****USER EXPERIENCE****CASE STUDY II : BASMANE SQUARE**3 December 2023
Izmir Fairgrounds

Figure 154: Two Pre-Test Studies; Comparison of User Experience Results

Figure 154 shows the comparative user experiences for the 2 pre-test studies. For both studies, 4 user experience questions were used as criteria. The first two questions represent the enjoyment and ease of self-expression in the study. The other two questions were asked to evaluate the comprehensibility of the study by the participant and the ease of designing using the participatory Design kit. If we compare the two pre-test studies based on these 4 questions, Case Study 1, which was conducted in the Yalı neighborhood, was found more enjoyable by the participants compared to the other study. This may be due to the fact that the canvas prepared for the two-dimensional study obliged the participants to use their imagination. Another reason may be that the participants transferred their designs on the canvas in a short time compared to the Basmancı study. Although the objects prepared in the Basmancı study are 3-dimensional, the self-expression value is lower than 2-dimensional objects. The reason for this may be that while 3-dimensional objects push the participants to create a functional stone, 2-dimensional objects are first imagined by the participants and then they start to design. When we compare the scores for the comprehensibility of the Participant Design kit and the ease of designing, we observe that Case Study 2 is more easily seen by the participants. This may be due to the fact that the comprehensibility and spatial perception of 3D canvas is higher than 2D canvas. Secondly, 3D objects need to be positioned spatially and require less imagination compared to 2D objects and may have reduced the time to think about them. To summarize this situation briefly,

when these two pre-test studies were compared, the 2D study was found to be more fun, while the 3D study was found to be easier.

In both studies, the importance of involving participants in the urban design process was emphasized and data was collected from participants through workshops, surveys and interviews. Participatory Design Kits were used in both studies and various tools were used to allow participants to express their ideas and preferences. The common goal of these studies is to create more inclusive and sustainable urban spaces by taking into account the needs and expectations of space users. It should be noted that these comparisons and findings are pre-test studies conducted with 21 participants. The findings obtained in this direction are a pioneering study and leave an open door that can be studied for future studies.



CHAPTER 4

CONCLUSION

This thesis aims to increase the effectiveness of participatory urban design approaches and co-design tools by exploring in-depth the effectiveness of participatory urban design approaches and co-design tools to enable more active participation of community members in urban planning processes and increase the efficiency of these processes. The research includes two pre-test studies conducted in two different neighborhoods of İzmir and extensive literature reviews supporting these studies. These pre-test studies in Karşıyaka/Yalı Neighborhood and Konak/Basmane Square are creative examples of how two different urban areas with different needs can be effectively transformed.

Focusing on the question of how to involve the community in urban design processes, this study has demonstrated the different and creative ways in which participatory design approaches can involve space users in urban design processes. Pre-testing in two different neighborhoods of İzmir demonstrated that by incorporating citizens' ideas and feedback directly into the design process, it can be successful in creating more inclusive and user-centered urban spaces. In the workshops, the active participation of participants was ensured through questionnaires and interviews and valuable feedback from space users was collected at every stage of these processes. These approaches went beyond understanding the needs and expectations of communities, but also increased participants' commitment to the projects and their sense of ownership. As emphasized in the literature, participatory design strengthens the social fabric and increases individuals' sense of belonging to urban life.⁴

Examining the question of how different co-design tools affect the effectiveness of urban design processes, this study found that the tools used should vary according to the context and user profile. The 2D canvases used in Karşıyaka/Yalı Neighborhood made the spatial perception of the participants difficult, while the 3D model used in Konak/Basmane Square increased the spatial perception and participation effectiveness.

On the contrary, 2D canvases can be used more easily in pre-test studies as they are fast to produce, while 3D canvases and objects produced in Konak Basmane square study were costly and took a long time to produce. These findings suggest that the choice of co-design tools plays a critical role in the success of the process. In particular, 3D models helped participants visualize the environment better and provided more effective feedback. According to Manzini & Rizzo (2011), the tools used in participatory design processes, such as models, prototypes, and design games, greatly enhance the process.

When the effects of different toolkit techniques on user experiences were investigated, it was found that the 2D toolkit used in the Karşıyaka/Yalı Neighborhood study limited the spatial perception of the participants, while the 3D toolkit used in the Konak/Basmane Square study enabled the participants to better understand the environment. However, some disadvantages were also observed, such as the 3D toolkit limiting participants' creativity. This shows that toolkit techniques significantly affect user experiences and that appropriate techniques should be selected for each context. Zimmermann (2008) user experience-oriented design approaches place an emphasis on creating intuitive interfaces that inspire active participation from users and lead to better outcomes. The contributions and limitations of co-design tools and toolkit techniques to user experiences are examined in detail in this thesis.

Two pre-test studies were conducted in the thesis and the results were evaluated. There are similarities and differences in the applications in order to evaluate the user experience from different perspectives. In this direction, 4 basic situations were observed. In the Konak/Basmane Square application, 3D models and objects strengthened the spatial perception of the participants and enabled them to visualize the environment better. However, this method was slower than the 2D study and affected the overall speed of the process. Since the pre-test was conducted at the İzmir Fairgrounds, it took extra time to introduce Basmane Square and the information time was prolonged. Secondly, in the Konak/Basmane Square study, the visual warning signs created problems for visually impaired citizens. It is important to develop accessible solutions. Also, the lack of clear entrances in the 3D models made it difficult for the participants to place the objects. Thirdly, while the use of 3D models and toolkits provided clarity in both applications, concrete objects were seen to limit creativity. These limits were especially evident in the Konak/Basmane Square study and limited the creativity of the participants. Finally, the lack of elements for participants to linger

while waiting was identified in both applications. The lack of attractive elements to increase participation negatively affected the workshop process.

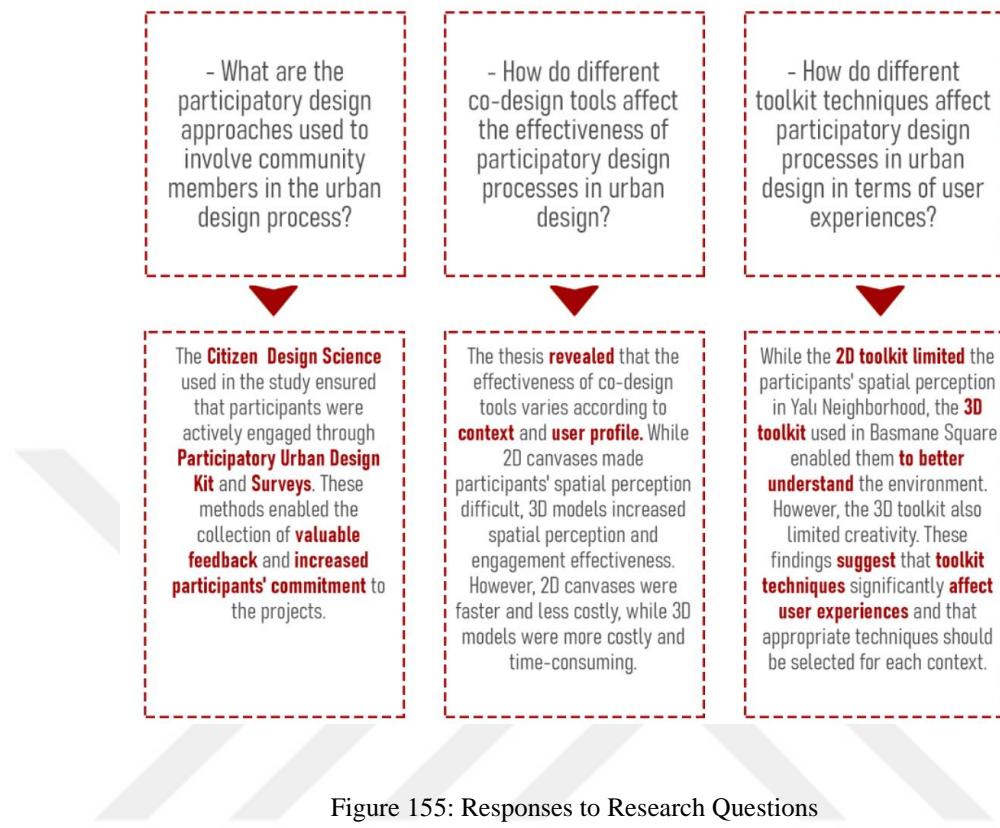


Figure 155: Responses to Research Questions

In conclusion, this thesis has shown how participatory urban design approaches and co-design tools can be effective in enabling more active participation of community members in urban planning processes and increasing the efficiency of these processes. The findings of this study offer valuable insights for future urban design projects and provide important recommendations for making participatory design processes more inclusive, sustainable and efficient.

Future research should examine various co-design tools to enhance participatory design processes. The role of next generation tools such as digital technologies and virtual reality should be explored. How 3D modeling and virtual screen studies affect spatial perception should be studied. The potential of co-design tools to become manifestos for civil society organizations or public/private institutions should be considered. Analog 2D studies can be used in pre-tests as they are fast to produce and practical. The advantages and disadvantages of these studies should be examined and used to select appropriate tools for projects. A large-scale kit library for analog 2D

studies can be created and this library can support the process by providing customizable tools for different projects. Work should be done on elements that increase the creativity of the participants. Workshops should include attractive elements, gamified activities or interactive elements. The impact of such elements on the participation process should be investigated. Participatory design kits can be developed in collaboration with private toy companies. Examine how different demographic groups can be more effectively included in participatory design processes. In particular, accessible solutions should be developed for visually impaired citizens. A more inclusive design process can be achieved by developing tools and methods that suit the diverse needs of participants.

Furthermore, the effects of different co-design tools and techniques on production speeds and process efficiency should be investigated. Studies can be conducted on the production speed of 2D and 3D toolkits and the effects of this speed on process efficiency. Faster and more efficient tools can shorten design processes and make it easier for participants to provide effective feedback. This research will increase the potential and effectiveness of User Experience Based Participatory Urban Design.

Limitations;

This study has some limitations. First, the case studies were conducted in only two public space of İzmir (Karşıyaka/Yalı Mahallesi and Konak/Basmane Square), so the generalizability of the findings is limited. As similar studies have not been conducted in other cities and cultural contexts, it is unclear how the results can be adapted to practices elsewhere. Second, the tools and methods used are context-specific and may yield different results in different contexts. For example, the impact of 2D and 3D toolkits may vary depending on the participants' level of technological knowledge, age or spatial perception abilities. As this study was limited to participants with specific demographic characteristics, the effects of these tools on a wider and more diverse group of participants have not been adequately examined. Third, while one of the case studies was conducted in the field (Karşıyaka/Yalı Neighborhood), the other was not conducted in the field, but at the İzmir Fairgrounds (Konak/Basmane Square). This limited the participants' one-on-one interaction with the real space and required extra

time to introduce the space. Recognizing these limitations, future research should be conducted with larger and more diverse samples, and the effectiveness of different co-design tools and methods should be examined more comprehensively.



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APPENDICES

APPENDIX A

Participatory Urban Design Workshop: Application Directive



İZMİR INSTITUTE OF TECHNOLOGY FACULTY OF ARCHITECTURE UD 502 URBAN DESIGN STUDIO II

PARTICIPATORY URBAN DESIGN WORKSHOP - APPLICATION DIRECTIVE

- The design proposal you will prepare within the scope of this study will be used as 'design science data' in the design process of the master's thesis research project titled "User Experience Based Participatory Urban Design practices: Case of Izmir".

- For research purposes, your design actions may be recorded anonymously, you agree to share this data by continuing to apply.

- You can place the design objects you choose on the application area as you wish.

OBJECTS

NATURAL ELEMENTS	ART DESIGN ELEMENTS	URBAN FURNITURE ELEMENTS	MOBILITY ELEMENTS	TEXTURE ELEMENTS
TREE	IMAGE	CANOPY	NO ENTRY	GREEN
FLOWERPOT	MUSIC	BANK	CYCLING	STONE
IVY	ACTIVITY	BARRIER	PEDESTRIAN CROSSING	WOOD
VERTICAL GARDEN	JOKER OBJECT			

EXAMPLES OF JOINT USE

ARTISTIC TREE + PAINTED IVY = COLORFUL PEDESTRIAN CROSSING

ARTISTIC TREE + PAINTED IVY = FUN BANK

GAME BARRIER + PAINTED IVY = GAME BARRIER

APPENDIX B

Citizen Design Science Workshop: Yalı Neighborhood Co-Design Experience Survey



CITIZEN DESIGN SCIENCE WORKSHOP: YALI NEIGHBORHOOD CO-DESIGN EXPERIENCE SURVEY



This survey was conducted by Prof. Dr. Koray VELİBEYOĞLU,

Head of Department of Urban and Regional Planning, İzmir Institute of Technology, and Assist. Dr. Pelin ÖZDEN, Lecturer of Architectural Restoration Program, Kavram Vocational School, within the scope of the design process of the master's thesis research project titled "User Experience Based Participatory Urban Design Practices: Case of İzmir"

The information you provide will only be used for scientific purposes and activities, and your data will never be shared with third parties.

Your privacy will be respected.

Your participant number (Will be given to you by the researcher) *

Please indicate in minutes the time you spent in the design experience in the citizen design science workshop. *

Apart from the design objects you used in the citizen design science workshop, were there any other objects (Joker Objects) you would like to see? If yes, please specify. *

Please mark the participant profile that suits you *

Neighborhood Residents

Tradesmen

Visitors (for entertainment - sightseeing)

What is your gender?*

Female Male Other

What is your age?*

15-24 25-34 35-44 45-54 55-64 65 and above

Do you have children?*

Yes No

If you have children, please indicate their age(s).

What is your educational background? *

Primary School Middle School High School Associate Degree
 Bachelor's Degree Master's Degree PhD

What is your profession?*

Place of birth?*

Province of residence? *

If you reside in İzmir, how many years have you been living in İzmir?*

Which neighborhood do you live in?*

Which street do you live on?*

Is the house you live in one of the houses surrounding the area? *

Yes No

Do you use this area?*

Yes No

If yes, please indicate for which purpose(s) you are using this field. *

- Sport-Walk
- Rest-Sitting
- Watch Around
- Pet Walking
- Transference
- Disaster Gathering Area
- Socialization-Meeting
- Other

Please indicate your negative thoughts about this area, if any.*

- Noisy
- Undefined/ Non-functional
- Unmaintained
- Dirty
- Insecure
- Darkness
- City Furniture Incomplete / Uncomfortable
- Lack of Shade Area
- Ground Not Suitable for Seasonal
- Other

If an artistic work were to be done in the area, what kind of work would you like to see? *

- Appealing to the Eye
- Ear Appealing
- Activity Oriented
- Other

If the answer is other, what is the representation you would like to see?*

Was there an object you used together?*

Yes No

If you did, what was the representation you imagined in your design? *

Are you satisfied with the facades of the buildings in the area?

Yes No

If no, what would you like to see on the facade? *

Is the number of lighting elements in the area sufficient? *

Adequate Partially Inadequate

Is the number of seating elements in the area sufficient? *

Adequate Partially Inadequate

Do you have any concerns about security in the area? *

Yes No

If yes, what are these concerns? *

Are you satisfied with the pedestrianization of the roads in the area? *

Yes No

If no, how would you like the road to be shared? *

Are you a vehicle owner?*

Yes No

Do you actively use your vehicle?*

Yes No

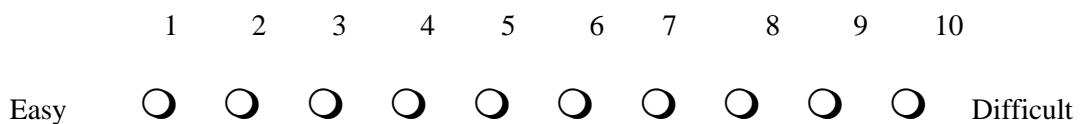
Can you easily find a parking space for your car?

Yes No

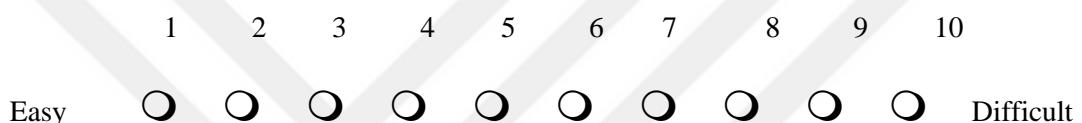
Have you been involved in participatory design projects before? *

Yes No

Rate the ease of designing in the citizen design science workshop



Rate the ease of instructions on the information cards during design.



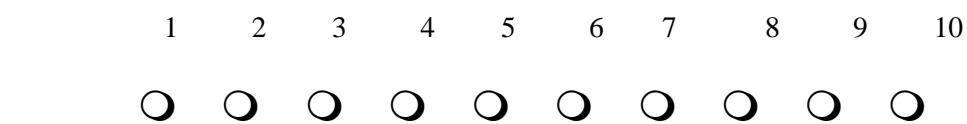
At what level were you able to express yourself in the Co-Design Workshop



I couldn't express myself

I expressed myself.

Rate your enjoyment of the Co-Design Workshop



I didn't enjoy it.

I enjoyed it.

THANK YOU FOR YOUR PARTICIPATION AND YOUR TIME

BASMANE SQUARE PARTICIPATORY URBAN DESIGN EXPERIENCE APPLICATION GUIDELINE



- The design proposal that you will prepare within the scope of this study will be used as a design solution in the practical design process of the area.
- You can realize the design objects you have chosen on the application area as you wish on the stage.
- If you cannot find the objects that belong to the function you want to see among the objects, you can use the green cubes (wildcard objects).
- For research purposes, your design actions and app images are anonymously recorded, and by continuing with the app you agree to share this data.

OBJECTS

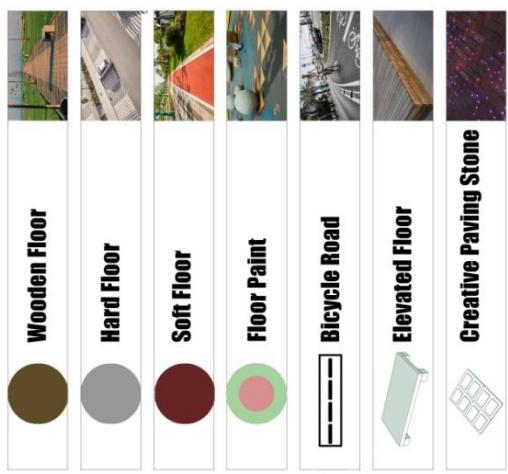
GUIDENCE OBJECT



URBAN FURNITURE



GROUND TEXTURE



APPENDIX C

Basmane Square Participatory Urban Design Workshop: Application Guideline

Basmane Square Participatory Urban Design Manifesto

Basmane Square has an important position as one of the historical and cultural centers of Izmir. However, the square is currently not pedestrian friendly due to the chaos of motorized vehicle traffic and difficulties in pedestrian circulation. This manifesto includes recommendations to make Basmane Square a more accessible, aesthetic and functional public space.

1 PEDESTRIAN PRIORITY DESIGN	2 ACCESSIBILITY	3 GREEN AREAS AND LANDSCAPING	4 URBAN FURNITURE AND RECREATION AREA	5 FLOOR COVERINGS AND VISUAL ARRANGEMENTS	6 PARTICIPATORY AND SUSTAINABLE DESIGN
Pedestrian safety should be ensured by creating pedestrian crossings and sidewalks. Should be widened. Ramps should be placed in front of the sidewalks or level surfaces should be provided. When the latter is preferred, important directional and organizational objects should be developed and incorporated into design practices. For the visually impaired, QR-coded guidance paths, digital help panels and directional arrows should facilitate circulation in the square.	Implement practices for the use of persons with disabilities, such as wheelchair charging stations, and audible traffic lights. Roads should be closed to pedestrians and/or vehicular traffic and should be reorganized to improve access for people with disabilities.	Green areas should be increased through afforestation works in the square, and building roofs should be equipped with green roof applications. Vegetative arrangements should be made by using dividing and well-designed urban furniture.	Benches and reclining units should be placed in public spaces to meet the resting needs of users. Kiosks with promotional or food and beverage concepts should be placed at various points in the square. In addition, urban furniture such as bicycle parking spaces and shaded areas should be added to meet the needs of users.	The floors should be improved both aesthetically and functionally with floor paints and innovative paving stones. These arrangements will help make the area more attractive and useful. Soft surfaces should be used especially on pedestrian paths, while hard surfaces should be preferred on main roads.	Throughout the entire design process, participants should be consulted and solutions should be developed in accordance with their needs. This will ensure that the space is more embraced by users. All arrangements should be realized in line with the principles of sustainability.

APPENDIX D

Basmane Square Participatory Urban Design Manifesto

APPENDIX E

Citizen Design Science Workshop: Basmane Square Co-Design Experience Survey



CITIZEN DESIGN SCIENCE WORKSHOP: BASMANE SQUARE CO-DESIGN EXPERIENCE SURVEY



This survey was conducted by Prof. Dr. Koray VELİBEYOĞLU, Head of Department of Urban and Regional Planning, İzmir Institute of Technology, and Assist. Dr. Pelin ÖZDEN ,Lecturer of Architectural Restoration Program, Kavram Vocational School, within the scope of the design process of the master's thesis research project titled "User Experience Based Participatory Urban Design Practices: Case of İzmir"

The information you provide will only be used for scientific purposes and activities, and your data will never be shared with third parties.

Your privacy will be respected.

Your participant number (Will be given to you by the researcher) *

Please indicate in minutes the time you spent in the design experience in the citizen design science workshop. *

Apart from the design objects you used in the citizen design science workshop, were there any other objects (Joker Objects) you would like to see? If yes, please specify. *

Please mark the participant profile that suits you *

Neighborhood Residents Transit User Tradesmen Visitors (for entertainment - sightseeing)

What is your gender?*

Female Male Other

What is your age?*

15-24 25-34 35-44 45-54 55-64 65 and above

What is your disability?(To be taken during the conversation, not to be asked)*

Do you have children?*

Yes No

If you have children, please indicate their age(s).

What is your educational background? *

Primary School Middle School High School Associate Degree
 Bachelor's Degree Master's Degree PhD

What is your profession?*

Place of birth?*

Province of residence? *

If you reside in İzmir, how many years have you been living in İzmir?*

Which neighborhood do you live in?*

Which street do you live on?*

Is the house you live in one of the houses surrounding the area? *

Yes No

Do you use this area?*

Yes No

Do you use any assistive devices when using or visiting the site (baby stroller, walking stick, wheelchair, visually impaired cane, etc.)?*

If you use one of the assistive devices in this field, what is the most difficult point(s)?*

Can you use this square in case of extreme weather conditions (extreme heat, precipitation, wind)?*

Yes No

If no, why can't you use this area during extreme weather events?*

If yes, please indicate for which purpose(s) you are using this field. *

Access to Transportation

Transference

Socialization-Meeting

Shopping

Watch Around

Sport-Walk

Reaching the Workplace

Please indicate your negative thoughts about this area, if any.*

Noisy

Unmaintained

Not Disability Friendly

Insecure

Lack of Shade Area

City Furniture Incomplete / Uncomfortable

Lack of informative and stimulating elements

Ground Not Suitable for Seasonal Conditions

Unsuitable for Hiking

Dirty

Darkness

Lack of design elements

If you were to implement a disability-friendly work or application in the area, what would it be?*

Is the number of lighting elements in the area sufficient? *

Adequate Partially Inadequate

Is the number of seating elements in the area sufficient? *

Adequate Partially Inadequate

Do you have any concerns about security in the area? *

Yes No

If yes, what are these concerns?*

Are you satisfied with the pedestrianization of the roads in the area? *

Yes No

If no, what are the points where you are not satisfied with the pedestrianization of the roads in the area?*

Are you a vehicle owner?*

Yes No

Do you actively use your vehicle?*

Yes No

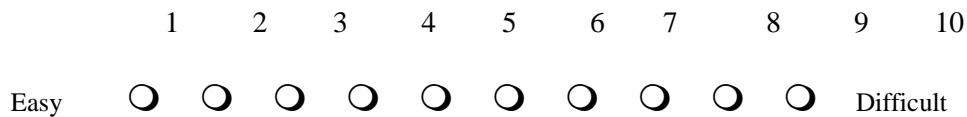
Can you easily find a parking space for your car?

Yes No

Have you been involved in participatory design projects before? *

Yes No

Rate the ease of designing in the citizen design science workshop



Rate the ease of instructions on the information cards during design.



At what level were you able to express yourself in the Co-Design Workshop



I couldn't express myself

I expressed myself.

Rate your enjoyment of the Co-Design Workshop



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THANK YOU FOR YOUR PARTICIPATION AND YOUR TIME