



KARŞIYAKA MUNICIPALITY

**PARTICIPANT
URBAN
DESIGN:
CITIZEN
DESIGN
SCIENCE
WORKSHOPS**

CITY VISION STUDIES



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KARŞIYAKA MUNICIPALITY

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It was carried out in cooperation with Karşıyaka Municipality and İzmir Kavram Vocational School.



FROM AUTHOR

“Participatory Urban Design: Citizen Design Science Workshops, Karşıyaka” project aims to reveal the transformation of various idle public spaces at the neighbourhood scale in Karşıyaka into sustainable, multifunctional, livable and qualified public spaces with nature-based solutions by reconsidering the citizen design science method as a participatory urban design strategy. It is foreseen that the action plan and urban design projects prepared can lead other local governments in the data-based co-design and management of public space on a national and international scale, and can be used as a basis for subsequent studies in holistic, inclusive and participatory urban planning and design methods.

Karşıyaka Municipality Strategy Plan for the years 2020-2024 aims to carry out activities in order to ‘ensure public participation in decision-making and implementation mechanisms as a requirement of a democratic and transparent management approach’. SECAP and Public Open Space Urban Resilience Master Plan (2023) were prepared and workshops were organised by Karşıyaka Municipality. The strategy draws attention to organisation and governance at neighbourhood scale. In addition to spatial improvement in increasing urban resilience, it is very important to increase social resilience with community-based solutions. In this context, Karşıyaka Municipality is pioneering activities that ‘aim to develop a holistic understanding of civic resilience through community-based methodologies’. Karşıyaka Municipality, which also takes initiatives to increase community-based organisation, aims to create smart communities, management of the-

se communities, transparent data sharing, data-based decision-making, co-design and co-learning. In line with these objectives, participatory design workshops were carried out with the selection of 4 pilot public spaces selected from among 300 idle public spaces included in the 'Inventory of Idle Public Spaces in Karşıyaka District' study prepared by the Urban Vision Development Unit under the Urban Design Directorate. In these workshops, spatial analyses were completed on individual design drafts for the design of selected public spaces using active design tools with the participation of local and visiting citizens, concept design projects were prepared and applications were carried out. In the workshops, the 'citizen design science' method was re-examined with design tools in the form of a holistic and inclusive approach with the participation of disadvantaged groups. Atakent (Oto) Park project, which is the first of these public spaces, has gone down in the literature as the first project implemented with this method.

The findings presented at the end of the workshops were transformed into an action plan for idle urban spaces in Karşıyaka district by creating a basis for design, production and operation with participatory urban design method.

I would like to thank Mr. Cemil TUGAY, the Mayor of Karşıyaka Municipality, who pioneered this project series, which has a holistic, inclusive and transparent understanding, where citizens can freely exercise their urban rights in the urban space in the environment they live in, and which has turned into a public space application without remaining only in the action plan. I would like to thank Cemil TUGAY, my esteemed professor Prof. Dr. Koray Velibeyoğlu, who paved the way for these studies with his visionary approaches developed at the upper scale and always supported them, Karşıyaka Municipality Urban Design Manager Ms. Ms. Özlem ŞENYOL KOCAER and the staff of the Urban Design Directorate, Ms. Yasemin ŞENTÜRK and the Urban Vision Development Unit Officer. Ms. Yasemin ŞENTÜRK and the staff of the Urban Vision Development Unit, Ms. Arzu DOĞRUYOL, responsible for the Citizen Participation Unit, which is an innovative unit at the scale of local government, as it is needed within the scope of these studies. Arzu DOĞRUYOL and the staff of the Citizen Participation Unit, Izmir Metropolitan Municipality Fablab staff for their interest,

support and assistance, Şehit Ast. Erkan Durukan Primary School and Prof. Dr Derman KÜÇÜKALTAN, Director of IKMYO for their support.

I would also like to thank our participants in Atakent, Yalı, Bostanlı, Örnekköy and Bahariye Neighbourhoods, who defended the rights of urbanites and actively participated by sharing their knowledge and experiences on selected public spaces within the scope of the projects we carried out. I hope that the public spaces designed and produced together with local users in design science workshops based on crowdsourced data production processes will contribute to the formation of sustainable and livable cities.

Pelin ÖZDEN

A B S T R A C T

“Cities have the capacity to offer something for everyone, but only when they are created by ‘everyone.’”

Anderson, N.B., 2021

In order to make cities and human settlements inclusive, safe, resilient and sustainable, it is important to involve residents and other stakeholders in the urban planning and design process. It is important to identify relevant targets and stakeholders in the resilient city target. In recent years, the importance of this participation has increased in order to ensure sustainability in urban planning and design processes and to operate the system from the bottom up. Citizen participation now constitutes policy reforms within a movement advocating democracy, justice and sustainability in global planning. Therefore, community participation in decision-making processes is seen as a fundamental element to ensure sustainable development in contemporary urban planning and design. Plans and designs will thus more closely match the expectations of stakeholders.

The study describes how the process of co-urban design, based on citizens' spatial experiences, needs and expectations, is transformed into a design and implementation project of the urban space through analogue active design tools. It covers 4 different urban space studies of different types of scales and users for crowd-creative design applications. The studies are respectively; Atakent (Car) Park, Cemal Gürsel Street: Climate-Sensitive Street, Şehit Ast. Erkan Durukan Primary School Garden and Elderly Friendly Public Space: Bahar Park in Bahariye Neighbourhood.

The 'citizen design science' used in the studies is a new co-design strategy developed for urban systems that improves the planning, design, management and renewal of cities, urban living spaces, public spaces, using active design tools through citizens' observation, experience and local knowledge. This strategy has been revised and applied in parallel with the needs of local government, urban areas and users with special needs. The approach creates the chance to collectively combine the design ideas, concerns and knowledge of individual citizens in urban areas. Thus, moving away from techno-creative urban design, the design of the urban space has become a democratic process in which all stakeholders participate as co-designers. The results of this new model of co-design in urban design processes and practices towards a resilient and sustainable city create a public commitment, constructive debate and high awareness of urban design projects. This study presents a new participatory model and a new form of data-driven governance and participation through practices for local governments responsible for the design and implementation of public spaces.

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ABBREVIATIONS

GIS: Geographic Information Systems

SECAP: Sustainable Energy and Climate Action Plan

UN: United Nations

CS: Citizen Science

CDS: Citizen Design Science

Standardised production, repetition, uniformity, monotony and similarities are among the problems affecting our cities, neighbourhoods, buildings and urban environments. There are large gaps between the components of industrially produced small-scale prototypes and large buildings, urban environments and cities¹. Other social challenges, such as migration, poverty, wider cultural or political crises, as well as common standards in the building industry, co-production and permanent solutions that no longer apply, lead to anonymous, distant lives and communities in cities.

Sanders, an American academic and designer specialising in co-design and manufacturing, explores the evolution of designers' understanding of humanity². In contrast to customers and consumers in the 1980s, in the 1990s users began to be referred to as participants and co-creators. Moreover, since the 1990s, the concept of governance instead of management has become widespread globally due to the political crises faced by representative democracy. Thanks to the participatory techniques of the 2000s, people are invited as co-designers, actively participating in the actual design. This profound transformation has led to the development of an understanding of participation that replaces the divine role and power traditionally associated

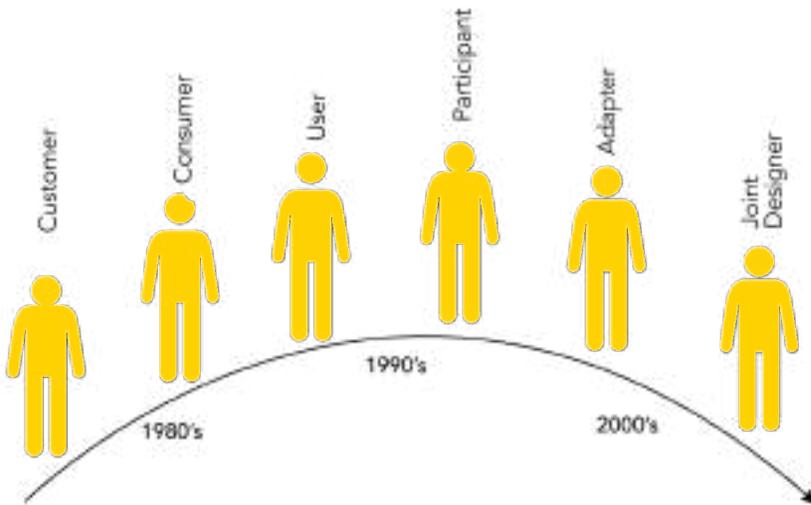


Figure 1. Changes in the way designers think about people²

¹ Tom Verebes, "Mass-Customised Cities," *Architectural Design* AD 85, no. 6 (2015).

² E. B Sanders, "Information, Inspiration and Co-Creation," in 6th International Conference of the European Academy of Design (Bremen, 2005).

with the role of the designer³ (Figure 1). As a result, concepts such as basic planning, tactical urbanism and spontaneous urbanism have emerged..

In order to make cities and human settlements inclusive, safe, resilient and sustainable, it is critical that residents and other stakeholders participate in the urban planning and design process⁴. This goal requires the establishment and participation of relevant communities to ensure sustainability and to run the system from the bottom up.⁵ Community participation is an important element in global planning and policy reforms of a movement advocating for democracy, justice and sustainability. In today's urban planning and design, community participation is important for sustainable development and representative decision-making in the context of resilience.

Especially from the perspective of urban planning and design, the decisions taken for the life of a city have a significant impact on many aspects. The results of the design have a profound impact on the citizens' experience. Modern urban planning and design is a highly specialised process that does not effectively involve users in the design process, thus to some extent neglecting their needs, preferences and local knowledge and experience. Decisions are often taken without public dialogue. Commonly used participatory formats either follow a highly decentralised form of decision-making or revert to limited methods such as voting or tallying in non-traditional participatory approaches. However, the participation of disadvantaged people is often suppressed in a culture dominated by strong political institutions and community contributions are seen as token gestures. In addition to information and opinions, it is obvious that a new understanding of participation that aims to include the participant in every stage of the process and envisages the role of the planner/designer as a stakeholder should be adopted. The real solution is based on the inclusive co-operation of the authorities and citizens. However, local knowledge provides the potential to be used to create more diverse, adaptive and harmonised places. Citizen participation in urban planning and design involves mutual and collaborative learning, bringing

3 Maria Gabriela Sanches and Lois Frankel, "Co-Design in Public Spaces: An Interdisciplinary Approach to Street Furniture Development," *Design and Complexity - DRS International Conference 2010, 7-9 July, Montreal, Canada, 2010, 7-9*, <http://www.designresearchsociety.org/docs-procs/DRS2010/PDF/105.pdf>.

4 Noelle Blood Anderson, "Jane Jacobs: A Legacy of Community-Based Development," 2011, <https://www.oneomaha.org/jane-jacobs-a-legacy-of-community-based-development/>.

5 United Nations, "Sustainable Development Goal 11," n.d., <https://sdgs.un.org/goals/goal11>.

together knowledge, expertise and skills from diverse backgrounds. It has the potential to achieve much better results by fostering personal development of participants, creating a sense of ownership over outcomes, building consensus on solutions and increasing support for implementation. Therefore, when citizens are actively involved in planning, design and implementation processes, plans and designs are more in line with the needs, interests and expectations of stakeholders and citizens. It also helps to achieve socially and environmentally beneficial outcomes. The main challenge here is the lack of a common language based on continuous dialogue between actors and stakeholders⁶. It is also important that citizens can reflect through the common language what they actually need or think.

⁶ Johannes Mueller et al., "Citizen Design Science: A Strategy for Crowd-Creative Urban Design," *Cities* 72, no. August 2017 (2018): 181–88, <https://doi.org/10.1016/j.cities.2017.08.018>. we present Citizen Design Science as a new strategy for cities to integrate citizens' ideas and wishes in the urban planning process. The approach is to combine the opportunity of crowdsourcing opinions and thoughts by citizens through modern information and communication technology (ICT

4 public space projects produced as a result of Citizen Design Science Workshops; “scientific and local data” (by mapping all ecosystem services in the areas with preliminary interviews with users and analyzing them on features such as water retention and carbon sequestration), ‘citizen design science’ workshops, which is an inclusive and innovative co-urban design method, It is based on urban design projects and applications obtained as a result of this method. In this section, the stages of the study for data collection will be explained in the form of (1) selection of idle public spaces, (2) citizen design science method and (3) implementation of workshops.

2. 1 Selection of Idle Public Domains

In its Strategy Plan for the years 2020-2024, Karşıyaka Municipality aims to carry out activities to ensure public participation in decision-making and implementation mechanisms as a requirement of a democratic and transparent management approach. In response to the management of risks in the current situation of Karşıyaka, SECAP and Public Open Space Urban Resilience Master Plan (2023) were prepared and a workshop was organised by Karşıyaka Municipality. Within the scope of the 2021 SECAP; it is aimed to ‘ensure organisation at the neighbourhood scale’. ‘Organising data science workshops based on crowdsourced data generation processes’ is among the actions of the ‘Urban Vision Development Unit’ under the Urban Design Directorate of Karşıyaka Municipality under the strategy of ‘Creating smart communities by carrying out capacity building activities on urban vision themes’. In addition; Among the actions of the strategy of ‘addressing a participatory model in the transformation of public space’ are ‘adoption of participatory methods such as ‘Citizen Design Science’ workshops, which strengthen spatial belonging in the transformation of public space and aim at the active participation of citizens in design processes”, “Creation of global and local collaborations in the transformation of public space” and developing new funding sources” and “Including vulnerable groups in decision-making processes”. Thus, Karşıyaka Municipality Urban Design Directorate, Urban Vision Development Unit carried out an inventory study on idle and unqualified public spaces in Karşıyaka district. Based on the data on idle areas; a qualified transformation is aimed with the urban design method in public areas determined for the design of urban areas with ‘inclusive, circular, healthy and ecological themes’. The selection criteria for the public spaces included in the inventory are; *high diversity of use, having social basic equipment areas,*

high accessibility, diversity of users.

In this context, 4 different public spaces were selected in Karşıyaka district (Table 1).

Application Tools	Location Selection Criteria I	Location Selection Criteria II	Location Selection Criteria III	Location Selection Criteria IV	Location Selection Criteria V	Location Selection Criteria VI
Atakent Ottopark	Sub-space - car park, Passive Green Area Empty Land	Areas in need of parking	Large car park uses and possible transformable car park areas	Places close to areas with strong publicity	Large car park uses required by public facility area	Areas requiring ecological expertise
Cemal Gürsel Street	Side spaces along the road, passive green areas	Areas in areas inadequate in terms of ecosystem services	Streets and avenues with strong pedestrian use	Area with strong publicity	Axes where parking lots are occupied and pedestrian use is intense	Areas requiring ecological expertise
Şehit Astsubay Erkan Durukan Primary School Garden	Unqualified Children's Playground	%20 of students continue their active education life	It is expected that the Schoolyard will be transformed into an attractive and qualified public space for educational life.	Proximity to avenues and streets with strong pedestrian use	Environments with low pedestrian use or poor construction	Areas requiring ecological expertise
Bahar Park	Subspace - Passive Green Areas, Vacant Lands, Neglected Public Space - Parks, Private Garden	Areas where gardening practice is currently carried out	Places away from busy main streets and close to common areas of neighborhoods	Areas located at the intersection of streets with heavy pedestrian use	Private garden disputes	It has basic social equipment areas and is highly accessible.

Table 1. Selection criteria for idle public spaces

The aim of the workshops, which are developed as a tool for producing design science data, covering the co-design process and carried out with 'citizen design science', is to provide solution proposals covering the experiences, needs and wishes of the participating local citizens about the area through active design tools of the selected parks, gardens and idle areas identified above in Karşıyaka district.

On the other hand, the studies including the process of 'transparently sharing the design science and experience survey data with citizens' show that the local government has adopted the 'data-based decision-making' method in a transparent and democratic manner.

As a result of the creation of Citizen Design Science Workshops with a democratic and transparent setup, it is aimed to organise a qualified public space that is integrated into all processes of design in the context of inclusiveness, integrated into 'smart city' systems, integrated into all processes of design in the context of inclusiveness, 'developing urban consciousness', creating a 'smart community', strengthening the relationship of belonging to the transforming space, and produced from the spatial data of citizens' needs, wishes and experiences. In this way, a new organisational model is targeted in the transformation of space with a 'data-based management style'.

2.2. Citizen Design Science

Citizen science, which refers to the voluntary contribution of citizens to science where they meet with professional scientists, represents the participation of the public in planning on local issues in the context of urban scale.¹ Together with the common design ideas of citizens, stakeholders and designers, it has brought along experiments on public debates and planning processes for the future of the city. Beyond these studies carried out in various disciplinary fields, the 'Citizen Design Science' (CDS) method, in which citizens generate data for design science by making use of their experiences about the environment they live in, was added to the literature by Johannes Müller, Hangxin Lu, Chirkin Artem, Bernhard Kleina, Gerhard Schmitt by combining active design and crowdsourcing methods in urban planning at ETH Zürich, Future Cities Laboratory (FCL) in 2018.²

CDS includes experiments that produce design data related to the planning process in order to identify the problems of the city and to create a vision for its future. CDS involves improving the planning, design, management and transformation of urban living spaces, public spaces and buildings for urban systems. It is a strategy of citizen participation and co-design using active design tools through human observation, experience and local knowledge.³

1 Bruce V. Lewenstein, "What Does Citizen Science Accomplish?," Meeting on Citizen Science, no. May (2004): 1–8, <http://ecommons.cornell.edu/handle/1813/37362>.

2 Mueller, Lu, vd., "Citizen Design Science: A Strategy for Crowd-Creative Urban Design."

3 Hangxin Lu et al., "Evaluating Urban Design Ideas from Citizens from Crowdsourcing and Participatory Design," CAADRIA 2018 - 23rd International Conference on Computer-Aided Architectural Design Research in Asia: Learning, Prototyping and Adapting 2 (2018): 297–306.

In citizen design science, which is a participatory co-design method based on the dialogue between scientists, citizens and designers, these actors work together in the project design process. Instead of traditional participation methods such as public hearings, writing comments, citizen-based committees, participation of representations, etc.; it is a method that includes innovative and active tools using today's information and intelligence technology in participatory design approaches in urban planning and development.⁴.

Using urban design tools, Citizen Design Science is a new approach to actively involve citizens in the urban design and planning process. 'Design science' data are obtained from the design proposals produced by citizens from their local experiences and active design tools through various analysis methods. It is used in the design process of professional designers in the context of 'data-based governance'. Citizen design science is a synthesis of citizen science and design science that uses bottom-up data and information flows to improve the design and functioning of urban space.⁵.

The three basic concepts of Citizen Design Science constitute this method: 1) citizen science, which refers to the elements of participation and the type of data collection; 2) citizen design, which refers to active design by citizens; and 3) design science, which refers to the transformation of citizens' design proposals into the designs of expert designers (Figure 2).

⁴ Johannes Mueller, Shiho Asada, ve Ludovica Tomarchio, "Engaging The Crowd: Lessons For Outreach And Tool Design From A Creative Online Participatory Study," *International Journal of E-Planning Research* 9, no. 2 (2020): 66–79, <https://doi.org/10.4018/IJEPR.2020040101.oa>.

⁵ Johannes Mueller et al., "Citizen Design Science: A Strategy for Crowd-Creative Urban Design," *Cities* 72, no. April 2017 (2018): 181–88, <https://doi.org/10.1016/j.cities.2017.08.018>.

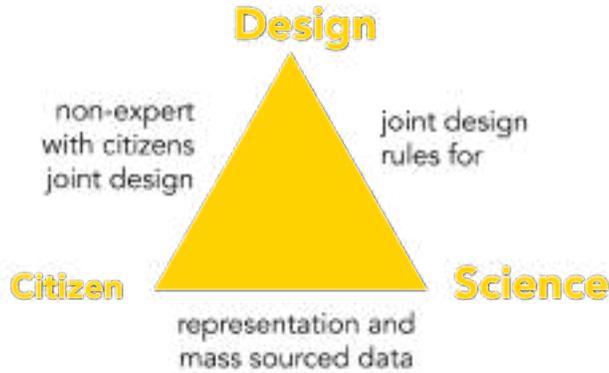


Figure 2. Citizen Design Science Concept

Citizens (users) are recognised as ‘amateur designers’ through non-specialist designers and primitive models for their environment. The cognitive toolkits show how citizens perceive and understand the design space through simple 3D models of the design space. Such tools encourage citizens to think about the design problem and express themselves. Experts realise their designs based on the data received from citizens for urban planning and urban design. In this method, citizens are not just simple sensors, they are actively involved in urban planning and urban design projects through design scenarios. This initiative links bottom-up and top-down decision-making processes in urban design while strengthening the role of citizens. Citizens’ competences and experiences have the potential to produce better strategies and plans for the regions where they live ⁶.

The 4 different elements criticised by the Citizen Design Science method are as follows ⁷:

(1) Citizens only create what they already know.

According to Sanders¹⁴’s theory of implicit and latent user experience and Carteau¹⁵’s theory, citizens will not only try to create the urban environment as they know it, but they will also create it by developing it with their own wishes, dreams and needs. For example, the person walking is the person making the choice (Figure3).

⁶ Mueller et al., “Citizen Design Science: A Strategy for Crowd-Creative Urban Design,” 2018.

⁷ Mueller et al., “Citizen Design Science: A Strategy for Crowd-Creative Urban Design,” 2018.



Figure 3. *The walker is the one who makes the choice: design/ user experience (from K. Velibeyoğlu's archive)*

(1) Citizens do not have the whole view of a city; they can only optimise their neighbourhood.

For example, residents need a solid transport infrastructure, while in another region the motorway is often no better for the neighbourhood. In this context, Citizen Design Science is presented as a method for collective consensus. This method is a starting point for bottom-up governance. It challenges the top-down perspective by challenging the general direction of policies to implement the neighbourhood perspective.

(2) Citizen Design Science urban experiments are more useful than complex representative verbal and written data.

Through Citizen Design Science, different feedback can be obtained from citizens. Although access to citizens' information is more difficult, the value of confidential experience outweighs verbal or written comments.

(3) Direct dialogue between citizens and designers is very important and cannot be replaced by computer technologies.

Mueller and colleagues¹⁴state that direct public discussions or community workshops with decision-makers cannot be replaced by any high-tech computerised tools.

They do not want to put Citizen Design Science in competition with other technological participatory design tools and strategies. They also present Citizen Design Science as a powerful opportunity for cities as a human-centred planning and design process.

CDS Workshops; The examples carried out at Eth Zurich via Qua-Kit (web-based digital design tool; <https://qua-kit.ethz.ch/>) and the Izmir-Küçük Park example have previously been conducted via the digital design tool to reach more local participants. , was handled and re-adapted through analog design tools due to inclusivity and close dialogue with citizens. Each workshop is addressed with a new implementation guideline and editing process appropriate to the field and actors. In this sense, the series of 'citizen design science workshops' can be characterised as new urban experiments.

The participatory co-design process is based on the organisation of scientists working together with local citizens, visitors and the authority, Karşıyaka Municipality (Figure 4).



Figure 4. CBS Workshops Actors

In this communication process; the local citizens' data on the problems related to the area are established through the design tool together with the expert designer. The communication period is based on the process fiction in which the individual active design proposals are presented in the role of expert designer together with the application and the design science data are evaluated by the expert designer and the authority at the end of the

workshop (Figure 5).

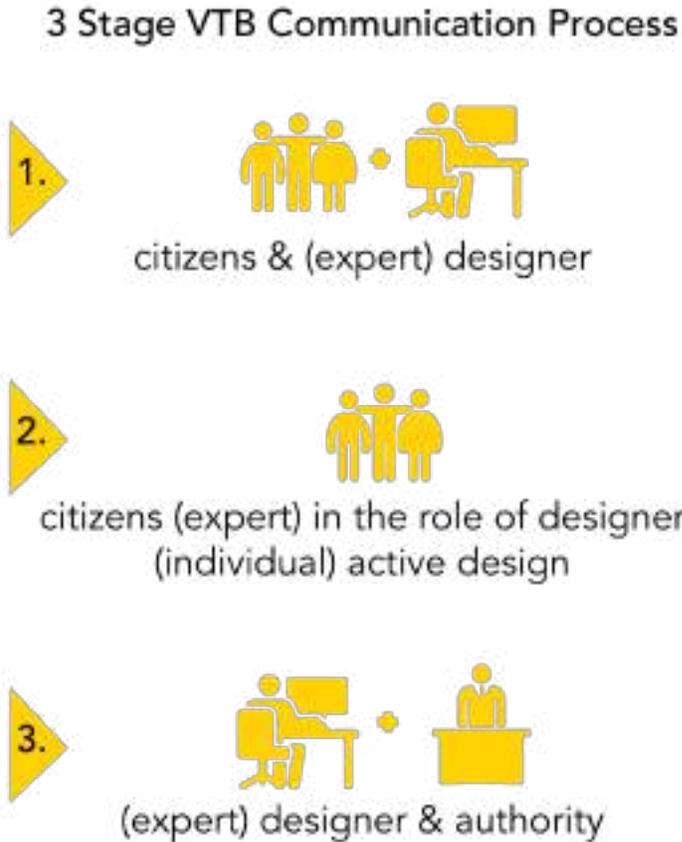


Figure 5. Stage Citizen Design Science Communication Process

The 'pre-interview studies' focus on local citizens' identification of problems in the area, how they would like to see the area in the future and contribute to the vision and needs programme decisions to be taken by the authority.

In the working report prepared after the meeting, these problems, suggestions and evaluations are shared with the 'authority'. Then, in meetings with the 'authority', the vision for the area is evaluated through this report and the requirements programme, production process and implementation guidelines are planned for the active design phase within the scope of the workshop. Within the scope of the workshop, individual design drafts of the participating citizens on the analogue model are recorded. After the

application is completed, the participants are directed to the experience questionnaire, which includes questions about demographic data, application experience and problems related to the field. The design science data obtained as a result of the analyses prepared after the application and experience survey are discussed with 'authority' and 'professional designers' in 'round table meetings' and design decisions on spatial organisation are taken. With reference to the design decisions taken; conceptual design alternatives are produced, and design alternatives with all design science data are presented to the participating citizens for voting (Figure 6).



Figure 6. Citizen Design Science Workshops: Method-Acquisition-Effect-Final Product

The developed method includes the process of transformation of selected urban idle areas into qualified public spaces. It is a unique example for the 'co-design' process where the real users of the area can convey their spatial solutions, suggestions and needs to the designer in a common language through active design tools.

2.3. Implementation of Workshops



2.3.1. Atakent Car Parking

Yalı Neighborhood

"From Parking Lot to Urban Public Space"

A workshop was carried out with a citizen design science method for the reorganization of the 4,400 m² area located at 6342/3 of Yalı Neighborhood, which is a Regional Storey Parking Area in the implementation plan and owned by Karşıyaka Municipality, on the borders of Atakent and Yalı Neighborhoods, and which currently functions as an irregular open parking lot. The workshop aimed to transform the area into a qualified public space by following a participatory process.

PARTICIPANTS:

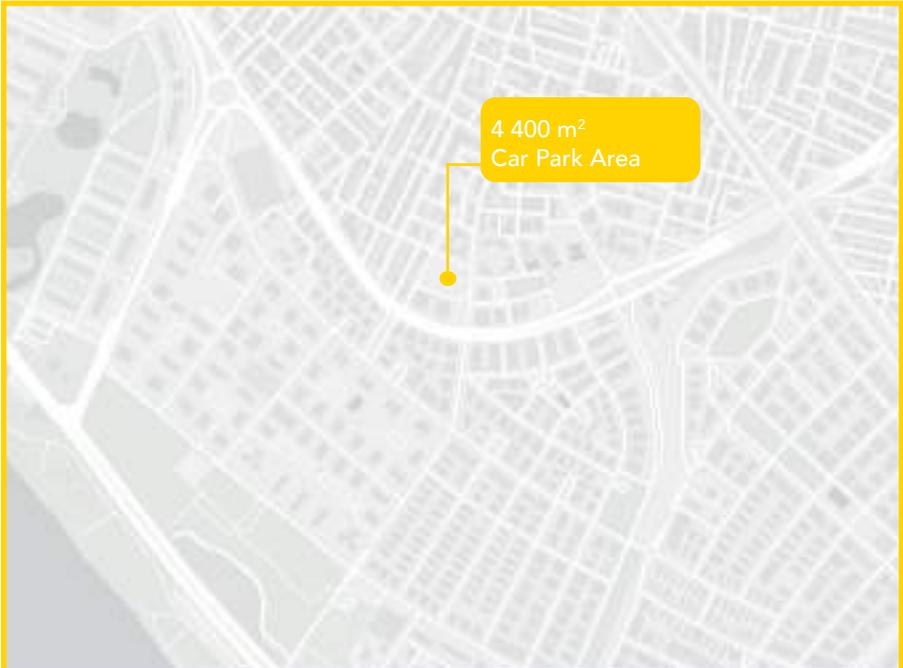


98



92

neighborhood residents, shopkeepers and users of the library for the visually impaired



PROJECT DURATION:

10 months (10 working days workshop)

COLLABORATORS:

Visually Impaired Center

Atakent Parking Lot is surrounded by a sports complex, a hospital, a high school, a primary school, a library for the visually impaired, and the old stream bed water trail. In the north-east of the area, which currently has an irregular parking lot function, where passive green meets old trees, there is a part of the street with a higher amount of green compared to other streets. The parking lot area is also used as a disaster gathering area.



After the preliminary interviews conducted before the participatory design workshop, an evaluation was made with the authority to evaluate these views and to make decisions on urban elements within the vision, design constraints and needs programme for the area. Based on the opinions of neighbourhood residents, shopkeepers and users of the Library for the Visually Impaired;

- Maximum 50% of the area to be used as a car park and the rest of the area to be used as a multifunctional, qualified public space,

- Among the urban elements to be proposed for the area, the participants decided on the 'yellow object', which was not found within the scope of the study and was a wildcard object for the functions,

- Preservation of existing trees in the area,

- In order for the participants to perceive the space and scale more easily, instead of the container, which is the workshop space, and the 'pole star' element on the analogue model, where they can find directions, is a transformer,

- That the views on the water accumulation due to the old stream bed water trace located near the site are important in terms of regulation in the ecological context,

- Emphasising the importance of the participation of visually impaired citizens in this participatory workshop based on the 'design for all' approach of the 'Citizen Design Science' method,

- In the context of urban governance, to establish the 'Citizen Participation Unit', an innovative unit in the municipality's organisation chart, which arose out of necessity in order to ensure coordination before and during the workshop implementation,

- Decisions were taken for a method (co-production) in which citizen participation should be followed through participatory practices not only in the project design process but also in the implementation process to complete the smart city-smart citizen cycle.

The urban elements identified for spatial transformation in the area in line with the wishes and needs are: green area, hard floor surface coating, (de-

sign) tree, car park, bicycle park, bicycle path, walking path, pergola / cover, seating element, water element, dog park, cat house, children's playground, hobby garden, skateboard area, basketball court, volleyball court and the wildcard object-yellow object , which is handled for the first time in the method (Figure 7).

CITIZEN DESIGN SCIENCE WORKSHOPS | ATAKENT
APPLICATION DIRECTIVE

- The design proposal you will prepare within the scope of this study will be used as design data in the practical design process of the area.
- You can place the design objects you choose on the application area in any way you wish.
- If you cannot find the objects that have the function you want to see among the objects, you can use yellow cubes (open objects).
- For research purposes, your design actions may be recorded anonymously, by continuing the application you agree to share this data.

OBJECTS

	Open Object Joker		Tree
	Green Area		Dog Park
	Hard Floor Surface Coating		Cat House
	Car park		Children's play area
	Bicycle Park		Hobby Garden
	Bicycle Path		Skateboard Area
	Pergola/Top Cover		Basketball Court
	Seating Element		Volleyball Court
	Water Element		

Figure 7. Atakent Car Park- Implementation Guideline

Within the scope of the participatory design process, the citizen design science method was reconsidered in order to enable the participants to easily express their spatial proposals. With this scale, it is aimed to prepare a user-friendly analogue design tool and application guidelines that include the simplest representations of the objects belonging to the model base and urban elements. In addition, for the participatory process in which the 'design for all' approach is adopted, the objects of urban elements were produced in 3D and embossed form for the participation of visually impaired participants in the process, and a 'mind map'¹⁵ process(mind map process) was added to the application directive for these participants (Figure 7).

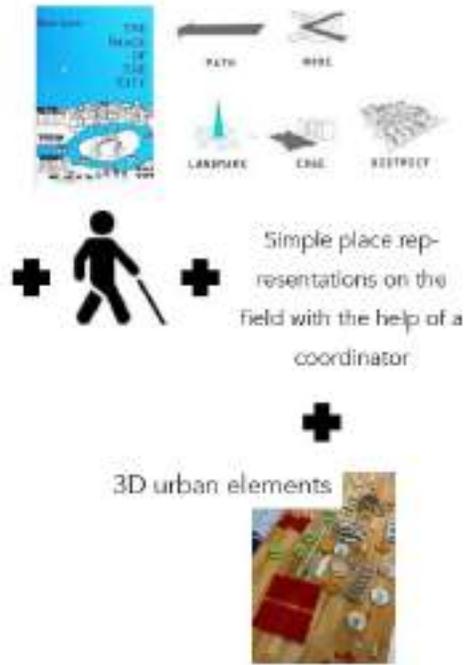


Figure 8. Guidelines for visually impaired participants

The second step of the workshop, the 'experience survey', is a questionnaire consisting of 25 questions sensitive to the protection of personal data in order to measure demographic data, understanding the wishes and needs of the area, measuring the implementation experience, interest in the co-production process and trust in local government. Before the workshop, the Citizen Participation Unit carried out field work and informed the participants with the brochures prepared and invited them to the workshop. The 'container', which is the pre-application workshop space, was placed at a point close to the transformer, which is the 'pole star' element meaning directional, and dominating the area. It was aimed to document the top view of the design drafts of each user by placing a tripod and camera on the model base in the container. In the immediate vicinity of the container, an open area was organised for the experience survey. In front of the experience survey area, a catering section has been created for the waiting process and 'motivation to participate' of the participants. For workshop application; The coordinator responsible for general operation, the person responsible for welcoming and directing the participants, the person responsible for the analog model and

application instructions, the person responsible for registration-documentation and the person responsible for the experience survey-pseudonym were appointed from the City Vision Development Unit and Citizen Participation Unit.

For the participant target, a stratification sampling method with 96 participants over age groups was selected. However, during the workshop, free sampling was used due to the intensity of participation. Before the application, a preliminary study was completed for the analyses by coordinatising over the model photograph of the area in GIS. The Citizen Design Science Workshop was completed between 15 April - 26 April 2022 with the participation of 190 citizens (n=190) consisting of 98 female and 92 male participants. In the first step of the workshop, the spatial design proposals for the Atakent Car Park area were documented. In the second step of the study, the 'design proposals collection process' for the area was completed with a questionnaire consisting of 25 questions.

2.3.2. Climate Sensitive Public Space

Cemal Gürsel Street

"Climate Sensitive Urban Space: Cemal Gürsel Street"

In the urban area, in cooperation with Izmir Metropolitan Municipality and Karşıyaka Municipality, it is aimed to transform ecologically-oriented, climate-compatible, qualified public spaces in order to mitigate the effects of climate change, improve air quality and water management, increase biodiversity, reduce the urban heat island effect and increase sustainability through nature-based practices.

PARTICIPANTS:

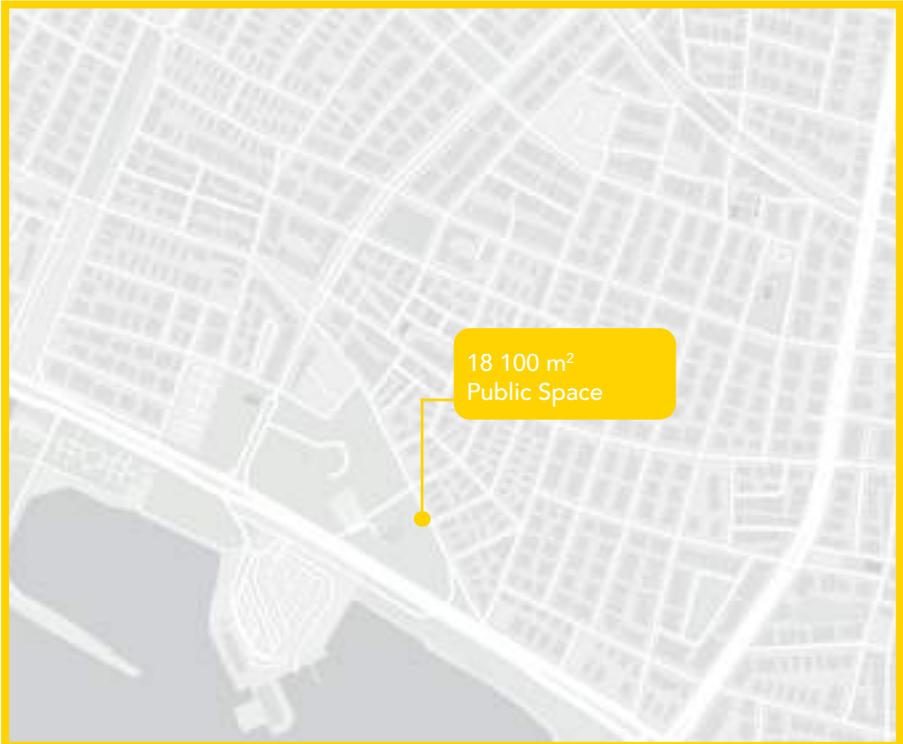


82



71

neighborhood residents, shopkeepers and visitors



COLLABORATORS:

Izmir Metropolitan Municipality

PROJECT DURATION:

12 days

Cemal Gürsel Street, located in Bostanlı district of Karşıyaka district of İzmir, is one of the most important streets due to its accessibility to a wide range of public transportation facilities such as buses, ferries and trams, and its location in the second most densely populated neighborhood. In this context, the area is close to a strong transit and dispersal focus, with the ferry pier, bus stops, tram stops and open and closed spaces for waiting and gathering in close proximity to the study area. The presence of an uninterrupted bicycle path and pedestrianized road along the coast is also important for access to the area.

Bostanlı Fine Arts Park and Suat Taşer Open Air Theater, where events are held intensively, are other important points close to the area. The park within the area, which is currently predominantly green space, is intensively used by the neighborhood and visitors from various districts of İzmir.



In the citizen design science methodology, a nature-based 'implementation guideline' has been adapted as part of the 'Climate Compatible Street Design' guidance. In addition, within the scope of the directive, questions were added to the application directive within the scope of the experience survey together with ecological urban elements in order to understand and increase the level of awareness of citizens about the climate crisis and ecological elements before the 'workshop'. The method of the study consists of 'preliminary interviews' conducted with citizens to identify problems and complaints about the area, 'needs programme' within the scope of the participatory design process with the 'Authority', discussions on design rules and limits, co-design workshop and experience survey work through active design tools, and the steps in which participating citizens' spatial organisation schemes for the area are created. The design principles decisions to be taken on the basis of design science data on the site were discussed in 'round table meetings' and included in the tender file to be opened for the application. The study is an original example of the 'co-design' process by adapting nature-based practices to participatory design tools.

After the preliminary interviews with the users of the area, such as the neighbourhood, visitors and tradesmen, an evaluation was made with the authority to evaluate these interviews and to make decisions on the vision, design constraints and needs programme for the area. Based on the preliminary interview study;

- In order to increase the comfort of the users by reducing the vehicle traffic in this area, which has become a living sub-centre of the city, which has visitors at all seasons of the year and at all hours of the day, the area should be closed to traffic at certain times of the day and the time interval should be asked to the participants in the 'experience survey' questions (for the purpose of consensus of local users),
- Nature-based applications and nature-based urban elements to be proposed in the design within the scope of the 'Climate Compatible Street Design' theme carried out by Izmir Metropolitan Municipality,
- Among the urban elements to be proposed for the area, the 'open object-yellow object', which the participants could not find within the scope of the study and which is a wildcard object for the functions, should be included,

- Preservation of existing trees in the area,
- In order for amateur designers to perceive the workspace and scale more easily, the workshop space container should be located in front of Suat Taşer Open Air Theatre and the 'pole star' element that they can find direction should be transformer and sculpture,
- Within the scope of the workshop, it was decided to present the model base as an active design tool in two different models.

The urban elements determined for spatial transformation together with the authority for the wishes and needs in the area are as follows: green area, hard floor surface coating, (design) tree, car park, bicycle park, bicycle path, walking path, seating element, dog park, cat house, children's playground, hobby garden, skateboard area, sports-playgrounds, green canopy seating element, ecological seating area, parklet, rain ditch, permeable concrete material and yellow object (open object) (Figure 9).

CITIZEN DESIGN SCIENCE WORKSHOPS
CEMAL GÜRSEL CLIMATE COMPATIBLE STREET
APPLICATION DIRECTIVE

İZMİR BÜYÜKŞEHİR BELEDİYESİ **TO KADIKÖY MÜHÜR MÜHALFİYETİ**

The design proposal you will prepare within the scope of this study will be used as design data in the practical design process of the area.
 - You can place the design objects you choose on the application area in any way you wish.
 - If you cannot find the subjects that have the function you want to see among the objects, you can use yellow cubes (open objects).
 - For research purposes, your design actions may be recorded anonymously, by continuing the application you agree to share this data.

OBJELER

- Open Object | Joker
- Green Area
- Hard Floor Surface Coating
- Car Park
- Bicycle Path
- Dog Park
- Cat House
- Hobby Garden
- Skateboard Area
- Sports - Playgrounds
- Tree
- Bicycle Park
- Green Canopy Seating Element
- Ecological Seating Element
- Seating Element/Bench
- Children's Play Area
- Parklet
- Rain Ditch
It is used to collect rainwater and prevent water accumulation on the surface. It can be built for technical, ecological, recreational and aesthetic purposes. There are opportunities to use it as a green space. It can be used as a green space in urban areas.
- Permeable Concrete
It is used for applications in urban areas. It can be used in urban areas and it is used to reduce the noise level.

Figure 9. Cemal Gürsel Street Application Directive

For the workshop implementation; Karşıyaka Municipality Urban Vision Development Unit, Citizen Participation Unit and Izmir Metropolitan Municipality Department of Studies and Projects Directorate of Project Management and Coordination, a coordinator responsible for the general operation, responsible for welcoming and guiding the participants, responsible for the analogue model and implementation guidelines, responsible for recording and documentation and responsible for the experience survey were assigned. During the participatory design process, free sampling was applied in terms of participant profile based on the intensity of participation in the area. Before the application, a preliminary study was completed for the analyses by making coordinates on the model photograph of the area in GIS. The participatory design workshop was held between 30 May - 8 June 2022 and 310 spatial design proposals were collected from a total of 153 participating citizens (n=153) on two different models for Cemal Gürsel Caddesi. In the second stage of the workshop, the participants took part in the survey consisting of 30 questions and the 'process of collecting design proposals' for the area was completed.

▶ 2.3.3. Örnekköy Şehit Petty Officer Durukan Primary School Garden

Bahariye Neighbourhood

“Elderly Friendly Public Space”

The project aims to transform the garden of Örnekköy Şehit Petty Officer Erkan Durukan Primary School in Örnekköy Neighborhood of Karşıyaka Municipality into a qualified public space by following a participatory process. The creation of the project through a participatory and transparent process includes the transformation of the school garden into an attractive and qualified public space for education and training life by increasing the 20% of the student population continuing their education life together with the establishment of the belonging of the users in the disadvantaged social group with the area. The workshop also aims for students to take part in the participatory process of decision making, taking responsibility, problem identification, problem solving, organizing, producing creative potentials and being a part of all processes.

PARTICIPANTS:



26

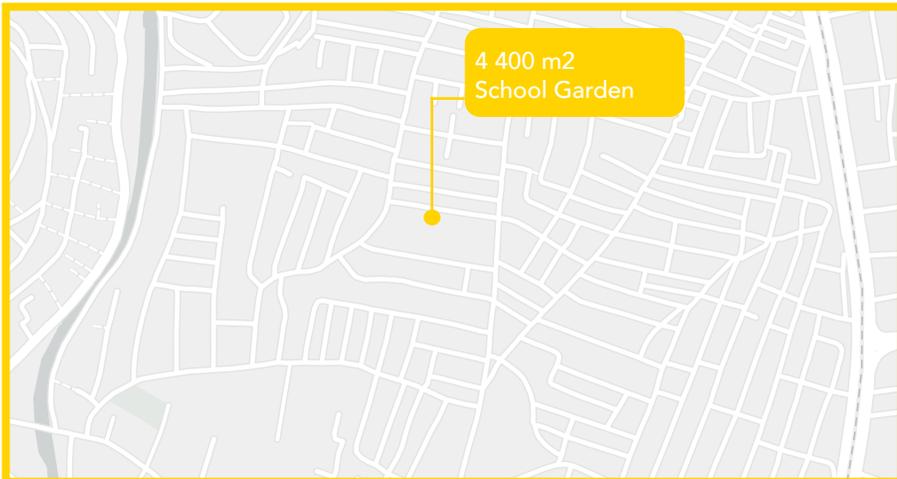


10



15

school staff, parents and students



COLLABORATORS:

Ministry of National Education

PROJECT DURATION:

3 days

The school is built on an area of 6518 m² and the land is owned by the special administration. Part of the school garden is shared with the kindergarten and separated by a 1.85 meter high school wall. There is an undefined playground, a basketball court, a mini soccer field and a ceremony area. There is a 37 m² canteen in the garden. The main building area is 800 m² and consists of a single two-story building. While 250 students are enrolled in the school, the number of regular attendance is 47. Approximately 85% of the students are Roma citizens.



The method of the study is the 'needs programme' together with the 'Authority' after the 'preliminary interview' conducted with the users to identify problems and complaints about the area. It consists of steps such as discussions on design rules and limits, participatory design workshops and experience surveys carried out through active design tools, and the provision of spatial organisation schemes and data for the area. In the preliminary interview study conducted prior to the participatory design study, an evaluation was made with the authority in order to evaluate these interviews and to make decisions regarding the vision of the area, design constraints and urban elements to be used in the design. Based on the preliminary interview;

- That the urban elements of 'children's playgrounds' that the participants can use in their design proposals are diverse and attractive,

- Among the urban elements to be proposed for the area, it was decided to propose the 'yellow object', which is a wildcard object for the functions that the participants could not find within the scope of the study,

- Among the urban elements to be proposed for the area, the 'blue object', which means 'water element', was added to the directive and the participants characterised this element within the scope of the experience survey study,

- Decisions were taken to target inward participation for user diversity.

The child's sense of space develops through various concepts such as above-below, inside-outside, open-closed, right-left, near-far. Repetition of shapes, textures, colours, designs and sounds is important to enable children to learn¹. Playgrounds outdoors for children;

- *Playing games*

- *Developing children's skills,*

- *Increasing learning abilities*

- *Enabling them to find their personality*

- *They have the benefit of facilitating their perception of their environ-*

¹ Sevgi Yılmaz and Zöhre Bulut, "Kentsel Mekanlarda Çocuk Oyun Alanları Planlama ve Tasarım İlkeleri," *Atatürk Üniversitesi Ziraat Fakültesi Dergisi* 33, no. 3 (2002): 345–51.

ment .

Four types of playgrounds that meet these criteria:

1. Traditional (classical or conventional) playgrounds
2. Contemporary (sculptural) playgrounds
3. Adventure playgrounds
4. Creative playgrounds

In the method where the simplest version of the determined urban elements was presented to the child participants between the ages of 5-9, which Jean Piaget, the most important theorist of cognitive development, defines as the introspective stage, the urban element of 'children's playgrounds' was introduced in these four different types ^{2,3}.

The urban elements we have identified for spatial transformation together with the authority for the requests and needs in the area are as follows: green area, hard ground surface covering, soft ground surface covering, pergola/top cover, seating element, tree, fruit tree, hobby garden, basketball court, volleyball court, bicycle park, cat house, hobby garden, hopscotch, I sell oil - I sell honey circle, cube seating element, coloured cubes game element, rubber game element, climbing wall, performance element, yellow object - wild object, blue object - water element (Figure).

2 Duygu Çukur, "Erken Çocukluk Döneminde Görsel Algı Gelişimine Uygun 25 Mekan Tasarımı," *Sosyal Politika Çalışmaları Dergisi* 24, no. 24 (2011): 25–36.

3 Jean Placet, "Piaget ' s Theory," n.d., 11–12.

**CITIZEN DESIGN SCIENCE WORKSHOPS
ÖRNEKKÖY APPLICATION DIRECTIVE**

- THE DESIGN PROPOSAL YOU WILL PREPARE DURING THIS STUDY WILL BE USED AS DESIGN DATA IN THE DESIGN PROCESS OF THE AREA'S APPLICATION.
- YOU CAN PLACE THE DESIGN OBJECTS YOU CHOOSE ON THE APPLICATION AREA AS YOU WISH ON THE AREA.
- IF YOU CAN'T FIND THE OBJECTS OF THE FUNCTION YOU WANT TO SEE AMONG THE OBJECTS, YOU CAN USE THE YELLOW CLIPS-OPEN OBJECTS. FOR RESEARCH PURPOSES, YOUR DESIGN ACTIONS MAY BE RECORDED ANONYMOUSLY, YOU AGREE TO SHARE THIS DATA BY CONTINUING THE APPLICATION.

OBJECTS

OPEN OBJECT / JOKER	TREE	SEKSEK
WATER ELEMENT	FRUIT TREE	I SELL OIL / I SELL HONEY CIRCLE
GREEN AREA	HOBBY GARDEN	CUBE SEATING AREA
HARD FLOOR SURFACE COATING	BASKETBALL COURT	COLORFUL CUBES GAME ELEMENT
SOFT FLOOR SURFACE COATING	VOLLEYBALL COURT	RUBBER GAME ELEMENT
PERGOLA TOP COVER	BICYCLE RACK	CLIMBING WALL
SITTING ELEMENT	CAT HOUSE	PERFORMANCE AREA

Figure 10. Implementation Guidelines

Within the scope of the study, the concept of ‘citizen design science’ method, in which citizens produce data for design science by utilising their experiences about the environment they live in, has been expanded and re-taken in accordance with this project and participant diversity. Two different ‘implementation guidelines’ were prepared for the workshop, in which a diversity of introverted participants was carried out with students, school staff and parents, who are the real users of the space. In addition, the experience questionnaire, which is the second step of the ‘workshop’ for the participants within the scope of the directive, was prepared in three different contents⁴.

The process for adult participants (school staff and parents), which followed the implementation guidelines of the Citizen Design Science I and II projects, was revisited for student participants in this study. A new application guideline consisting of 4 steps has been added for the participant profile consisting of primary school age group students. The first step of this directive adopted in the method; After the introduction of 3D models and objects to the students, in the second step, a ‘visual matching’ game was prepared

⁴ Pelin Özden, “Vatandaş Tasarım Bilimi Atölyeleri, İhtisas Raporu I” (Izmir, 2022).

by walking around the garden with the primary school site plan included in the experience questionnaire prepared for the student profile and photographs taken from some different points of the garden around it.⁵ (mind map process). In this way, thanks to this 'gamification', students will be able to exercise their minds on the location - direction on the field before creating their spatial proposals on the model base. In the third step of the instruction, it was aimed to record the students' individual design drafts on the active design tool and possible qualitative data during the application. In the last step of the application, with the experience questionnaire, if the student used a 'yellow object', which is an open object in his/her sketch during the application, he/she was asked to draw the object(s) used (Figure 8-9).

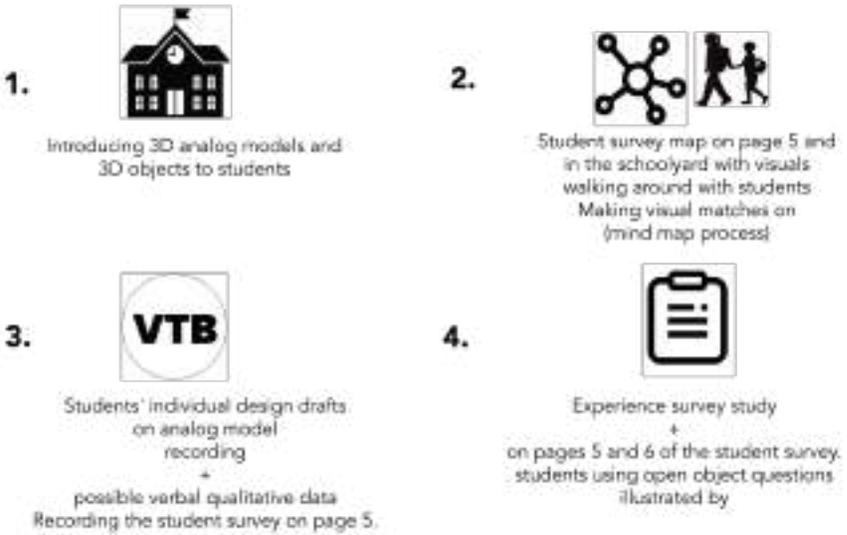


Figure 11. CDS Workshops III -4 Phase student implementation guidelines

⁵ Kevin Lynch, *Kent İmgesi*, 10. Baskı (İstanbul: Türkiye İş Bankası Kültür Yayınları, 2018).



Figure 12. Left: Workshop (mind mapping process with students in the field), Right: Participant's design sketch on a 3D model

51 participants (n=51) participated in the study where spatial design proposals for the primary school garden arrangement were received, and design principles decisions were taken through design science data about the area. The meetings with multi-stakeholder experts took place in four phases:

1. Analysing the data,
2. Determination of design principles based on 'Design Together' data,
3. Creation of design proposals,
4. Production process organisation (organisation of the co-production phase through NGOs).

The participants in the meeting team were as follows: CDS Workshops project coordinator, Urban Design Directorate design team, Dokuz Eylül University Faculty of Architecture academicians, designers participating in the 'Child Friendly and Playable Karşıyaka Workshop' organised by Aktif Yaşam, and representatives of Örnekköy Roma Community Youth Education and Development Association.

The study includes the process of transformation of the primary school garden into a qualified public space and is an original model example for the 'co-design' process in which the real users of the area can convey their spatial solutions, suggestions and needs to the designer in a common language through active design tools.

▶ 2.3.4. Bahar Park

Bahariye Neighbourhood

“Elderly Friendly Public Space”

Located within the boundaries of Karşıyaka-Bahariye Neighborhood, the area surrounded by residential buildings is owned by Karşıyaka Municipality and marked as a park in the zoning plan. The area is surrounded by adjoining 5 and 6-storey residential buildings. All backyards of the existing residences around the park face the park.

The project aims to transform Bahar Park in Bahariye Neighborhood into a qualified and inclusive public space by following a participatory process.

PARTICIPANTS:



3

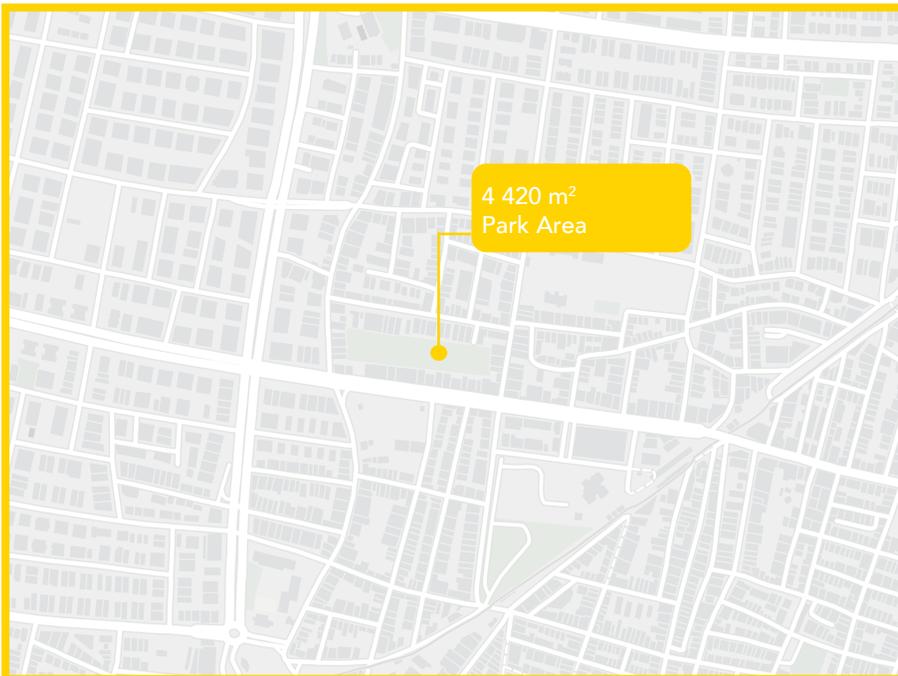


71



7

shopkeepers, neighborhood residents and visitors



COLLABORATORS:

PROJECT DURATION:

7 days

The 83 participants consisted of students, young people, neighborhood residents and the elderly; 71 people participated as neighborhood residents, 7 as visitors, 3 as shopkeepers, while 2 people stated that they participated as both shopkeepers and neighborhood residents.



Within the scope of the participatory design method 'citizen design science', it aims to document the interviews with the authority about the needs programme and rules, active design practice, survey study including demographic and experience questions, and the spatial organisation suggestions of the citizens who experience or visit the area. The results of the experience survey, active design practice and voting survey are shared with the authorities and professional designers in 'Round Table Meetings' and decisions are taken for the design process of the concept design of the urban area.

In the interviews, it is noteworthy that the young population described this park as 'empty park' among themselves. The expression reflects the meaning that the area is unattended and neglected. In the oral pre-interview evaluation, the reasons for the current users to visit the area are as follows:

- Meeting,
- Walking their pets,
- Using outdoor sports facilities,
- It is seen as making transit.

It has been observed that the people who visit the area for meeting purposes are young people after school and high school hours, neighbourhood residents who walk their pets intensively, and elderly people rarely use outdoor sports elements. Visitors who use it for transit purposes use it with low intensity.

According to the preliminary interview evaluation, negative opinions about the field are as follows:

- Preference of young people as a meeting point for smoking, drinking alcohol, etc. after school hours,
- Removing the playground elements of the playground as a result of unsafe incidents and replacing them with outdoor sports elements,
- It is a meeting point for drug addicts in the evening,
- Due to the lack of access from the side garden, those who want to pass through have to jump over the dividing garden wall,

- Street and pet faeces,
- Car parking problem,
- Safety concerns regarding electricity and natural gas transformer elements,
- Incidents such as harassment, theft and drug dealing in the area,
- Lack of sufficient lighting in the area,
- Defining the area as an unsafe area

According to the preliminary interview evaluation, the positive opinions about the field are as follows;

- Establishment of neighbourhood culture,
- High sense of belonging.

At the meeting with the authority based on the pre-interview assessment;

• Due to the fact that the demographic structure of the area and its context is predominantly made up of the elderly population and the negative events evaluated for the use of the area based on the preliminary evaluation results, the qualities of 'elderly-friendly public space' should be taken as a basis for the transformation of the area,

• Selection of urban elements to be proposed for the area in accordance with this theme,

• Protection of existing trees in the area,

• The design and implementation of the separating walls between the area and the dwellings should be asked to the users through a questionnaire method,

• Since visual images in elderly-friendly public spaces create strong senses in the memory in the urban experience, the sculpture element should be proposed in the transformation of the area.⁶,

⁶ Ayşen Çelen Öztürk et al., "Yaşlı Bireylerin Kentsel / Kamusal Mekânları Kullanım Analizi : Eskişehir Örneği," *Elderly Issues Research Journal (EIRJ) Cilt 10*, no. 1 (2017): 1–13, <http://dergipark.ulakbim.gov.tr/yasad/>.

- Due to the transformation of the area into a fully inclusive, multifunctional and qualified public space, the car parking element is not proposed in the new arrangement,

- The dividing wall in the area should be redesigned to be more transparent and permeable and open at certain times of the day due to security concerns,

- Among the urban elements to be proposed for the area, it was decided to add the 'yellow object', which the participants could not find within the scope of the study and which is a wildcard object for the functions,

- Due to the unsafe definition of the area and unsafe incidents, a 'black object' - camera - was added to the directive and among the urban elements - for the first time in the method - in order to record the qualitative phenomenon of trust,

- In order for the participants to perceive the space and scale more easily, the 'pole star' element on the analogue model should be a transformer instead of the container, which is the workshop space,

- Based on the 'design for all!' approach of the 'Citizen Design Science' method, it is emphasised that the participation of senior citizens is also important in this participatory workshop, and the invitation and participation organisations will be made by the Citizen Participation Unit in an analogue manner,

- Decisions have been taken to ensure that the urban elements to be proposed do not contain 'noise' elements.

The rapid change and transformation of urban spaces creates an environment of insecurity for the elderly in the city and defines their living spaces with the housing and its immediate surroundings. Elements such as monumental buildings, parks, sculptures, streets and avenues enable elderly people to feel safe in their urban circulation, thus enabling them to be liberated and independent in their daily activities. The prerequisite for healthy ageing is that individuals can live safely and independently in housing and urban spaces. Therefore, cities should provide safe urban spaces where all individuals can live independently. It is essential that the arrangements to be made in public spaces are designed to facilitate and mobilise the movements of

the elderly. It is important in terms of 'healthy urbanisation' that the elements of urban memory that carry the traces of the past, including all age groups, are carried to the future and that new spatial arrangements and transformations are designed together with memory elements.⁷ In this context, urban elements determined for the spatial transformation of the area towards user demands and needs are; green area, hard ground surface covering, botanical garden, bicycle park, organic product sales unit, pergola-top cover, seating element, water feature, tree, fruit tree, cat house, kiosk/book cafe, artistic element: sculpture, black object – security camera, yellow object – joker. In addition, within the scope of the participatory design process to be followed in the transformation of Bahariye Neighbourhood, Bahar Park into a qualified and multifunctional public space, it was aimed to prepare a user-friendly analogue design tool and application guidelines, including the simplest representations of the objects belonging to the model base and urban elements together with the scale in order to enable the participants to easily express their spatial proposals (Figure 11).



CITIZEN DESIGN SCIENCE WORKSHOPS IV – BAHARIYE | BAHAR PARK APPLICATION DIRECTIVE

* The design proposal you will prepare within the scope of this study will be used as 'design science data' in the practical design process of the field.
 * You can place the design objects you choose on the application area in any way you wish.
 * If you cannot find the objects that have the function you want to see among the objects, you can use the yellow cube object [open object].
 * For research purposes, your design actions may be recorded anonymously. By continuing the application you agree to share this data.

OBJECTS

<ul style="list-style-type: none">  Green Area  Hard Floor Surface Coating  Botanic Garden  Bicycle Park  Organic Market  Pergola/Top Cover  Seating Element  Water Element 	       	<ul style="list-style-type: none">  Tree  Fruit Tree  Cat House  Kiosk/Book Cafe  Sewazal Üge: Heykel  Artistic Element Sculpture  Yellow Object Joker 	      
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Figure 13. Bahariye Bahar Park, Workshop application guidelines

For the workshop; it was aimed to document the top view of the design drafts of each user by placing a tripod and camera on the model base. An open space was organised in the workshop area for the experience survey (Figure 14). For the participant target, free sampling method was preferred due to the physical characteristics of the inner garden of the area. Prior to the workshop, information notes were posted at the entrances of the flats. Before the application, the preliminary study for the analyses was completed by coordinating the model base of the area on the model photograph of the area in GIS. Citizen Design Science Workshops, Bahar Park study was completed with the participation of 83 citizens (n=83) between 25.07.2022-12.08.2022. In the first stage of the participatory design workshop, spatial design suggestions for the area were documented, and in the second stage, the 'design suggestions collection process' for the area was completed with the experience survey consisting of 45 questions.

In the Citizen Design Science Workshops, where spatial design proposals for 4 different public spaces were documented, individual design proposals recorded on analogue design tool models were then coordinated and analysed through the bases produced using GIS tools. In order to produce design science data, the 'Hierarchical Cluster Analysis' method was used at the spatial scale. Cluster analysis and graphs of the objects were prepared based on the analyses of the documented individual design drafts of the participants. The data were organised and classified according to urban object type and dendrograms of user groups and urban objects were produced.

In the evaluation of the analyses; instead of the 3D structure of the urban design elements, the focus is on how the urban elements are arranged and where they are placed on the base. Participants can propose basic organisation and new function(s) using existing design tools. In addition to the requirement for participants to build a minimum number of residential units, the current method with design limitations (CDS) allows them to propose original functions and spatial organisation of the public space. Cluster analyses of urban elements aim to show the preferred areas for certain objects. It also reveals the spatial distribution of urban element types. This method allows the participants' ideas about spatial organisation and urban elements to be visually combined¹.

The design principles to be adopted in the concept design(s) were determined through the analyses prepared in line with the relationships between the spatial proposals. Spatial suggestions of existing and potential users of the site were included in the workshops. In the application guidelines and on the analogue model, permanent elements and areas such as existing trees and transformer elements are identified as non-intervention areas.

The analyses, which include the experiences and suggestions of the participating citizens in the workshops, are examined under 3 main headings: Experience Survey Analysis, Spatial Data Analyses (Design Science Data), 'Open Object' Analysis.

The evaluations based on the results of the analysis include infrastructure - technical needs, spatial organisation of urban elements and spatial design principles, open object decisions.

¹ Özden, "Citizen Design Science in the Context of Crowd-Creative Design Practices: Case of Izmir."

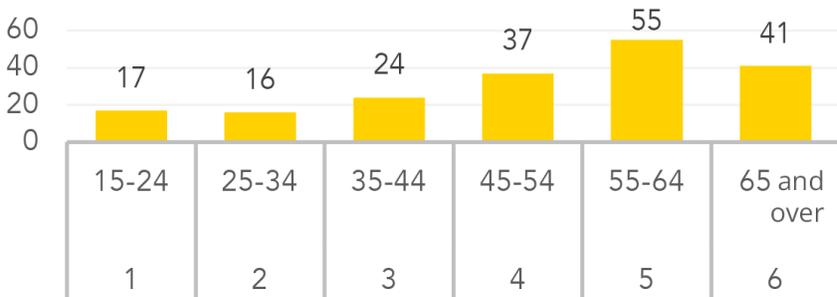
In this section, the results of the experience survey and design science data for 4 different public spaces after the workshops will be explained. The results of the analyses are presented in detail in the Specialised Report on Citizen Design Science Workshops.

3.1. Atakent Car Park Results

Cluster analysis and graphs of the objects were prepared based on the analyses of the individual design drafts documented by the analyses of the participants' experience questionnaires. The data were organised and classified according to urban object type and dendrograms of user groups and urban objects were produced.

3.1.1 Atakent Car Park: Experience survey analyses

Within the scope of the workshop, the study was completed with 190 citizens consisting of 92 women and 98 men; 48% of the participants were women and 52% were men. The highest participation rate is in the 55-64 age group with 29%. This is followed by the 65 and over age group with 22% (Graph 1.).



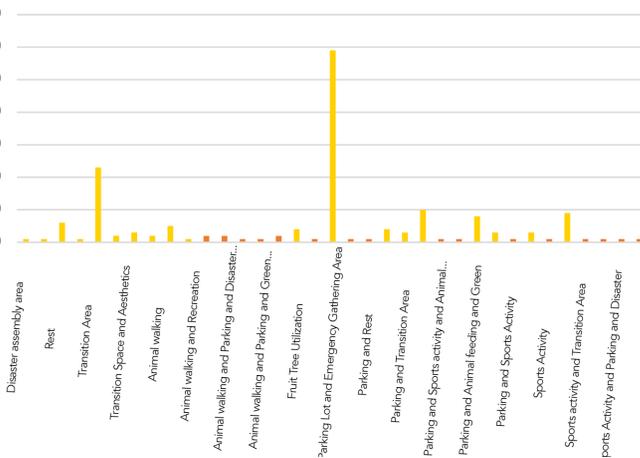
Graph 1. Age Distribution of Participants

The occupational groups of the participants were analysed in two groups as professional (people who are experts in design) and amateur (people who are not experts in design). While 97% of the participants are not in the occupational group related to professional design, 3% are in the occupational group related to professional design. Within the scope of the 'Citizen Design Science' method adopted, it is valuable for the participating amateur designers to meet with professional designers on a platform through a com-

mon language in the design tool developed through analogue model.

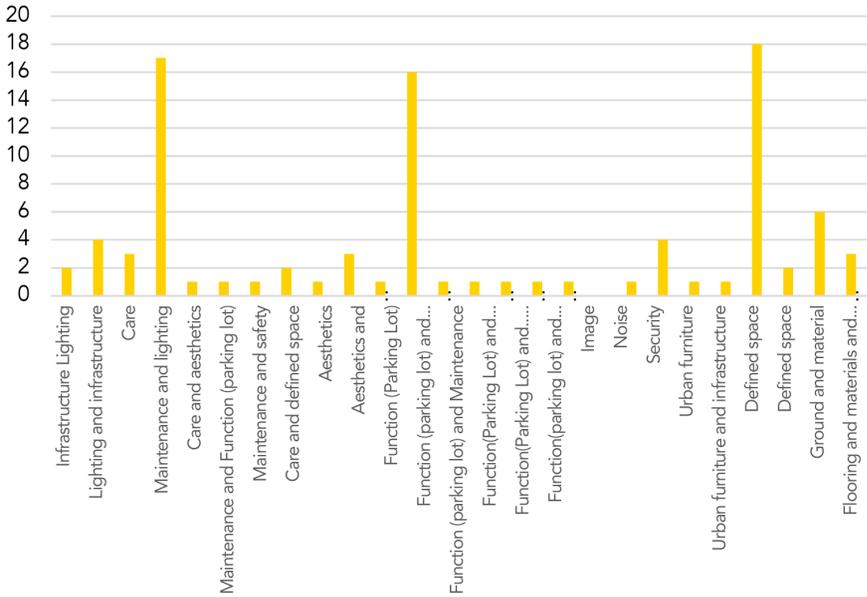
Within the scope of the method aiming to produce spatial data through the participation of existing users and potential users of the area; 63% (120 people) of the participants live in Atakent Neighbourhood, while 37% (70 people) are visitors who do not live in Atakent Neighbourhood and use the area. Thus, 63% of the respondents are current users of the site, while 37% are potential users of the site; visitors.

While 164 of the 190 participants used the area, the participants who stated that they used the area were asked for what purposes they used the area. According to Graph 2; the area is mostly used as ‘car park’ with a rate of 35% (59 people). On the other hand, the area is used as a ‘transition area’ with 14% (23 people), which is the second highest rate. These data emphasise the ‘transit space’ characteristic of public spaces rather than their ‘stopping and spending time’ characteristic (Graph 2).



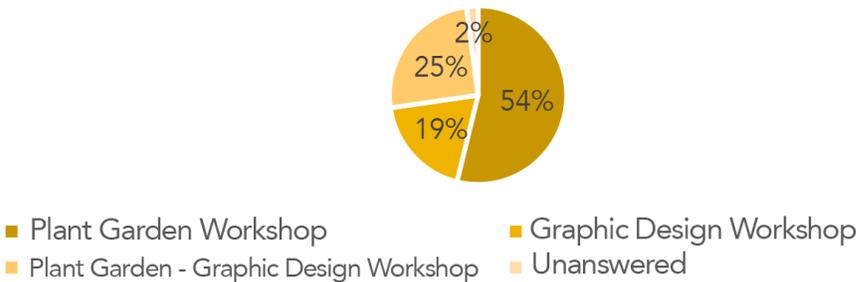
Graph 2. Distribution of the participants’ purpose of using the area

93 out of 190 participants responded to the question of negative thoughts about the area; 18 people stated that ‘the area is undefined’, 17 people stated that ‘the area is neglected’, 16 people stated that ‘the area is used as a car park’, 6 people stated that ‘the ground material’ is negative and 4 people stated that the area is not safe. These negative opinions about the area give clues about the transformation of the area into a qualified public space (Graph 3).



Graph 3. Distribution of participants’ negative opinions about the field

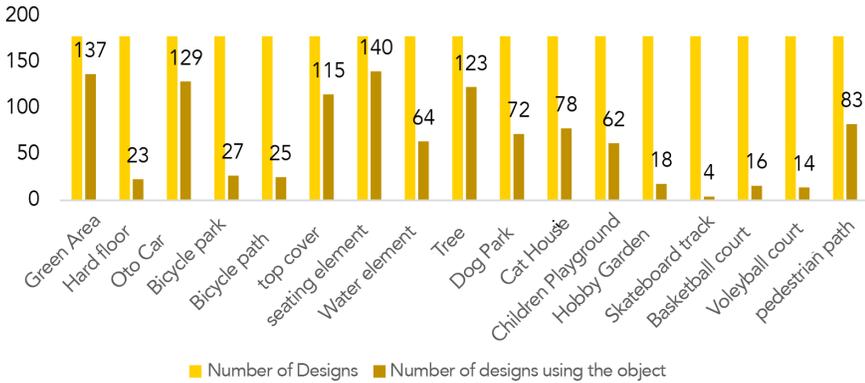
Participants were asked about their willingness to participate in potential co-production workshops that could be opened for practice in Karşıyaka Municipality and which production workshop they would like to participate in. Of the 142 participants who wanted to participate in the workshops, 77 wanted to participate in the plant gardening workshop and 27 wanted to participate in the graphic design workshop. The number of citizens who wanted to participate in both workshops was 36. The number of people who wanted to participate in the workshops but did not choose a workshop was 3 (Graph 4).



Graph 4. Distribution of the workshops that the participants would like to participate in the co-production process

3.1.2 Atakent Car Park: Spatial data and open object analyses

In the study involving 190 participants in the co-design process of Atakent Car Park, 9,497 urban objects were used. Graph 5 shows the distribution of urban elements preferred by the participants (Graph 5).



Graph 5. Distribution of the urban elements used by the participants in their design drafts according to the number of user designs

With reference to Graph 5; the ratio of car parking area in the area is 30% for 0-20 vehicle capacity and 30% for 60-80 vehicle capacity. In addition, within the scope of the workshop, which does not allow more than 50% intensive car parking use, the ‘yellow cube’ object, which was included as an ‘open’ object, was used as a ‘car parking’ object by 11% of the participants who suggested that the area should be used 100% as a car parking function. This was considered as a manipulative design trick.

Cluster analyses and graphs of the objects were prepared based on the documented individual design sketches of the participants and the analyses of the experience questionnaires. The data were organised and classified according to urban object type and dendrograms of user groups and urban objects were produced (Figure 14).

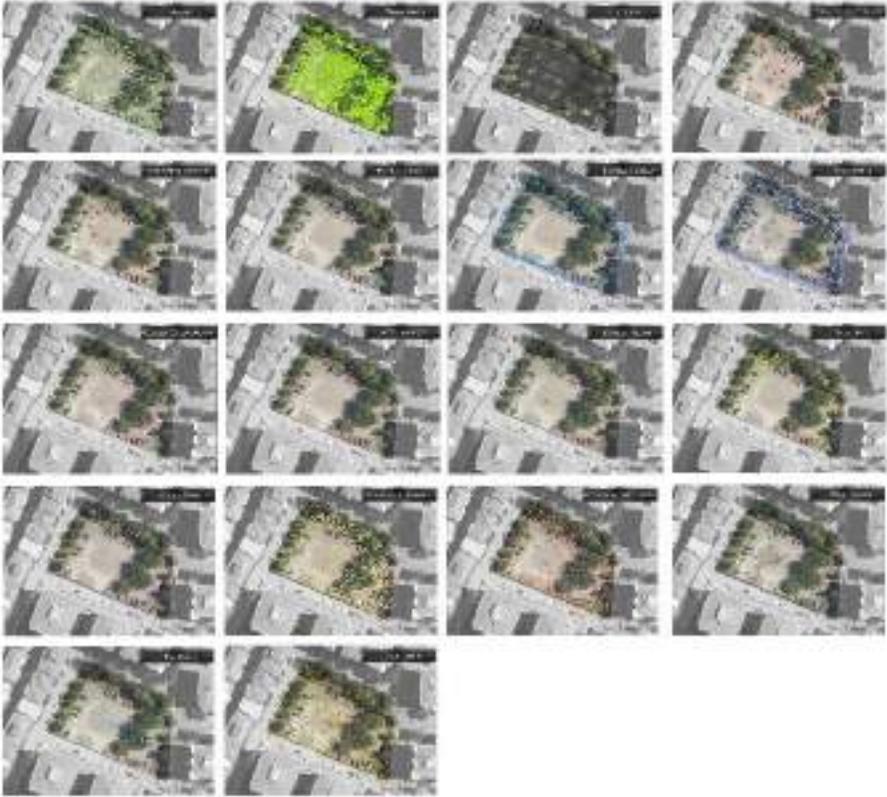


Figure 14. Atakent Car Park: Hierarchical clustering graph of urban elements

There were 217 uses of the free urban element 'yellow object' by the participants; and in the analyses, 97 objects consisting of technical needs and requests were excluded from the cluster (lighting element, waste bin, rubber floor, etc.). The remaining 120 'yellow objects' were analysed in three different groups: (a) public function, (b) commercial function, (c) artistic function. In the analyses, the highest preference was given to items with public functions, while the lowest preference was given to proposals with commercial functions. The hierarchical order of the suggestions is concentrated on picnic tables, table tennis and sports equipment.

3.1.3. Atakent Car Park: Spatial Organisation of Urban Elements, Design Principles and Design Process

After the evaluation of spatial design science data and experience survey data in 'round table meetings' with the 'authority', two alternative con-

cept design projects were decided for the transformation of the public space. These two concept design projects were submitted to the voting of the participating citizens within the process fiction of 'citizen design science'.

In the round table meeting, the evaluations regarding the spatial organisation scheme and design decisions were evaluated through 3 main decisions: The ownership of the area belongs to Karşıyaka Municipality and its 'applicability' for the implementation process due to the fact that it appears as a regional multi-storey car park area in the zoning plan, whether there are similar public functions in the immediate context of the area, the reflection of the 'open object' analysis evaluation on two alternative concept designs.

After the evaluation, hierarchical cluster analysis maps of urban elements and their spatial organisation schemes for two alternative concept designs were shared with professional designers. The urban element decisions taken for Alternative Concept Design I are as follows: walking path, parklet - shade, seating area-parklet, cat houses, dog park, children's playground, children's playground water feature, pergola / cover, car park (50% capacity) - artistic works, bicycle parking - scooter parking, picnic table and bicycle track area. The urban element decisions taken for Alternative Concept Design II are as follows; seating area - parklet, walking path, activity area, water element, pergola / cover, cat houses, dog park, car park, bicycle parking space-scooter parking space, table tennis, picnic table, car park (50% capacity) - artistic works. In the first alternative concept design project, 'picnic table' was suggested by the majority of the participants, while in the second project, 'table tennis' represented the 'open object' (Figure 15).

A three-day voting study was carried out in the field to vote on two alternative concept design projects prepared for the transformation of the car park area into a qualified public space. The voting setup includes the transparent sharing of design science data in the co-design process, the voting of the alternative concept design project by the participant and the voting survey consisting of 3 open-ended questions. A total of 50 participants took part in the voting process carried out in the field. An online survey form was created for citizens who could not participate in the voting process in the area. This form was sent to the citizens via text message by Karşıyaka Municipality. A total of 23 participants took part in the digital survey.



Figure 15. Atakent (Auto)Park Alternative Concept Design I (left) and II (right)

Within the scope of the citizen science method, during the voting process in which all processes and evaluated data were transparently shared with the participants, the projects were introduced to the participants in the voting area under the coordination of the Urban Vision Development Unit and the Citizen Participation Unit. Participants voted for the concept design project of their choice in the 'transparent ballot box' (Figure 16).



Figure 16. Voting Process of Alternative Concept Design Projects in Transparent Ballot Box (Photos: Karşıyaka Municipality Press and Publication Directorate)

73 citizens participated in the analogue and digital voting process, 43 participants selected Alternative Design Project 1, while 30 participants se-

lected Alternative Design Project 2. Based on the data on the process, the voting result of the citizens who participated in the co-design process shows that Alternative Design 1 was selected with a democratic majority of votes. After the completion of the revisions in the project, the urban furniture of Atakent Car Park was produced in the municipal atelier for the qualified public space application, taking into account the production capacity of the municipality (Figure 17-18-19).



Figure 17. Production of urban elements within the capacity of the municipality and visuals from the park application (Photos: Pelin Özden)



Figure 18. Atakent (Auto) Park top view after the application (Photos: Karşıyaka Municipality Press and Publication Directorate)



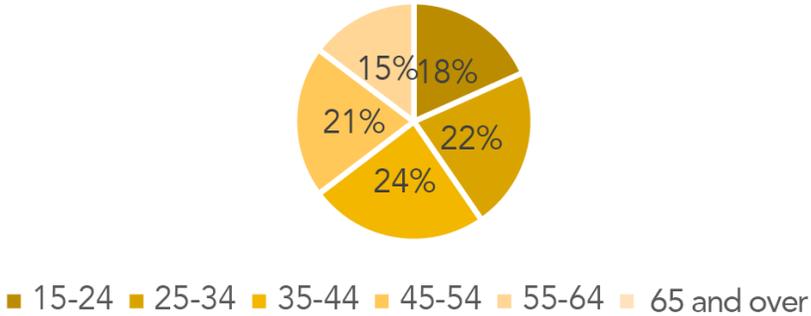
Figure 19. Atakent (Auto) Park after the application (Photos: Karşıyaka Municipality Press and Publication Directorate)

3. 2. Climate Sensitive Urban Area: Cemal Gürsel Street Results

Cluster analysis and graphs of the objects were prepared based on the analyses of the individual design drafts documented by the analyses of the participants' experience questionnaires. The data were organised and classified according to urban object type and dendrograms of user groups and urban objects were produced.

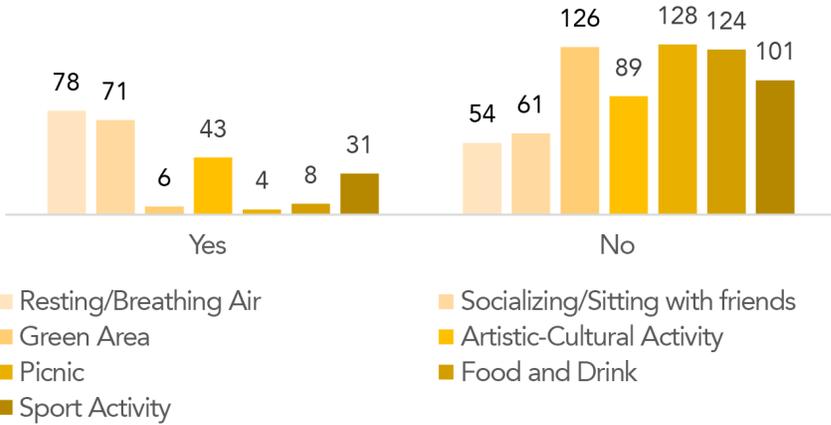
3.2.1. Cemal Gürsel Caddesi: Deneyim anketi analizleri

Of the 153 participants who took part in the urban design study together, 71 were female with a rate of 46% and 82 were male with a rate of 54%. 25 people aged 15-24, 30 people aged 25-34, 33 people aged 35-44, 28 people aged 45-54, 20 people aged 55-64, and 17 people aged 65 and over participated in the co-design study. The highest participation rate is in the 35-44 age group with 21.6%. This rate is followed by the 25-34 age group with 19.6% (Graph 6).



Graph 6. Age distribution of participants

The occupational groups of the participants were analysed in two groups as professional (people who are experts in design) and amateur (people who are not experts in design). While 95% of the participants are not in the occupational group related to professional design, 5% are in the occupational group related to professional design. Within the scope of the method, it is valuable that the participating amateur designers meet with professional designers on a platform through a common language in the design tool developed through analogue model. In addition, all 153 participants stated that they used the space they designed. Out of 135 people who use the urban area for recreational purposes, 78 people (58%) state that they use the urban area for resting/getting air, while 71 people (53%) use the area for sitting in the area for socialising. According to the purposes of recreational use of the area; 43 people who use the area for artistic/cultural activities constitute 32%, 31 people for sports activities constitute 20%, 6 people who prefer green areas constitute 4%, 12 people for eating and drinking constitute 8%, and 4 people for picnics constitute 3%. Therefore, it is seen that 55% of the people who use the area for recreational purposes mostly use the area for resting/getting air and socialising (Graph 7).



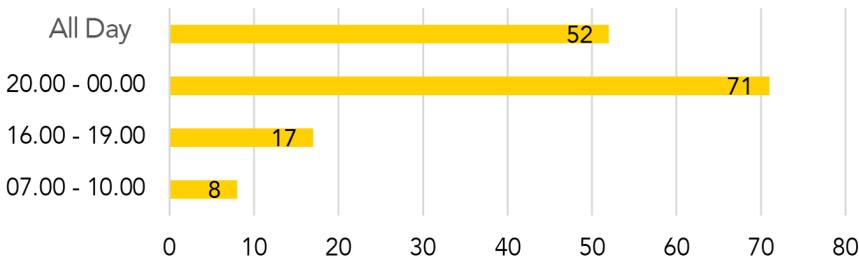
Graph 7. Recreational use graph

115 out of 153 participants expressed negative opinions about the field. When these opinions are analysed under 5 different headings; 48 people are in the most negative opinion category such as 'traffic access-parking, car noise in the area' with a rate of 42%. 'insufficient urban furniture' (fountains, benches, children's playgrounds, etc.) and 'lack of cleanliness-maintenance' (toilet use, park neglect, environmental pollution, etc.) come in second place with 33 respondents each and constitute 57% of the respondents. These data suggest that the area should be well maintained and clean in the future. The participants who presented negative opinions on sub-headings such as lack of green areas and the use of concrete floors constitute a rate of 23% with 27 people. The 25 people who stated that there is a 'security' problem in the study area constitute 22% of the respondents. Sub-headings such as alcohol consumption in the area, lack of security personnel, noise problem and lack of lighting are included in this category. There are also participants who are uncomfortable with the dense building stock in the area, who find the study area dysfunctional and unqualified, who think that the human communities in the area are not managed, and who are uncomfortable with the bazaar area. Among these topics, the heavy traffic on the street, car parking problem, security concerns in the parking area and the insufficiency of the quality and quantity of urban furniture give clues about the transformation of the area into a qualified public space in the future (Graph 8.).



Graph 8. Graphic on participants' negative opinions in the field

As a solution to 'heavy traffic and car parking', which is among the negative opinions reported about the area, it was decided to reduce pedestrian priority vehicle traffic. 134 people out of 153 participants responded to the question 'at which time intervals the street should be closed to traffic'. Of the 134 participants who responded to the question, 71 people (53%) preferred the street to be closed to traffic between 20:00-00:00 in the evening, 52 people (39%) preferred the street to be closed to traffic all day, and 17 people (13%) preferred the street to be closed to traffic between 16:00-19:00 (Graphic 9.).



Grafik 9. Time preferences of the participants regarding the closure of Cemal Gürsel Street to traffic

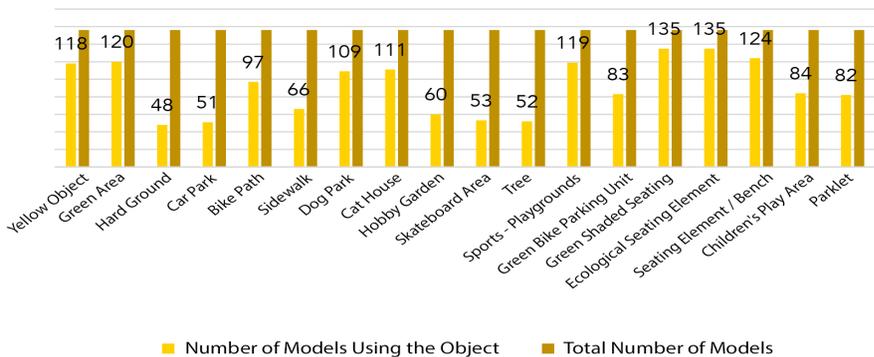
In the study, where nature-based practices and ecologically-oriented participatory design workshops were aimed, 152 participants responded to the question 'Do you think you have information about climate change?' which was asked to the participants in order to measure knowledge and raise awareness. While 81 participants thought that they were informed about cli-

mate change, 61 participants stated that they were partially informed. 10 participants stated that they did not have information about climate change with a rate of 7%. Therefore, it was observed that 93 of the participants had knowledge about climate change with a rate of 53%.

Regarding the nature-based practices and urban elements in the workshop, which aims to measure awareness and awareness before and after the workshop, and the practices they learned after the workshop, it shows that 121 of the 153 participants were mostly knowledgeable about the practice of creating bicycle facilities. The practice that was unknown before the workshop but which the participants thought they had learnt the most after the workshop was the 'rain garden and rain ditch' practice. Since this application is an infrastructural application, it is shown in 2-dimensional form on a model base instead of an urban element that can be preferred in the spatial proposal. Despite this, it is an application that the participants expressed that they learnt the most after the workshop by giving verbal information to the participants within the scope of the application directive. In this sense, the contribution of the method is important as it raises awareness and consciousness among the participants.

3.2.2. Cemal Gürsel Caddesi: Spatial data and open object analyses

In the co-design process for the urban area, a total of 12,732 urban element objects were used in the study, which included 156 design drafts. The most used urban element is the green area (Graph 10.).



Graph 10. Graphic showing how many different users use the objects used in the designs

According to Graph 10, at least one green canopy seating element and at least one ecological seating element urban elements were used in 135 design drafts. Based on the frequency analysis of the objects; 'seating elements' are indicators of spatial needs and desires for 'stopping and resting' in the area. Urban elements such as trees, green areas, cat houses, dog parks and bicycle paths follow in this order. The selection of ecological seating elements and urban elements related to cycling as a nature-based mode of transport matches the objectives of the workshop.

Hierarchical clustering analyses and graphs were prepared for each object of the urban elements through the underlays produced using geographical information systems tools (Figure 15).

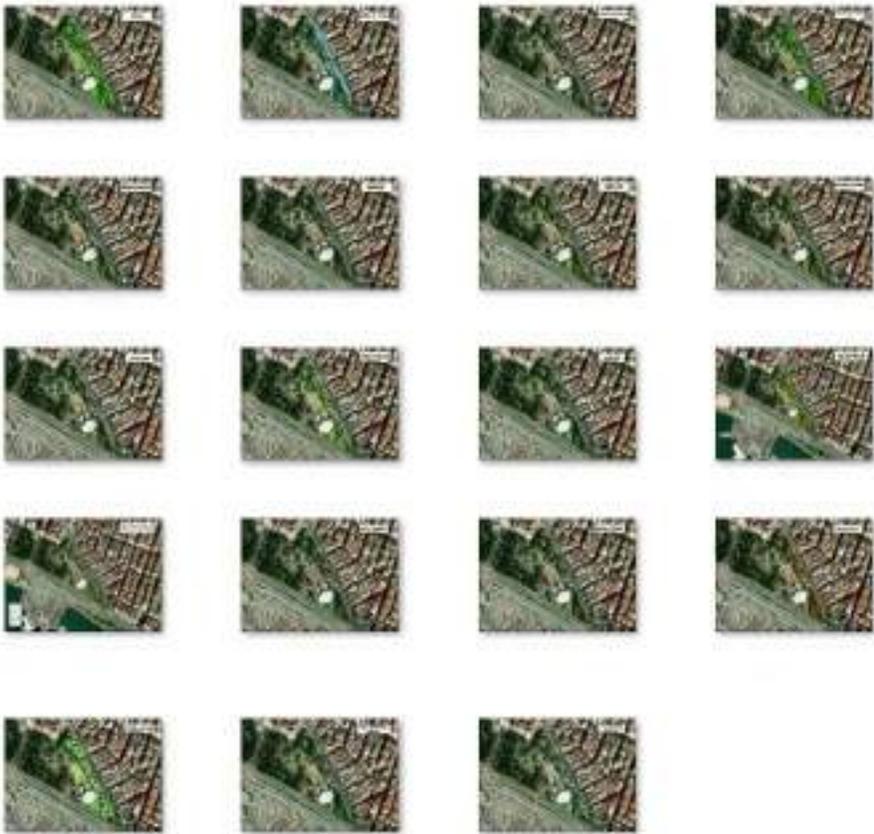
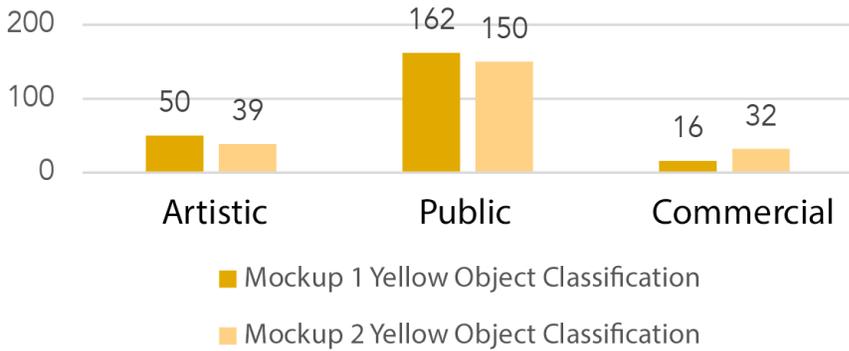


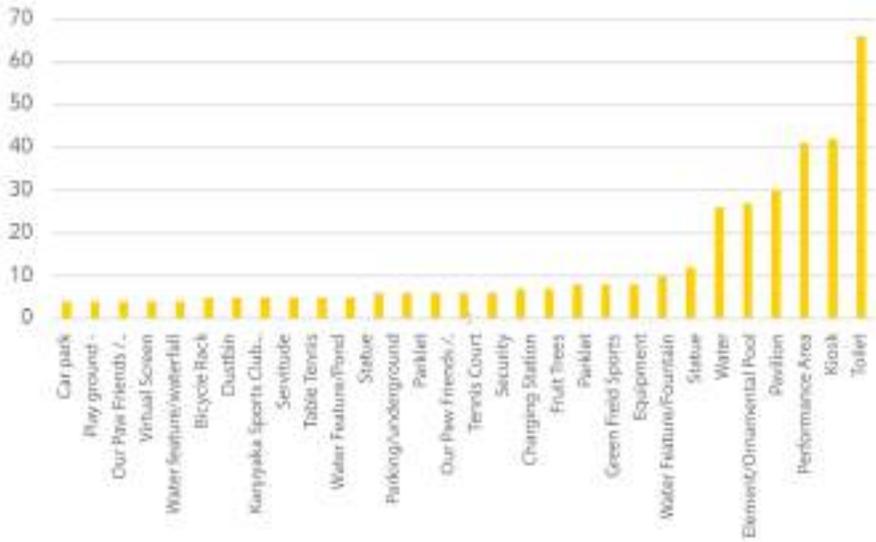
Figure 20. Cemal Gürsel Street: Hierarchical clustering graph of urban elements

In the co-design study; the urban element defined as ‘yellow object’ - open object for the needs and wishes that are not among the urban element options given to the participants for design proposals for urban space was used 499 times by 118 participants in total. The ‘yellow object’ element proposed in the study was analysed under three different headings: Public function, commercial function, artistic function (Graphic 11.).



Graph 11. Classification of yellow objects

While the ‘yellow object’ items, which are characterised as free urban elements by the participants, have the highest public function, the lowest preference has been for objects with commercial functions. The definitions of ‘yellow object’ with public function are concentrated in different public functions in model 1 and model 2. In the yellow object analysis of the design proposals of the model 1 base covering the area from Suat Taşer Open Air Theatre to Bostanlı Mosque; 34 public area toilets, 26 performance areas, 18 sculptures, 18 ornamental pools/fountains, 17 temporary exhibition area pavilions and 13 sculptures were proposed. In the yellow object analysis included in the design proposals of the model atlık-2, which includes Suat Taşer Open Air Theatre within its borders; 32 public area toilets, 29 sales kiosks, 15 performance areas, 14 sculptures and 13 pavilions as temporary exhibition areas are proposed (Graphic 12).



Graphic 12. Scatter plot of the preferred open object in the urban area

3.2.3. Cemal Gürsel Street: Spatial Organisation of Urban Elements, Design Principles and Design Process

Within the scope of the project, participant profiles, site and design data were analysed in relation to each other within the scope of ‘spatial proposal’ drafts and ‘experience survey’; infrastructure - technical needs, spatial organisation of urban elements and design principles were evaluated. The process was carried out with ‘authorities’, ‘scientists’ and ‘professional designers’ in a ‘round table meeting’ setting.

When the ‘Experience Questionnaire’ and ‘open object’ analyses are examined together, negative opinions, suggestions and demands are formed on the following issues: insufficient lighting elements as of evening hours, the demand for a ‘security’ officer due to the incidents that occur in the area especially at night, the insufficient quantity of garbage bins and cigarette butt bins, which are among the urban furniture elements, the neglect of the existing green texture in the area, the problem of car parking and heavy traffic, the neglect and insufficiency of the public area toilet, the insufficiency of technical infrastructure such as internet and charging in the area.

In the process of transformation of the area into a qualified public space, it is seen that it should be considered holistically with ‘lighting elements’,

'garbage bins', 'cigarette butt bins'. It is important to ensure regular maintenance of green texture, urban design elements and ecological elements, to consider technical solutions such as permeable concrete surface for the hard ground surface, to close the street to traffic between 20:00-24:00, to offer technical and infrastructure-related solutions such as charging and wi-fi stations open to the use of existing and potential users of the area.

As a result of the analysis in which the user profiles and the urban element objects used were evaluated together by means of the underlays produced using geographical information systems tools; dominant space schema and sub-group schemas were evaluated. As a result of the hierarchical clustering analyses and experience survey data; the primary elements 'seating elements' urban element group and green space and tree elements; indicate 'arrangement' and 'maintenance' over the existing function of the area and additional public functions to this function. Based on the results of the analysis, the closure of the street between 20:00-24:00 hours can be considered together with the arrangement along the street where car parking pockets are currently located.

The green area, which is the secondary element, and the tree urban elements, which are evaluated together (design), clearly reveal the expectation of the transformation of the area into a greener area. In addition, the 'fruit trees' proposed among the open objects can be evaluated through the vegetation that can grow in the area within the ecosystem.

In the area which is mostly used by pedestrian users for recreational purposes in the current situation; seating elements such as green shaded seating elements, ecological seating elements, benches and parklets have been the most preferred urban elements in the area. In parallel with the data obtained from the experience survey; it can be evaluated as suggestions that support activities such as sitting, resting, watching, socialising, eating and drinking in the area and have the potential to increase socialisation. In addition, the intense demand for nature solution based seating elements can be considered as a response to the participants' awareness of ecological problems. The intense demand for seating elements that crowded groups can prefer is also seen as a means of spending time together and socialising without the obligation to pay a commercial enterprise. In the cluster analysis, it is recommended for the future of the urban area that these elements, which

are densely and homogeneously distributed in the area, be used intensively and frequently, especially together with tree elements.

The urban element 'pedestrian path' defines a walking route along the street on the entire periphery of the area and in the inner parts of the area with low density demand. For the neighbourhood and visitors who use the area for recreational purposes, a route can be drawn by separating it with nature-based material.

As one of the nature-based solution elements, 'green bicycle park' and bicycle path, which have become one of the important components of urban mobility, have been intensively suggested by the participants for cycling. There is a demand for a bicycle path along the street and a green bicycle park clustered at the approach points to the area from the street.

Living spaces for animals, which are natural users of urban space, draw attention both in the 'urban elements' analysis and in the 'open object' analysis. Demands such as cat house, dog park, animal water-feeding station and bird house, which are spread within the dense green areas in the park, albeit at a low density level, show themselves. In this way, a design approach that covers all living creatures in the understanding of 'design for all' can be developed..

One of the main objectives of this study is to increase the publicness, the belonging of existing and potential users to the space and to respond to their basic needs. Public functions and artistic elements that are of great importance in increasing publicity, performance spaces that enable individual or collective performances, sculptures, temporary exhibitions and pavilions are among the demands expressed with 'open object' in the participatory process. It reveals the necessity of a more vibrant public space approach that allows for artistic activities and performances, which can also be associated with the Suat Taşer Open Air Theatre.

In the design meetings held with the authority (Izmir Metropolitan Municipality - Karşıyaka Municipality), the following decisions were taken after the evaluation carried out with the focus on nature-based urban solutions: green seating areas with canopy, hydraulic barriers, rainwater collection channel, bicycle parking area, water tank, grass (green) amphitheatre, pollinator, dog walking area, children's playground, dry pool, parklet, parallel vehicle

to encourage sustainable transport modes, the integrity of use between the street and the park is aimed. The current fragmented and non-functional design language of the park has been redefined based on the hierarchy of space, materials and flexibility in use. It is aimed to strengthen the sense of belonging of the citizens to the park and its surroundings with the open and transformable sub-spaces produced for the active use of the urban area by different user groups at all hours of the day.

In the design draft, which was designed by considering the climate of Izmir city, the existing landscape texture, the urban heat island effect of the area and design science data, in addition to the use of shade elements and the shadows of trees with ecological shade elements, permeable floor application was planned for rainwater collection.

Long and efficient use is aimed with the natural materials and contrasting details selected for the urban furniture proposed in the park and on the street. The design project is at the tender stage.

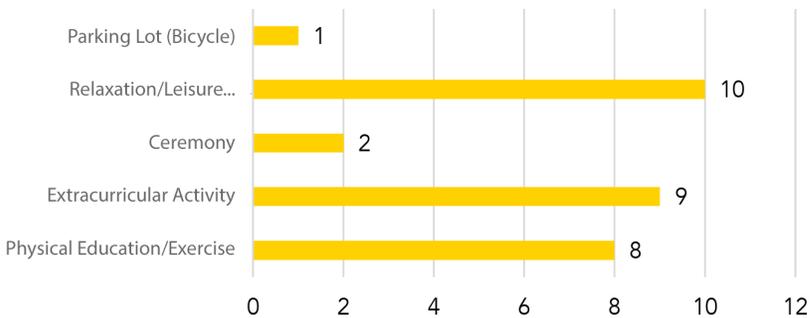
3.3 Örnekköy Şehit Astsubay Erkan Durukan Primary School Garden Findings

In the study, in which spatial design proposals of 51 participants for the garden arrangement of Örnekköy Şehit Astsubay Erkan Durukan Primary School were taken, the recorded individual design proposals were analysed through the bases produced using geographical information systems tools. The design principles to be adopted in the concept design were determined through the analyses prepared in line with the relationships between the spatial proposals. Only the spatial suggestions of the existing users of the area were included in the study.

3.3.1 Örnekköy Şehit Astsubay Erkan Durukan Primary School Garden: Experience survey analyses

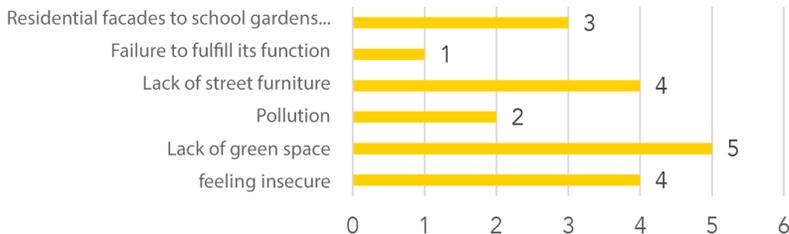
Of the 51 participants in the study, 26 were students, 15 were school staff and neighbourhood residents, and 10 were parents of students. A questionnaire form suitable for the participant profile (student, school staff and neighbourhood residents, student parents) was applied to the designing citizens. The data from the 'experience questionnaire' applied separately to each profile were evaluated on a profile basis.

Of the 15 school staff-neighbourhood residents who participated in the study, 11 were female and 4 were male. Eighty percent of the participants were school teachers and 20% were neighbourhood residents. The tenure of the school staff at the school varies. According to the data, the number of teachers with a tenure of 5 years or less is 6, the number of teachers with a tenure of 5-10 years is 3, and the number of teachers with a tenure of more than 10 years is 3. It was observed that all participants gave more than one answer to the question of the purpose of using the school garden. It is seen from the answers given that the school garden is mostly used for 'resting/leisure time' and 'physical education/exercise' purposes (Graph 13).



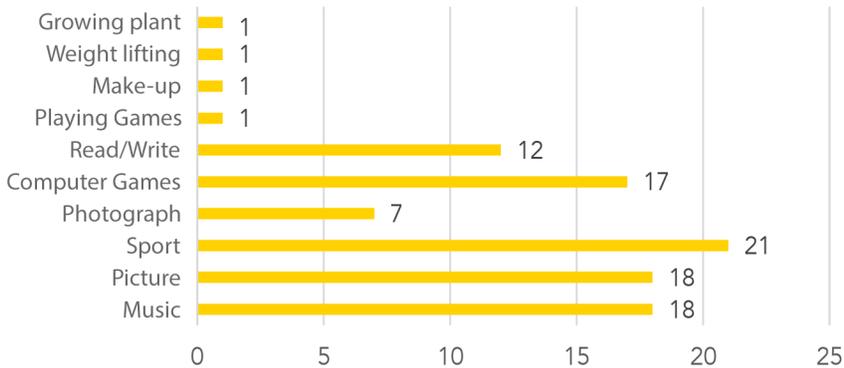
Graph 13. Purposes of the participants for using the school garden

When the participants were asked about their negative thoughts about the school garden, it was observed that all participants gave more than one answer. The most frequently expressed negative opinions about the school garden were gathered under the title of 'lack of green space'. The other negative opinions expressed were categorised under the titles of 'feeling insecure' and 'lack of urban furniture' (Graph 14).



Graph 14. Participants' negative opinions about the school garden

The students who participated in the study are between the ages of 6-13. 3 students are 6 years old, 4 students are 7 years old, 6 students are 8 years old, 3 students are 9 years old, 6 students are 10 years old, 3 students are 11 years old and 1 student is 13 years old. Students aged 11 and 13 graduated from the same primary school. When the students were asked what their hobbies were, 21 chose 'sports', 18 chose 'music' and 'painting', 17 chose 'computer games', 12 chose 'reading/writing' and 7 chose 'photography'. In addition to these, there is 1 person each who selected 'playing games', 'making make-up', 'lifting weights' and 'growing plants' (Graph 15).

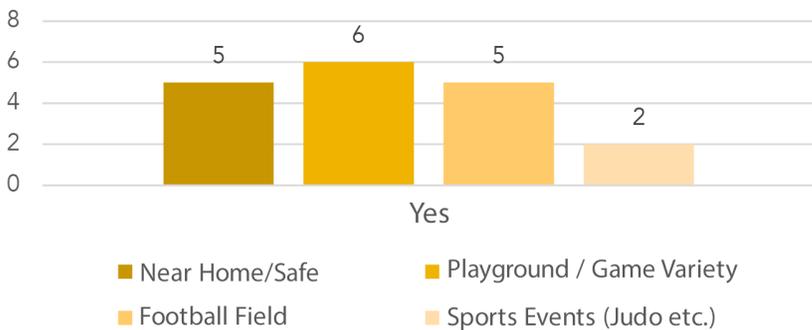


Graph 15. Distribution of participant students' hobbies

While 24 out of 26 students stated that they liked the environment they lived in, 2 students stated that they did not like the environment they lived in. When the students were asked the question 'Which means of transport would you prefer to go to school?', 12 students stated that they would prefer to go to school by bicycle, 7 students would prefer to go to school by private car, 6 students would prefer to walk to school and 1 student would prefer to go to school by public transport. In the previous question, the 'bicycle' option, which was not among the transport methods used by the students on their way to school, was the most preferred transport method selected by 12 students in this question.

The students were asked the question 'Can you play in public spaces (streets, gardens, playgrounds, parks, etc.) on your own without an adult?'. While 15 students answered 'yes' to this question, 5 students answered 'partially' and 6 students answered 'no'.

Of the 10 parents who participated in the co-design process, 8 were female (71%) and 2 were male. Six people between the ages of 25-34, three people between the ages of 35-44, and one person between the ages of 55-64 participated in the study. When the participants' agreement with the statements about the residential environment where they live is analysed; 6 people do not find the 'traffic' situation in the place where they live safe for their children, 2 people find it safe, and 2 people find it partially safe. While 7 people find the place where they live dangerous for their children in terms of 'crime', 2 people do not find it dangerous. 1 person finds it partially dangerous. While 8 people do not find the place where they live interesting and beautiful for their children, 1 person finds it interesting and beautiful, and 1 person partially agrees with this statement. 8 people stated that there is pollution where they live. 1 person stated that there is no pollution where they live and 1 person stated that there is partially. 7 people stated that their child could not spend time without an adult, while 2 people stated that their child could spend time alone. 1 person partially answered this question. 7 people stated that the place where they live does not have facilities for their children to play. 3 people partially answered this question. The answers to the question 'In what kind of areas would you like your child to play?' were categorised under 4 main headings. The most preferred title was 'playground/variety of games' with the responses of 6 people. The other titles that followed the ranking were 'near the house/safe' and 'football field' with the answers of 5 people each. 2 people stated that they would like their children to play in areas where they can participate in different sports activities such as judo (Graph 16).



Graph 16. The types of playgrounds that participant parents would like their children to play in

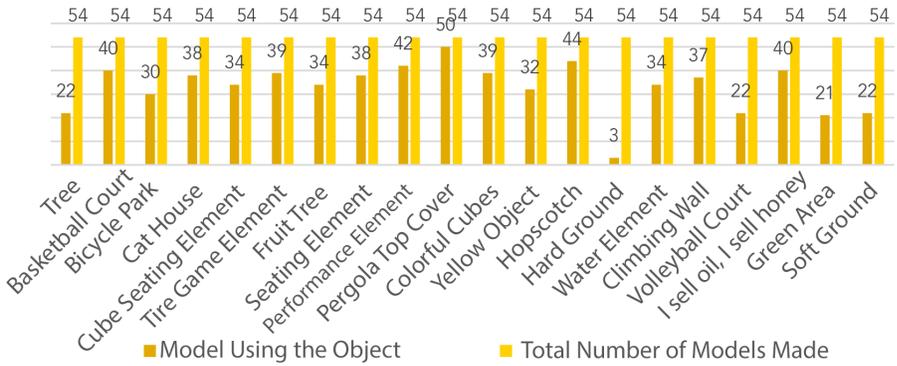
While 6 out of 10 parents stated that they were not satisfied with the facades facing the school garden, 4 stated that they were satisfied. Of the 6 people who stated that they were not satisfied with the house facades facing the school garden, 4 of them wanted it to be covered with a wall, while 1 person stated that they wanted to see it as a playground and wanted it to be covered with artificial turf. 9 out of 10 parents expressed their negative opinions about the area. These opinions were grouped under 5 main headings and the two headings with the most intense negative opinions were 'cleaning/maintenance' and 'lack of canteen/living area' with 6 people each. The second heading was 'lack of activity area' and 5 people stated that there was no suitable area for children to play. 3 people evaluated the fact that the toilets are in the school garden negatively, while 2 people stated that there is a lack of green space in the school garden.

3.3.2. Örnekköy Şehit Astsubay Erkan Durukan Primary School Garden: Spatial data and open object analyses

In the participatory design process, the spatial design draft of each participant's experience, needs and wishes regarding the area was documented with photographs and coordinated on geographical information systems tools and evaluated with 'hierarchical cluster analysis'. In the system, the participant profile and ID information were processed in the table in the main database and the design trends for the physical organisation of the space were also extracted by classifying the data according to their similarities by defining the object type for each urban element. In the spatial data analysis of the application, which has a democratic and transparent understanding; anomaly detection was applied by separating rare urban elements that differ significantly from the majority of the data.² Design principles were evaluated in the production of qualified public space for the common intervention pro-

2 VJ; Austin J. Hodge, "A Survey of Outlier Detection Methodologies," *Artificial Intelligence Review* 22, no. 2 (2004): 85–126, <http://eprints.whiterose.ac.uk/1783/>. but few data are available on the optical properties of human tissue at terahertz frequencies. A catalogue of these properties has been established to estimate variability and determine the practicality of proposed medical applications in terms of penetration depth, image contrast and reflection at boundaries. A pulsed terahertz imaging system with a useful bandwidth 0.5-2.5 THz was used. Local ethical committee approval was obtained. Transmission measurements were made through tissue slices of thickness 0.08 to 1 mm, including tooth enamel and dentine, cortical bone, skin, adipose tissue and striated muscle. The mean and standard deviation for refractive index and linear attenuation coefficient, both broadband and as a function of frequency, were calculated. The measurements were used in simple models of the transmission, reflection and propagation of terahertz radiation in potential medical applications. Refractive indices ranged from 1.5 ± 0.5 for adipose tissue to 3.06 ± 0.09 for tooth enamel. Significant differences ($P < 0.05$

posals of the existing users of the area. In the study of 54 design drafts, a total of 1293 urban elements were used. The most commonly used urban element is the seating element (Graph 17).



Graph 17. Graphic showing how many users use the objects used in design drafts

In 50 design drafts, at least one pergola/overcover and in 44 design drafts at least one hopscotch game element were used. Based on the frequency analysis of the objects; ‘seating elements’ are indicators of spatial needs and desires for ‘rest’. Green space, pergola/overcover, soft ground and fruit tree urban elements follow in this order. The selection of urban elements related to the use of seating elements, pergola/overhead cover matches the needs expressed in the experience survey. Hierarchical cluster analysis graphs were prepared for each object of the urban elements through the underlays produced using geographical information systems tools (Figure 16).



Figure 22. Örnekköy Şehit Astsubay Erkan Durukan Primary School Garden: Hierarchical clustering graph of urban elements

In the co-design study, the urban element defined as 'yellow object' - wildcard element for the needs and wishes that were not among the urban element options given to the participants for design proposals for urban space, was used by the participants in total 56 times.

The 'yellow object' items, which were characterised as free urban elements by the participants, were the most preferred items with a public function, while the lowest preference was for proposals with a commercial function. The definitions of 'yellow objects' with public function are hierarchically concentrated in the following order: lighting element, canteen, various play elements, cleaning staff and cleaning measure. In the clustering analysis of the yellow object, it is seen that the elements belonging to the public function are scattered in the area without clustering at a point.

Another free object among the urban elements to be proposed for the area; The urban element 'blue object', which means 'water element', was defined for the first time by the participants within the scope of this project

for the desired urban elements related to water.

The distribution of the urban element 'blue object' in each user profile is as follows:

1. Of the school staff and neighbourhood residents who participated in the study, 27% (4 people) used blue objects.

2. Of the 26 students participating in the study, 87% (21 people) used blue objects.

3. Of the 10 parents who participated in the study, 80 (8 people) used blue objects.

In the analysis of the 'blue object' suggested by the participants; fountain (drinking water) was preferred with 32 uses, dry pool and ornamental pool with 7 uses and swimming pool with 1 use. In the clustering map, it is seen that the urban element is scattered in the area, located in front of the houses facing the primary school and in the centre of the area with low density (Figure 17).



Figure 23. Blue object clustering graph

3.3.3. Örnekköy Şehit Astsubay Erkan Durukan Primary School Garden: Spatial Organisation of Urban Elements, Design Principles and Design Process

When the 'Experience Survey' and 'open object' analyzes are examined together; In the process of transforming the area into a qualified public space; It is recommended that technical solutions such as 'lighting elements', 'trash bins', 'security, cleaning' issues that are sufficient in terms of quality and quantity should be considered holistically, and that technical solutions such as regular maintenance of existing and future trees, which are both urban design elements and ecological elements, should be considered.

As a result of the combined analysis of user profiles and urban element objects used through bases produced using geographical information systems tools; The dominant space scheme and subgroup schemes were evaluated. As a result of hierarchical clustering analyses and experience survey data; the primary elements of pergola / canopy and tree urban elements emphasise the need for shade elements in seasonal conditions in the area. Secondary elements, game elements, refer to activities that allow students to interact with each other and their environment in their free time, to play games together, and to set up games. Based on the results of the analyses, it is expected that a public space with a predominance of green areas and qualified children's playgrounds will be constructed. In the current situation, 'safe ground zones' can be created through the fiction of the primary school garden, which consists of a hard ground surface, the 'green area' and the 'soft ground surface covering' urban elements included in the analyses. Thus, an inclusive design approach can be developed in the context of safe playgrounds.

In parallel with the data obtained from the experience survey, the 'seating element' and 'cube seating element', which are intensively demanded in the hierarchical cluster analysis, can be evaluated as elements that support activities such as sitting, resting and eating in the area and have the potential to increase socialisation among students. Apart from the 'seating element', the 'cube seating element', which can accommodate more crowded groups, also supports activities such as sitting, resting and feeding as an adventure playground. The urban element of 'bicycle park', which is one of the basic needs for the most demanded 'bicycle' for access to school, can motivate

existing users to take part in the future transformation of the area. The conceptual design project, based on the design science and experience survey data, has been presented to the authority, school administrators, the Directorate of National Education, representatives of the Roma Community Youth Education and Development Association and is awaiting implementation by the authority (Figure 18).



Figure 24. Örnekköy Şehit Astsubay Erkan Durukan Primary School Garden concept design project site plan

3.4. Bahariye Neighbourhood Spring Park Findings

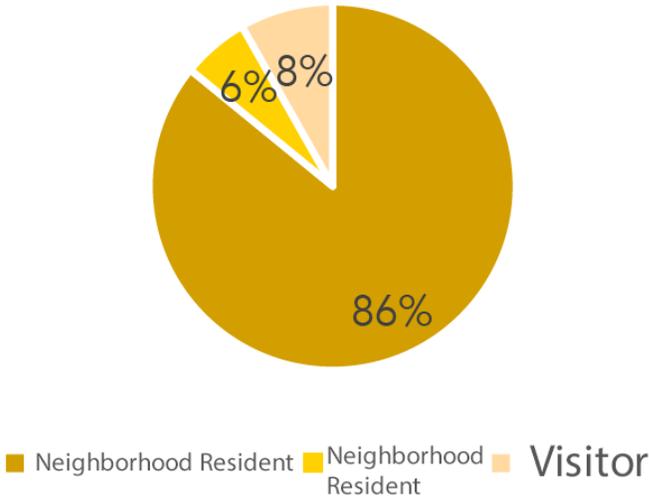
In the study where the spatial design proposals of a total of 83 participating citizens regarding the Bahariye Neighbourhood - Bahar Park area were documented; the individual design proposals recorded through the analogue design tool were then coordinated and analysed through the bases produced using geographical information systems tools. Hierarchical cluster analysis method was used to generate design science data.

In the evaluation of the analyses, instead of the 3D structure of the urban elements, the focus is on how the urban elements are arranged and where they are placed on the base. Cluster analyses of urban elements aim to show the preferred areas for certain objects. This method, which reveals the spatial distribution of urban element types, enables the participants to visually combine their ideas about the spatial organisation and urban elements in the urban area.

3.4.1. Bahariye Neighbourhood, Bahar Park: Experience survey analyses

Of the 83 people who participated, 71 people participated as neigh-

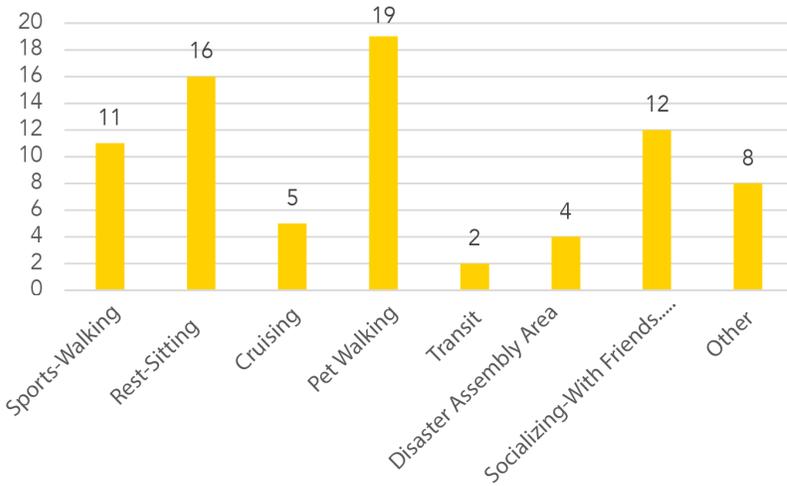
bourhood residents, 7 people as visitors (for recreation and other purposes), 3 people as shopkeepers, and 2 people as both shopkeepers and neighbourhood residents. It is noteworthy that the majority of the participants consist of neighbourhood residents who are the users of the introverted area. Out of 83 participants, 52% (43 people) were female and 48% (40 people) were male. It is seen that the gender distribution of the participants is homogenous (Graph 18).



Graph 18. Participant profile gender distribution graph

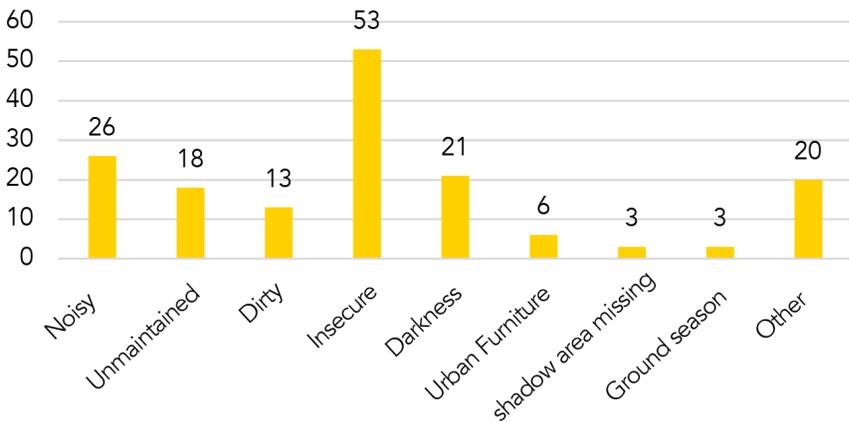
In the public space with an introverted physical structure, 88% of the participants reside in Bahariye Quarter, while 12% live in different neighbourhoods. While 58% (48 people) of the 83 people participating in the study stated that they used the designed area, 42% (35 people) stated that they did not use the designed area. This data hints that the area known as 'Empty Park' is an unqualified area.

Of the 48 people who stated that they use the area; 40% use it for 'pet walking', 33% for 'resting/lodging', 25% for 'socialising/meeting with friends', 23% for 'sports/walking', 10% for 'watching', 8% for 'disaster gathering area' and 4% for 'transit'. 16% stated that they use it for other purposes such as 'walking/playing children' (Graph 19).



Graph 19. Distribution of participants’ purpose of using the area

Regarding the negative opinions about the public space; 78% of 68 people stated that the space was unsafe. The rate of those who find the area noisy is 38%, the rate of those who find it dark is 31%, the rate of those who find it neglected is 26% and the rate of those who find it dirty is 19%. Apart from these negative situations, situations such as the electricity and natural gas transformers in the area and the bad smell emitted by cat and dog droppings are also mentioned in the negative thoughts (Graph 20).



Graph 20. Distribution of participants’ negative thoughts about the field

To the question regarding the use of sports equipment currently available in the area; 85% of 83 participants (71 people) stated that they did not use these sports equipment, 4 people (5%) stated that they did, and 8 people (10%) stated that they partially used them. It was also observed that sports equipment was not used frequently during the workshop (3 weeks).

In response to the question "Would you like a separating wall between the site and the dwellings?", 59 out of 83 respondents (71%) answered "yes", while 20 respondents (24%) answered "no". 5% of the participants (4 people) stated that they were undecided about having a separation wall.

Participants were shown examples of plant coverings, wire fences, compact surfaces and wire fences to choose from if they wanted to see a separating wall between the site and the dwellings. Out of 61 participants, 59 people (59) would like to see a separating wall between the site and the dwellings and 2 people who are undecided, 46% (28 people) would like to see a "green surface", 41% (25 people) would like to see a "natural stone cladding", 10% (6 people) would like to see a "wire fence" and 3% (2 people) would like to see a wall made of a different material.

Regarding 'sculpture', which is among the urban elements; 80% (45 people) of the 56 people who responded to the question "If a sculpture were to be built in the area, what kind of sculpture would you like to see?" stated that they would like to see a figurative sculpture, 20% (11 people) an abstract sculpture. 27 people preferred not to answer this question.

3.4.2. Bahariye Neighbourhood, Bahar Park: Spatial data and open object analysis

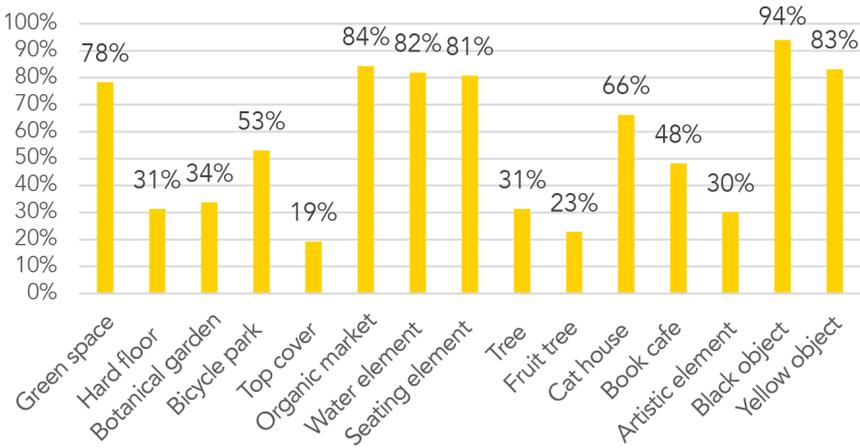
In the spatial data analysis of the application, which has a democratic and transparent understanding, hierarchical cluster analysis graphics were prepared for urban elements by applying anomaly detection by separating rare urban elements that differ significantly from the majority of the data (Figure 18).



Figure 25. Bahariye Neighbourhood Bahar Park: Hierarchical clustering graph of urban elements

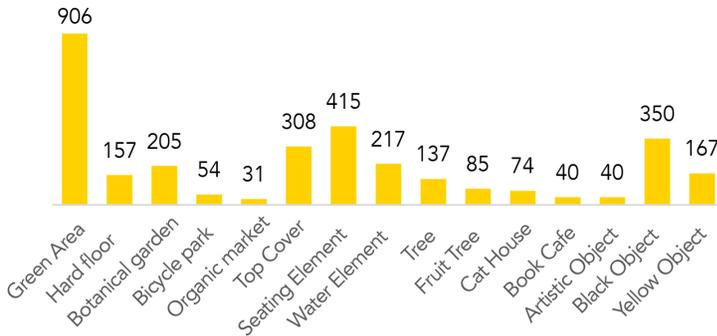
In the co-design study, a total of 167 urban open objects, defined as 'yellow objects' -joker elements- for the needs and wishes that are not among the urban element options given to the participants for design proposals for urban space, were used by 69 participants. In the co-design process, a total of 3,186 urban objects were used in the study in which 83 participants took part. In Table 21, which shows how many different users preferred the objects used in 83 different design drafts, the most preferred urban elements were the black object-camera urban element, which was proposed for at least one security problem in 78 design drafts, the urban element of the upper cover, which is a shadow element in 70 design drafts, and the yellow object belonging to the new functions and suggestions in 69 design drafts. Based on

the frequency analysis of the objects; ‘security measure’, the urban element proposed as a solution to the heat island effect for the area, and the open object, which is the representation of new functions and proposals, are hierarchically the most preferred elements in spatial needs and desires for the area (Graph 21).



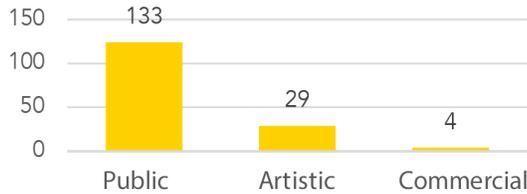
Graph 21. Preference distribution of urban elements used by the participants

Based on the frequency analysis of the objects; ‘green area’ urban element with 906 repetitions of use, ‘seating elements’ corresponding to the need for ‘stopping and resting’ for the area with 415 repetitions of use, ‘black object - camera’ urban element representing the security measure were the most frequently preferred urban elements (Graph 22).



Graph 22. Distribution graph of urban elements used

167 While analysing the 'yellow object' element, which is a repetition of use, the objects consisting of technical needs and requests were left out of the cluster for design. (Lighting element, waste bin, etc.) The use of the 'yellow object' was analysed in three different groups as in other projects: public function, commercial function, artistic function. The distribution of 'yellow objects' according to these three headings (Graph 23):



Graph 23. Scatter plot of the yellow object according to functions

While the open object elements have the highest preference for public functions, the lowest preference has been for objects with commercial functions. In hierarchical order of preference from high to low; dog park, children's playground and walking path were proposed.

3.4.3. Bahariye Neighbourhood, Bahar Park: Spatial Organisation of Urban Elements and Design Principles

Design principles have been evaluated in the production of 'common' qualified public space for the common intervention proposals of the existing and potential users of the area. 'Common mind' represents the design principles.

The dominant space schema and sub-group schemas were evaluated as a result of the analysis of the user profiles and urban element objects data together through the underlays produced using geographical information systems tools. The main objectives are that all individuals living in the context of the area use public open spaces together, that the space is owned by everyone and that the identity of the space is restored to the area with new public functions. As a result of the cluster analyses of the urban elements and the experience survey data; the green space urban element, which is the primary element, should be considered beyond the current state of the area, with a thematic tree and plant planting arrangement and additional public

functions.

When the second most preferred 'unique' urban element; black object - camera, is evaluated together with the data of the preliminary interview and experience survey about the area, it shows a remarkable parallelism regarding the security problem. In the spatial transformation of the area, it is suggested that security cameras be placed in a way to provide vistas to the points where they are concentrated in the cluster analysis.

The third most preferred urban element, the canopy, should be evaluated together with the seating elements for the area, which is under the intense heat island effect especially in the summer months, especially on the outer perimeters of the area due to its shading element quality and clustered in front of the apartment buildings located in the north of the area.

In the cluster analyses, the density and homogeneity of the green area and tree urban elements and botanical garden urban elements evaluated together (design) clearly reveals the participants' expectation of transformation into a greener area. The urban element 'pedestrian path' in the area, which is currently considered as a 'transit zone' by pedestrian users, defines a walking route around the entire periphery of the area. In parallel with the data obtained from the experience survey, the 'seating element' element, which is demanded intensively in the hierarchical cluster analysis, can be evaluated as an element that supports activities such as sitting, resting and watching in the area and has the potential to increase socialisation. In addition to the bench, design elements such as 'parklet' as a seating element that can accommodate more crowded groups and 'picnic table', which was intensively suggested in the 'yellow object' analysis, can be evaluated. This high demand is also an indication of the need for users to use the area without paying a fee.

In line with the goal of using bicycles as a means of transport, a bicycle park, which is one of the basic needs, is one of the most important elements for the integration of cycling in the city. According to the analysis data; a bicycle park urban element can be proposed at the eastern and western points at the entrance of the area and alternatively at the easternmost part of the area..

In the open object analysis, where the participants can express their needs, wishes and suggestions for new functions or technical requirements

regarding the area other than the proposed urban elements, 'dog park' and 'children's playground' with equal percentages draw attention. Hierarchically, the third most preferred option was 'walking path'. It is suggested that the dog park and children's playground should be included together in the project design.

As a result of the evaluation of the experience questionnaire and design data via SPSS; participants who found the lighting insufficient, who had security concerns; alcohol, drug use, harassment, presence of uncanny people, theft, dog noises and fights, and who found the area deserted preferred the security camera; black object. Those who use the area for sports and walking purposes have used the urban elements of book café and water element in their design drafts. Those who use the area for resting preferred the artistic element in their design drafts.

When the data from the hierarchical clustering analyses, the experience survey and the trend graph are evaluated in their entirety; the expectations of the participants regarding the public life pattern that includes diversity in space are clearly seen.

When the relationship between spatial recommendation data and user profiles and tendencies is analysed;

- In the cluster analysis map prepared for the urban element for green space; due to the dense and homogenous distribution, the participants' demand for green space-weighted design draws attention.
- In the cluster analyses, recreational areas were proposed with seating elements distributed on all the peripheries of the area together with the urban elements of the upper cover.
- It is seen that the water element proposal is concentrated along the linear axis in the centre of the area.
- The cycle park element is proposed primarily at the east and west points at the entrance to the site and secondarily at the easternmost part of the site.
- The cat house urban element proposal was highly preferred by the participants and is concentrated in the east of the area.

3.4.4. Bahariye Neighbourhood, Bahar Park: Design Process

The design principles determined with reference to spatial design science data and experience survey data were evaluated in 3 'round table meetings' with the 'authority'. Based on the open object data analyses for the transformation of the public space; a concept design project was decided. The concept design project was presented to the participating citizens in the area in accordance with the 'citizen design science' process fiction and 'citizen science' methodology. In the presentation sheets prepared for the design science and experience survey data, the whole process was carried out in a transparent and democratic manner by sharing the design science data with the participants in the form of open data (Figure 19)

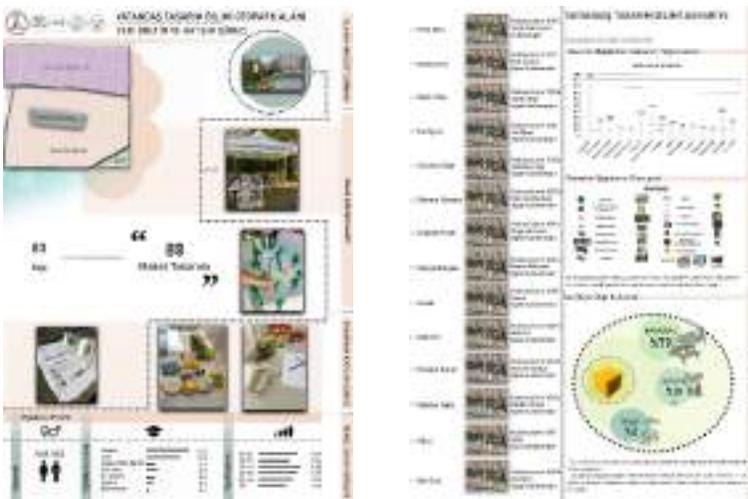


Figure 26. Bahar Park , Data presentation sheets

In the round table meeting, evaluations regarding the spatial organisation scheme and design decisions were evaluated in 3 different scales:

1. The application of wire fence by Karşıyaka Municipality for the separating wall application in the area, the dividing walls between the housing and the area to consist of a wire fence permeable design element,
2. Presence of similar public functions in the immediate context of the area,
3. The transformation of the 'yellow object' analysis evaluation into an alternative concept design due to its evaluation in the context of 'collecti-

ve consciousness’.

After the evaluation, urban elements and their spatial organisation scheme hierarchical cluster analysis maps were shared with the professional designer for the concept design. The urban elements selected for the concept design project are; walking path, seating area - parklet, cat houses, dog park, children’s playground, water element, pergola / cover, bicycle parking - scooter parking, thematic green areas, kiosk, qualified hard floor surface coating - with minimum usage area, activity area for young people, art element - sculpture. After evaluation in the context of age-friendly public space in the design meetings held with the authority; It was decided that the kiosk/book cafe urban element has the potential to become an urban agriculture sales center like a seedling, the water element should maintain the linear form, the hard floor surface area should be reduced in the design, and the area of the green area/medicinal aromatic plants and rose garden should be increased in the design. In addition, the children’s playground/ Decisions were taken regarding the necessity of minimal children’s playground design instead of the playground hill design, the necessity of increasing the number of seating elements for sitting, resting and viewing purposes instead of urban elements such as parklets where crowded groups can sit, and the necessity of removing the table tennis element. As a result of the decisions taken, it was emphasized that compacted soil or permeable concrete should be used for the hard ground surface material, seed sales unit and café function should be solved together, the children’s playground should be physically separated from the dog park, the area should be divided into two with a wire fence and gate, the west of the area should be closed at night (security measure), and the west of the area should be designed as a qualified green area with green space, trees, medicinal and aromatic plants and plants with low water consumption. Thus, in the concept design project, while the east of the area is designed with social elements, the west of the area is aimed to be transformed into a carbon sink social area (Figure 20-21).

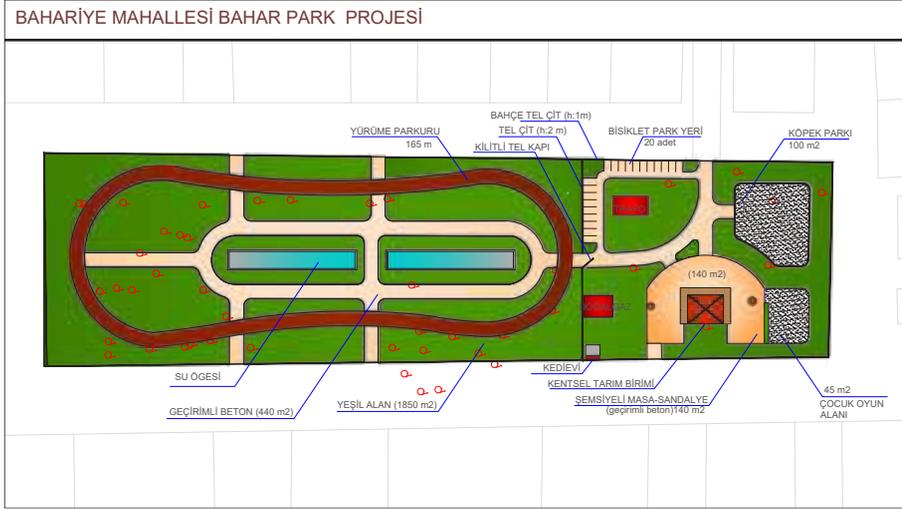


Figure 27. Bahar Park concept design project, site plan



Figure 28. An image of Bahar Park concept design project model

The project prepared based on the design science and experience survey data has been accepted by the authority and is in the implementation phase.

This project series begins with a discussion of the lack or absence of citizen participation in urban design projects, despite the increasing emphasis in the urban planning and design literature on the adoption of more democratic techniques. The projects problematised participation in urban design by trying to understand and explain how citizen participation can be integrated into urban design processes. Considering the current place of the concept of participation in urban design theory and practice, the study is expected to contribute to filling the gap in creating a more transparent environment. A series of empirical studies that integrate participatory urban design processes in terms of decision-making based on inclusive and scientific data, crowdsourcing together with local government in urban design processes, applied in different themes for different users in different urban areas have been carried out.

Another evaluation of participatory urban design projects based on the participant profile is that the method used in the projects is an ethnographic approach. In projects carried out in different urban areas, different users have different perceptions of public space and may react differently to space layouts. Studies show that design principles and results vary according to the behaviour and habits of the participants.

The projects facilitate communication between citizens and expert designers by involving participating citizens in the design process due to the methodology used. The participatory urban design approach Citizen Design Science also provides the possibility of co-implementation in the next step.

The most inspiring aspect of the projects that produce design data for their experiences, needs and wishes for urban design in cooperation with the municipality is that a citizen with no design knowledge uses active design tools to establish a common language and dialogue with a professional designer. The method also includes smart learning in the context of urban experience. The collaborative urban

design processes were realised on a democratic platform based on the tendencies and expectations of the participants.

In this study, unlike previous citizen design science studies, in addition to simplified design tools, diversity was increased by adding open object-tool sets (yellow object-black object and blue object). In this way, urban elements and functions could be identified that the authority or the design expert could not have thought of before the study. However, as in the car park design element in the Atakent Car Park project, the yellow object that turns into a design trick is an example of how conflicting ideas are separated from each other in the participatory urban design approach. In order to reach a consensus in this sense, a voting step has been added to this project. The method brings consensus through common sense.

Within the scope of the study; the participant profile with special or different needs had the opportunity to participate by reconsidering the toolkit in order to make the existing citizen design science method inclusive. A 3D and embossed toolkit, which is a common design language tool, was produced, enabling us to think about the 'mind map' process in a way that visually impaired citizens can perceive, while participants with special needs reflected their needs and wishes on their design drafts through open objects... Thus, the diversified participant profile transformed the method into an experimental, tactical and inclusive approach.

In the projects carried out with Karşıyaka Municipality and Izmir Metropolitan Municipality, there is also a need for effective organisational cooperation in the context of the organisation of the citizen design science method in which design science data is produced as a participatory urban design method. In this direction, the organisational structure of Karşıyaka Municipality has been expanded with the 'Citizen Participation Office'. It is seen that new institutional organisations are also needed for co-implementation processes, which are the continuation of co-design.



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