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Universal Design in Urban Public Spaces: The Case of Zafer Pedestrian Zone / Konya-Turkey

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Abstract

Individuals in society who have different requirements and needs (disabled people, elders, children, prengnant women, parents with strollers etc.) go through many difficulties while accessing urban indoor and outdoor services due to the constraints originating from built environment. Universal design is the design of the environment and the product that can be used by all the people. With it's inclusive and unifying characteristics, universal design has become a design approach that have been adopted by the academia during the recent years. Planning and organizing the urban spaces with regard to the universal design principles will contribute to an increase in the life quality of all the people who use the city. This article aims to evaluate the usage of urban spaces in Zafer Pedestrian Zone, located in Konya city centre, within the scope of universal design principles. The concept of universal design in the historical process, universal design's emergence process and it's principles and significances has been discussed in the theoretical infrastructure section of the article.

In the fieldwork section of the article, the suitability analysis of a chosen sample place's space usage have been carried out scrutinisingly under four chosen headlines, with regards to the universal design principles and standards.

Keywords: *Universal design, disability, urban spaces, Zafer Pedestrian Zone, Konya*

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INTRODUCTION

Designs that have been done wrong or lacking in housing, the most basic unit of life, all public spaces and transportation zones, affects the involvement of disabled individuals to urban and social life in a negative way.

The fact that disabled people with limited ability to move due to the apology they already have are not able to use urban spaces independently and easily is the basic element that causes social and urban as well as economic life to be excluded. Disabled individuals, who already have a limited ability to move due to their disability, and their situation of not being able to use urban spaces freely and easily is the main factor of their exclusion from social, urban and economic life. However, this problem can be prevented by doing correct design and taking precautions. In this context, universal design, which is accepted worldwide, is a very important intellectual approach to provide everyone with involvement to daily life and it is a guide to city planners, designers, decision makers and executors. Different from designs that only enable accessibility of old and disabled individuals, universal design is a common design approach that enables convenient accessibility to all individuals in a community. This article aims to examine chosen sample space's urban-physical arrangements according to the principles and approaches of universal design, which is seen as a guide to creating urban spaces that are more livable and have more quality. With this goal in mind, approachs and models towards disability status that laid the groundwork for universal design approach and national-international scale legal legislations have been evaluated within the frame of historical process, in the theoretical infrastructure section. Then, the concept and importance of universal design have been discussed in terms of city planning and architecture disciplines, with giving information about its importance and principles. The fieldwork findings of the work are based upon the fieldwork findings of Selcuk University Faculty of Architecture's UKEM (3. Ulusal Engellileştirilenler Panel ve Çalıştayı) workshop, which took place on 04-05 May 2018. Workshop team consists of 3 City and Regional Planning, 3 Architecture, 2 Industrial Design, 1 Landscape Architecture students and 2 academicians from Selcuk University Faculty of Architecture.

CONCEPTUAL AND THEORETICAL BACKGROUND

Universal Design Approach

In 21st century's agenda, under the general topic of urban habitability, environmental aspects, ecological balance, democratic, egalitarian and sustainable social utility and design is

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being discussed. The backbone of this discussions we have nowadays arise from "universal design" topic.

Universal design is the design of the environment and the product that can be used by all the people. "*Focusing on social structure just as much as physical structure"* and *"being a design that unifies a product with a building or a city and being a design that aims to be accessible for everyone"* separates universal design from other design terminologies. Universal design concept is not about only disabled people, it is about all people, simply"everyone". According to Universal Declaration of Human Rights, published by United Nations (UN-Habitat) in 1949, numbered 7217; Everyone is entitled to all the rights and freedoms without distinction of any kind, such as race, colour, sex, language, religion, political or other opinion, national or social origin, property, birth or other status.

This is the planning and management of "*Friendly and Safe Cities for Everyone"* which is co-created by United Nations and other international organisations (UNICEF, WHO, etc.) (URL1).

Definition of Universal Design

Terms with different names like inclusive design, lifespan design, design for all, user needs design, real life design and transgenerational design are being used with the same meaning with universal design (Evcil, 2014; Duncan 2007). The important points that makes universal design approach different from other design terminologies like accessibility design or design without disabilities are it's characteristics of not being spesifically designed for a certain group of disability, being normal, feeling normal and being unifying. To achieve success in a universal design execution, serving as much as possible different users should be aimed.

Universal design is designing and creating a space, a product or an environment that can be accessed, understood, and used by everyone with the greatest scale as possible, regardless of age, situation, ability or disability conditions. Urban spaces and physical surroundings (or any other building, product and service in the space) should be designed in way that satisfied the need of anyone who wants to use it. This situation is not a special requirement for the good of a certain group like elders or disabled individuals. It is an essential condition of the good design. If a space is accessible, easily usable and easily understandable, every individiual will make use of it. Universal design creates products, services and spaces that satisfies the needs of people, by taking different needs and skills of everyone into account in the design process (URL 2).

Hanson (2004), who have compared universal design with designs specifically made for disabled individiuals, points out to the social benefits of designs that are done without excluding or seperating anyone. He emphasizes that, as time passes by, special designs that are made in order to include disabled people into social life, causes them to become target group (Duman, 2017). According to Knect (2004), while accessible spaces are separative, unlikeable and expensive, universal design has high levels of aesthetic standard. Special accessibility applications which can cause discrimination are said to be more expensive and not being aesthetic to a large extent (Kavak, 2010). Correct, good and successful planning and design will be made real when all the planning and design in any scale are done with showing regard to necessities of all the users in the society.

Process of Universal Design Approach

In this current century, social, economic, demographic and changes tied with age, create the starting point of the universal design. According to Steinfeld (1994), interest in universal design has increased due to the reasons like, increase of the number of the people who have to live with their disability, increase of the life expectacny, increase of the purchasing power of the disabled population, realizing the inadequacy of assistive technology, the design of the products and environments in an unresponsive way to the wants of the disabled individuals (Kavak, 2010).

The term, universal design has been used by the American architect Ronald L. Mace for the first time, in 1985. Mace and his designer friends at North Carolina State University created the universal design approach, it's principles and sub-principles. According to architect and educator Mace, who had polio at a little age and had to use a wheelchair, people are different according to their ability to move, skills, antropometric measurements, physiologic structure and durability. Designs that have been made according to average human or people who are described as normal, are not suitable for real conditions, since it doesn't involve every single user. This situation created the questioning of the term average human.

There isn't any direct legal legislation to use universal design, but, accessibility, availability and transportation has to be provided in order to produce designs that are suitable for everyone's use.

To ensure this, all developed countries have some construction laws and regulations, standards, guides and measures. In many country's laws and declarations, all individuals in the society have equal rights. This equality has to be implemented into public spaces. Universal design aims to design spaces that are suitable

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for the use of everyone in the society, that gives the same service to everyone, according to their functions. Regulations, standards, laws and codes that has been prepared by countries should be taken into account while creating designs that serve this goals. Without aiming to follow a checklist or set up rules, while applying universal design, accepted disabled people standards and laws prepared by countries should be taken into account. Designs that are suitable for everyone's use should be made, with the most important factor, disabled people, in mind (Duman, 2017).

Principles of Universal Design

Seven principles of the universal design approach determined by The Center for Universal Design are as below. These principles are at the cross-section of all design groups, City Planning, Architecture, Interior Design, Industrial Design and Landscape Architecture to name a few.

- Principle of Equitable Use
- Principle of Flexibility in Use
- Principle of Simple and Intuitive Use
- Principle of Perceptible Information
- Principle of Tolerance for Error
- Principle of Low Physical Effort
- Principle of Size and Space for Approach and Use (URL 3).

According to the Principle of Equitable Use, the design should be used and be purchased by individuals who have different sets of skills. This situation should be applicable to to both public space and environment regulations and product designs. Accessibility and usability aspects should also be taken into account in designs of places and physical environments. Same usage should be effective with every user, if this isn't possible, an equal or alternative regulation should be made.

Regulations and designs that alienates or embarrasses a certain people should be avoided. Safety, security and privacy should be offered to all users equally. Any design or regulation that is being carried out should be done in a way that appeals to everyone.

According to the principle of equitable use, everyone should have equal access rights in public spaces (public and private places, city centers, hospitals, streets, avenues, boulevards, pedestrian roads, transport facilities, open-air green spaces and all recreational activities). In a city planning scale, in order to offer this access right, the approach of creating social and cultural facilities for every user group should be adopted (Figure 1).

Figure 1. Examples of *equitable use* principle of universal design *(URL 4; URL 5).*

According to the Principle of Flexibility in Use, design should have a wide variety in accordance of personal skill and preference of the user and it'll be beneficial if it can offer alternatives. Options should be offered for different ways of usage. Similar usage and accessibility options should also be offered to left-handed or right-handed people. Precautions for sensitive and correct usage should be taken and designs should be made in accordance with the user's pace.

With the Principle of Flexibility of Use, a suitable design that offers different options at every scale can be carried out. With the supporting of the decisions of mixed areas, usages (work-home-school-social activities etc.) at walking distances can be created.

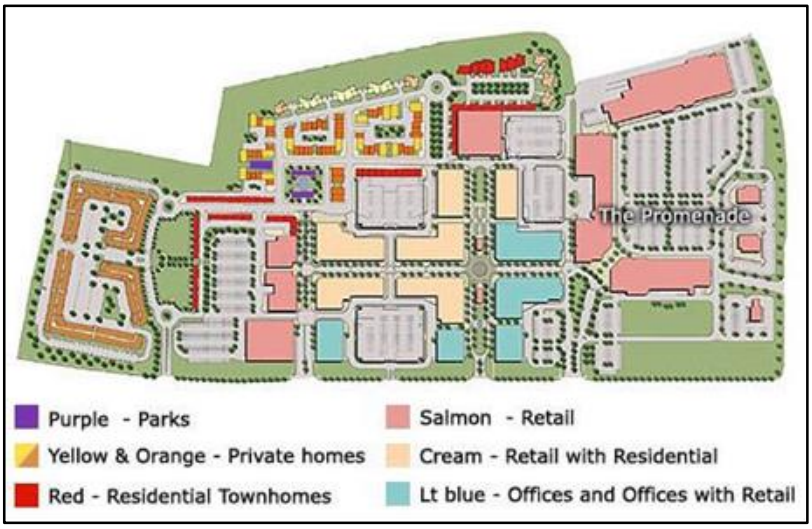

Figure 2. Mixed-use planning; example of flexibility in use principle of universal design *(URL 6).*

According to the Principle of Simple and Intuitive Use, the usage of the designs should be easily understood, regardless of the concentration level, which exists with in accordance with the user's experience, information, language and skills. Design and place setup should be simple in order to be easily perceivable. Unnecessary complexities should be avoided, the focus should be on user's expectations and intuitions. Regulations should be made with different education and language grades taken into account. Intensive usage of information level should be in accordance with

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significance level. The activation of effective stimulants while the process is continuing or when the process is done should be considered.

According to the Principle of Simple and Intuitive Use, design should provide simple usage regardless of people's experience, knowledge and skill levels. In this context, urban environments can be made more understandable and more attractive by using spatial qualities (Figure 3). For example, the understandability of a place can be increased wih Kevin Lynch's image analysis, in city planning scale. Urban identity items (landmarks) can support navigation.

Figure 3. Examples of simple and intuitive use principle of universal design *(URL 7; URL 8).*

According to the Principle of Perceptible Information, the designed product environment and place should present the information regarding usage in a way that doesn't get influenced by the user's environmental conditions and user's perception skills. Required informing should be done by using different methods of narration, like visual, verbal and tactual, understandability should be emphasized. Definitions of usage components should be provided by giving instructions and creating a guide. Solutions that can compete or can be better than the tools and techniques that individuals with limited understandability use should be developed.

With human-focused smart city applications, solutions that can increse the life quality of all the citizens can be produced (Figure 4). Technological advances bring facilitative, important opportunities and conveniences, especially for disabled individuals. Devices that scan written texts and convert them into audible format have been developed in USA, for people who are visually impaired. In Japan, walking staffs that have the ability of duplex communication can vocalise the name of the cross for the visually impaired person and sends a signal to traffic lights. After the signal are transmitted traffic lights switches to voice mode. Walking staff senses the crosswalk and prevents it's user from going out of the crosswalk. This way, visually impaired person can be supported to move safely and independently (Güngör, etc., 2011).

Figure 4. Examples of perceptible information principle of universal design *(URL 9; URL 10).*

According to the Principle of Tolerance for Error, the design should keep the bad outcomes and dangers arising from an accident or unwanted actions at a minimum level. Since the idea of universal design shows an approach that is oriented towards different individiuals and users, all users should be protected from accidental and dangerous situations. Regulations should be made in order to keep the margin of error and danger of usage elements to a minimum. Frequently used elements should be reached most easily, situations that can cause danger should be removed or should be kept under control. Warnings should be made regarding possible dangers and probable errors. Error-proof features should be provided and besides that, situations that require extreme cautions should have approaches that limit movement (Figure 5).

Figure 5. Examples of tolerance for error principle of universal design *(URL 11; URL 12).*

According to the Principle of Low Physical Effort, designed products and spaces should allow for efficient and comfortable usage by using minimum effort. Comfortable access to spaces and environments by making the least amount of effort should be provided. Users need to stay in their natural body forms in order to use the products or spaces. Qualities that will require acceptable amount of usage effort should be taken into account. Movements and actions that will require repetitions should be kept at minimum. Alternative approaches to decrease situations that will require a long duration of pyhsical effort should be developed (Figure 6).

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Figure 6. Examples of low physical effort principle of universal design *(URL 13; URL 14).*

According to the Principle of Size and Space for Approach and Use, appropriate space should be provided within approach, accessibility and usage sizes. This should be done in accordance with every user's body sizes, postures, and characteristics of movement in mind. An accessible perspective should be created in order to enable anyone, standing or sitting, to see the important usage elements. Every user's easy access to usage elements should also be provided. Different hand sizes and gripping features should be implemented. Places and spaces that allow for the usage of personal assistive tools and equipment's should be designed (Figure 7).

Figure 7. Examples of size and space for approach and use principle of universal design *(URL 15; URL 16).*

These principles should be taken into account in city planning and design practices, in revisions of existing plans and designs, in directions of the plan and design creation phase and in enhancement of life quality of users.

MATERIAL AND METHOD

Zafer Pedestrian Zone located in Konya city centre has been selected as the study area since it has a very intensive use by the pedestrians. Prior to study, national and international publications and guides and regulations related to universal design has been examined. With these researchs in mind, existing opportunities and problematic constraints and obstacles has been detected by doing social and physical analyses in study areas. Detected obstacles have been evaluated according to universal design approach and principles.

After the zone definition and analysis, accessibility detection study has started. For this study, various assistive tools has been used to determine the needs of not only visually impaired, hearing

impaired and physically handicapped people, but also kids, elders and individuals who might be carrying tools or other load.

As the starting point, analyses had been done on 1/1000, 1/500 and 1/200 scaled maps in order to determine the feasibility of building accessible places for everyone in public spaces, in selected locations, as part of the field study. In the field study, all the movement limiting factors that affect all the user groups (non-standard sidewalks, staircases, surface coating materials, ramps, street furnitures, building entrances, public transportation stops, pedestrian underpasses and overpasses, etc.) have been showed in the 1/200 scaled sheet with their sizes and qualities, in the location texture analysis phase. Accessible building entrances and locations have also been added to the texture analysis phase. Then, an assessment table has been created in order to question the place with suitability of universal design principles and sub-principles. In site measurements have been done in order to detect the current situation. Design elements (building entrances, sidewalks, ramps, crosswalks, parking lots, staircases, city furnitures, coating materials, etc.) that is located in the sample area and that can provide different users their needs have been determined with measuring their qualities, and their suitability. The physical qualities of these elements have been determined by taking photographs and observation. A suitability analysis has been done by cross-referencing the datas and findings of the study with standards. Analyses and findings have been examined under four main titles:

1. Usage of transportation and circulation systems (sidewalks, ramps, pedestrian roads, crosswalks, staircases and building entrances)

2. Usage of transportation zones (public transportation stops and parking lots)

3. Usage of city furnitures

4. Signs, signing and navigation resources

Evaluation criteria and table have been created by benefiting from resources about universal design that has a place in literature (Kavak, 2010; Sirel vd., 2012; Nimpuno, 2014) and national, international standards (TS 12506; ADA; The Center for Universal Design). Suitability to universal design principles percents of sample places have been calculated for each item. Each successful regulation that suits the standards in the table will get 1 point, if it is successful 0 points will be given (The dataset table used in the workshop is not included in this paper because of its long and detailed structure). If the standard doesn't exist within the area,

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the criteria will not be added to the calculation. Suggestions have been developed for elements that don't suit the universal design principles in order to develop space design proposals suitable for every user group in the sample area.

CASE STUDY: ZAFER PEDESTRIAN ZONE-KONYA

Historical Background of Case Study Area

Konya is a deep-rooted and rich settlement that has been hosted many civilizations that have seen settlement evidence since the Neolithic period. Çatalhöyük is known as the oldest and most developed Neolithic settlement center, it has been discovered so far. Similarly, neolithic traces have seen in similar character of the Çatalhöyük's neolithic traces on the Alâeddin Hill. Alâeddin Hill, which is the center of the city, was founded at the beginning of the Chalcolithic period (5500-3000 BC) with the end of the Neolithic period (9000-5000 BC) and also one of the mounds which had been inhabited regularly since 2000 BC. Findings of Phrygian, Hellenistic, Roman, Byzantine, Seljuk and Ottoman settlements were obtained on the excavations in the district. The Hittites, who established a great empire in the lands of Anatolia and Syria, also dominated Konya. During the Phrygian period, Konya has been surrounded by walls that has been developed in the Inner Castle (Alâeddin Hill) and has become into a castle-city. Between the old city center and Alâeddin Hill known as strong center line for history, culture, tourism and trade (Figure 8).

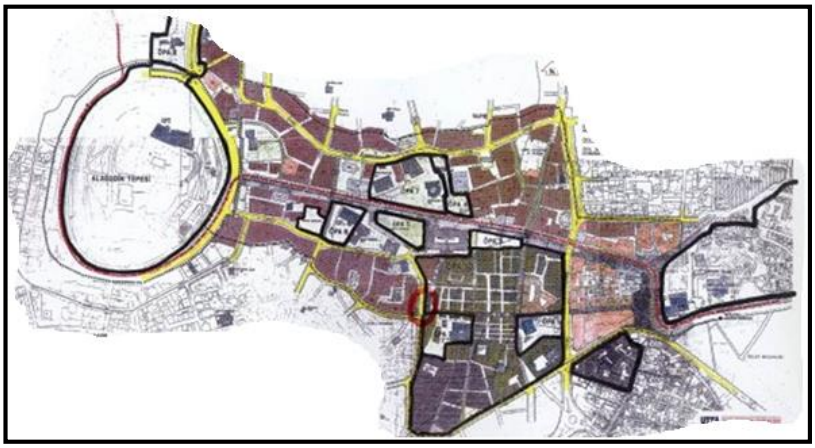

Figure 8. Konya Historical City Center Reconstruction Plan for Conservation *(URL 17).*

The position of Zafer Pedestrian Zone in Konya City can be seen in figure 9.

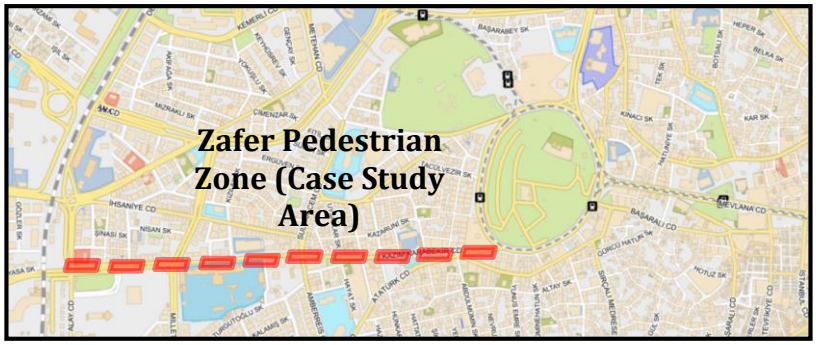

Figure 9. The Location of Zafer Pedestrian Area in Konya

Lynch analysis was performed by looking at the macro scale on the field of study to define the Zafer Pedestrian Zone center line and accessibility / barrier-free trace detection. Focus points, triangulation areas, boundaries, regions, vehicles and pedestrian paths and functions are determined. It is seen in Figure 10.

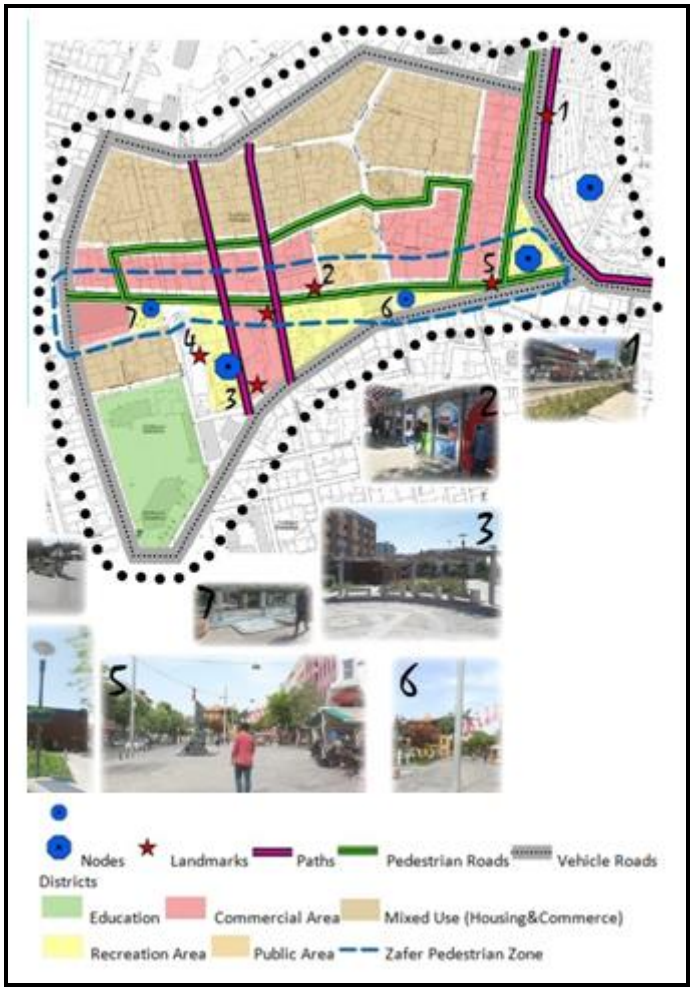

Figure 10. Zafer Pedestrian Zone and Near Surrounding Lynch Analysis

As a result of the determinations made, it has been determined that there are some focal points such as Hoca Hasan Mosque in the area, the pedestrian approach to the area is essential, reaching the area with public transportation stops, the tramway stops are the point of triangulation and Alâeddin Hill is a border, intersection of vehicle and pedestrian circulation at two points.

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Evaluation of Field Study Findings

Detailed analysis of the suitability of the principles of universal design of the circulation and circulation systems in the study area is shown in table 1.

Table 1. Evaluation results of circulation systems in the case area (detailed)

Pavements (P)	**Success (%)**	**Failure (%)**
P1	58.3	41.7
P2	25	75
P3	50	50
P4	16.6	83.4
Mean	**37.4**	**62.6**
Ramps (R)	**Success (%)**	**Failure (%)**
R1	0	100
R2	57.1	42.9
R3	14.2	85.8
R4	42.8	57.2
R5	57.1	42.9
R6	57.1	429
R7	14.2	85.8
R8	100	0
R9	85.7	14.3
R10	100	0
R11	33.3	66.7
R12	57.1	42.9
R13	71.4	28.6
R14	42.8	57.2
Mean	**52.3**	**47.7**
Pathways (PW)	**Success (%)**	**Failure (%)**
PW1	33.3	66.7
PW2	11.1	88.9
PW3	33.3	66.7
PW4	44.4	55.6
PW5	77.7	22.3
Mean	**39.96**	**60.04**
Stairs (S)	**Success (%)**	**Failure (%)**
S1	0	100
S2	25	75
S3	12.5	87.5
S4	62.5	37.5
S5	62.5	37.5
S6	25	75
Mean	**31.25**	**68.75**
Pedestrian Crossing (PC)	**Success (%)**	**Failure (%)**
PC1	27.2	72.8
PC2	81.8	18.2
PC3	27.2	72.8
PC4	45.4	54.6
Mean	**45.4**	**54.6**
Building Entrances (BE)	**Success (%)**	**Failure (%)**
BE1	12.5	87.5
BE2	0	100
BE3	0	100

BE4	0	100
BE5	0	100
BE6	37.5	62.5
BE7	62.5	37.5
BE8	12.5	87.5
BE9	12.5	87.5
Mean	**15.2**	**84.8**

Detailed analysis of the suitability of the principles of universal design of the public transport stops and parking areas in the study area is shown in table 2.

Table 2. Evaluation results of public transport stations and parking areas in the case area (detailed)

Public Transportaion Stations (PTS)	**Success (%)**	**Failure (%)**
Streetcar Station1	44.4	55.6
Streetcar Station2	55.5	44.5
Streetcar Station3	77.7	22.3
Bus Station	0	100
Mean	**44.4**	**55.6**
Parking Areas (PA)	**Success (%)**	**Failure (%)**
PA1	0	100
PA2	22.2	77.8
PA3	44.4	55.6
Mean	**22.2**	**77.8**

Detailed analysis of the suitability of the principles of universal design of the street furniture in the study area is shown in table 3.

Table 3. Evaluation results of street furnitures in the case area (detailed)

Resting Benches (RB)	**Success (%)**	**Failure (%)**
RB1	60	40
RB2	60	40
RB3	40	60
RB4	60	40
RB5	40	60
Mean	**52**	**48**
Phone Boxes (PB)	**Success (%)**	**Failure (%)**
PB1	0	100
PB2	33.3	66.7
PB3	33.3	66.7
PB4	42.8	57.2
Mean	**27.35**	**72.65**
Drinking Fountain (DF)	**Success (%)**	**Failure (%)**
DF1	0	100
DF2	50	500
Mean	**25**	**75**
Signboards (S)	**Success (%)**	**Failure (%)**
S1	100	0
S2	40	60
S3	100	0
S4	0	100
S5	25	75

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S6	50	50
Mean	**52.5**	**47.5**
ATM (Cash Machine)	**Success (%)**	**Failure (%)**
ATM1	0	100
ATM2	50	50
ATM3	100	0
Ticket Kiosk	100	0
Mean	**62.5**	**37.5**

Analysis of the suitability of the principles of universal design of the circulation and circulation systems in the study area is shown in table 4 and figure 11. According to findings, the most unsuccessful usings were building entrances (84.8%) while the most successful usings were ramps (52.3%).

Table 4. Evaluation results of the use of circulation systems in the case area

Circulation Systems	Success (%)	Failure (%)
Pavements (P)	37.4	62.6
Ramps (R)	52.3	47.7
Pathways (PW)	39.9	60.1
Stairs (S)	31.2	68.8
Pedestrian Crossing (PC)	45.4	54.6
Building Entrances (BE)	15.2	84.8
Mean	**36.9**	**63.1**

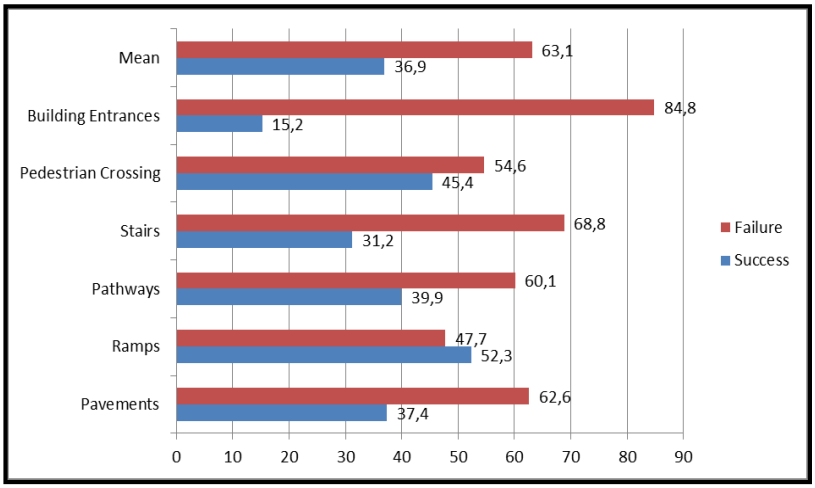

Figure 11. Evaluation results of the use of circulation systems in the case area

Analysis of the suitability of the principles of universal design of the transport stops and parking areas in the case area is shown in table 5 and figure 12. Both of public transport stops and parking areas has scored below 50% of the analysis of the suitability of the principles of universal design rating. General average achievement level is 33.3%.

Table 5. Evaluation results of the use of public transportation stations and parking areas in the case area

Stations and Parking	Success (%)	Failure (%)
Public Transportation Stations (PTS)	44.4	55.6
Parking Areas (PA)	22.2	77.8
Mean	**33.3**	**66.7**

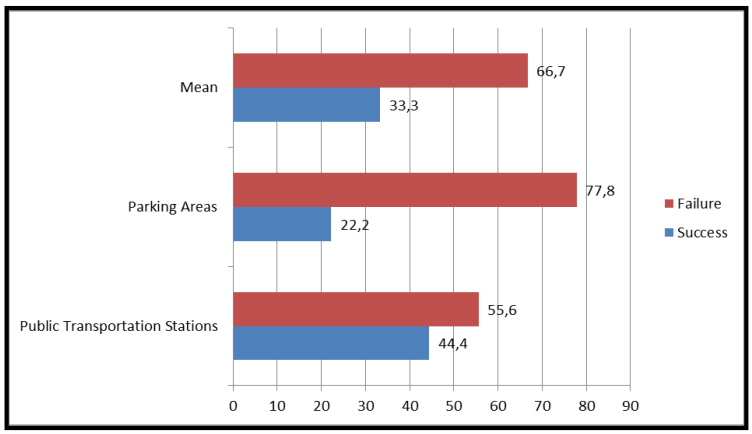

Figure 12. Evaluation results of the use of public transportation stations and parking areas in the case area

Analysis of the suitability of the principles of universal design of the street furniture in the case area is shown in table 6 and figure 13. ATMs and ticket kiosks are the most successful with 83.3%, while phone boxes, drinking establishments and street lamps are below 50%. The most successful usings were ATMs and ticket kiosks by rate of 83,3% while phone boxes, drinking establishments and street lamps using are below 50% on the scoring. The general success rate of street furniture is 46.2%. In this case, it shows up that street furniture is not appropriate to principles of universal design in case area.

Table 6. Evaluation results of the use of street furnitures in the case area

Street Furnitures (SF)	Success (%)	Failure (%)
Resting Benches (RB)	52	48
Phone Boxes (PB)	27.3	72.7
Drinking Fountain (DF)	25	75
Garbage Cans (GC)	50	50
Signboards (S)	52.5	47.5
Street Lamps (SL)	33.3	66.7
ATM (Cash Machine) and Ticket Kiosk	83.3	16.7
Mean	**46.2**	**53.8**

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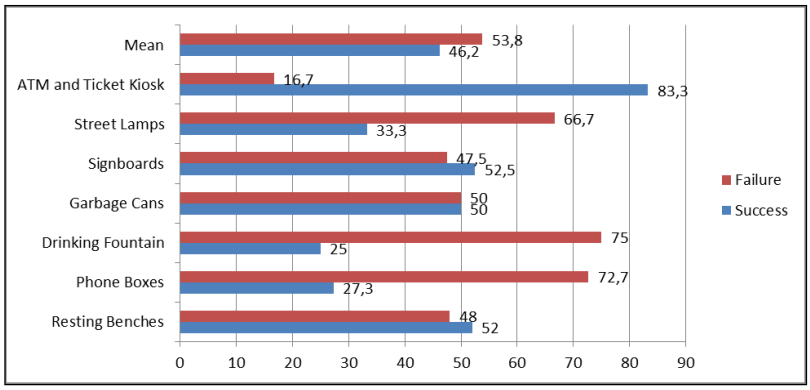

Figure 13. Evaluation results of the use of street furnitures in the case area

Evaluation of the Physical and Spatial Regulations of Zafer Pedestrian Zone According to of Principles of Universal Design

If people with special needs can not reach from the same point with everyone and they diverted to a different route, it can not said that the arrangement is suitable for the principles of universal design. There must be a ramp or elevator in the area and these items must be integrated with the stairs. There is a ramp to get on the tramway stop, there is no ramp on the pavements to reach the stop at the Kultur Park. It is preferred to use the elevator in a different entrance instead of arranging the use of stairs and ramps together in same entrance on the cafe in commen area on the Zafer Pedestrian Zone. This situation does not suitable for the principle of equal use of universal design. Also, this elevator is using for the purpose of cargo handling if required and this situation does not even suitable for the principles of human rights. The situation that many businesses do not have a ramp at the entrance or have one or two steps at the entrance does not suitable for the principles of equitable use (Figure 14).

Figure 14. Usages that do not suitable for the principles of equitable use

If flexibility in use examined at the urban scale, Zafer Pedestrian Zone is whole common and special usage area which can be used as a area defined by landscape elements with provide daily-social necessity and interaction for every individual from every age. However, fractional arrangements do not allow easy use for everyone in the area (Figure 15).

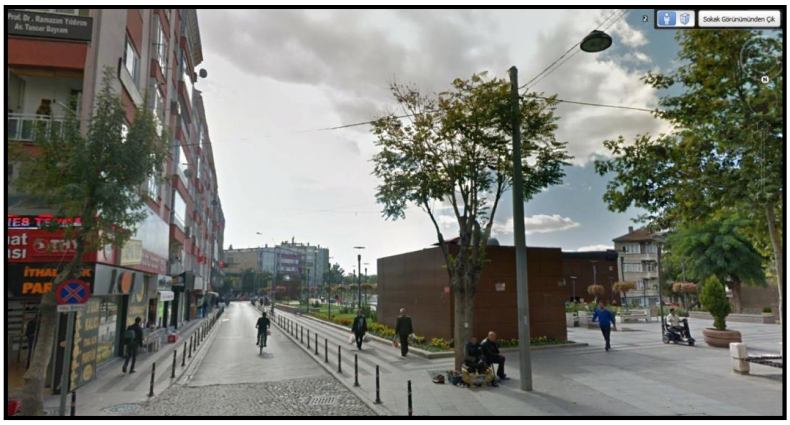

Figure 15. Examplary usage of flexibility in use

Infrastructure covers forming the level difference on the ground along the Zafer Pedestrian Zone, widely spaced grid in ramps downhill constitute an impediment for everyone. Also, it is a dangerous situation that there is no warning sign or strawman for feeling level the difference on the ground. In addition to this, the pool located in the cafe area in the common area on the Zafer Pedestrian Zone surrounded by a wall in the sitting level and is suitable for the principle of tolerance for error (Figure 16).

Figure 16. Usages to suit\not suit principle of tolerance for error

For the people with limited mobility, areas must be accessible in a short time and easy route. In case of need, area must be accessible

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on easiest and safest route with simple\intuitive methods and writing and voice signs for people who lost sight or hearing. Even healthy individuals can not find the place they want to reach, lose their time and energy because of warnings or information signs that are not in the proper eye direction, designing without warning colors. Simple designed areas and spaces will help to make social life easier for everyone. Absence of written and audial signs in WC and parking area on the cafe in commen area on the Zafer Pedestrian Zone does not suitable for the principle of simple and intuitive use in recognition of the area. A larger area is allocated for the disabled parking area in the garden of the Provincial Health Directorate with indicated by the symbol (Figure 17).

Figure 17. Usages that suitable for Principle of Simple and Intuitive Use

The cobblestone sidewalks that continue along Zafer Pedestrian Zone are obstacles for pedestrians, bicyclists, crutches or wheelchair users. Also, the wide gap between the grids does not suitable for the principles of universal design. People who do not want – can not use to stairs, cam reach the are with using ramp thanks to practicable slope of ramp on the cafe on the cafe in commen area on the Zafer Pedestrian Zone. In this case, many spatial arrangements in the sample area do not suitable for the principle of low physical effort of the universal design (Figure 18).

Figure 18. Usages to suit\not suit Principle of Low Physical Effort

Warning, information or direction signs must be designed with readable text and graphical designs reverse color of the floor color. All those signs must be understandable and noticeable without effort for everyone. City map does not bespeak for everyone on the tramway stops. Camlıköşk Square, which is one of the busiest spots in the city, the voice guidance of the traffic lights are difficult the hear in extraordinary traffic therefore it is not suitable for Principle of Perceptible Information. The elevator in the gardens of the Provincial Health Directorate can be reached with a yellow trace line therefore it's suitable for the principle of perceptible information (Figure 19).

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Figure 19. Usages to suit\not suit Principle of Perceptible Information

The ATMs on the Zafer Pedestrian Zone located to provide sidle distance and the devices are placed at eye level. But screens are not inclined so that the sitting individuals can not see the screen. There are no obstacles in the sidling area to the fountain and height of the tap is proper for sitting or standing individuals and is suitable for the Principle of Size and Space for Approach and Use (Figure 20).

Figure 20. Usage to suit\not suit Principle of Size and Space for Approach and Use

There are no different directors on the pedestrian zone for different groups of obstacles in terms of sound, color, lighting, materials and texture. Pedestrian traffic lights have warning lights, but the volume is too low. There are many obstacles (bicycles, boxes, water hoses, etc.) in the area that restrict the movement of the springs. There are defective lamp cables on the ground and large screws that protrude from the surface and there are no warning signs or colored bands for all these obstacles. There was insfrastructure work during the field survey and there weren't any warning elements around. Also, there is no feelable flooring around any street furniture.

Suggestions for Unsuitable Usage with Principles of Universal Design

On-site observation, detection and analysis studies, unimpeded practising for determine to uninterrupted and accessible center lines. After these studies, absence and deficiency (figure 21) identified and solution proposals introduced. Innovative solution proposal for urban furniture that are unsuitable for principles of universal design and which are scattered and disorderly placed in different lines is "Multi-Modular Street Furniture"

Figure 21. Dispered, disordered and non-universal street furniture

Multi-Modular Street Furniture

It is determined that there is absance of sitting unit suitable for principles of universal design at the Zafer Pedestrian Zone. The design produced as a solution with the use of certain points on the pedestrian zone for the all individuals with different physical properties; guidance, rest, lighting, charging and it may be a solution to the necessity to spend some time together.

As seen in figure 22 and figure 23, the sitting unit responds to individuals with different necessitys according to different heights levels. Especially short people, elderly people and children can rest together in the same comfort level with other individuals. For create an integrated design and remove irregularities, element of the main function of the electric lamps must be have different levels of lighting option, guiding digital surface, battery charger unit for battery-operated wheelchair, landscape elements such as flower beds. Also, the energy of the entire system provided by solar panels, which contributes to the energy efficiency of the city.

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Figure 22. Multi-Modular Street Furniture Design Alternative 1

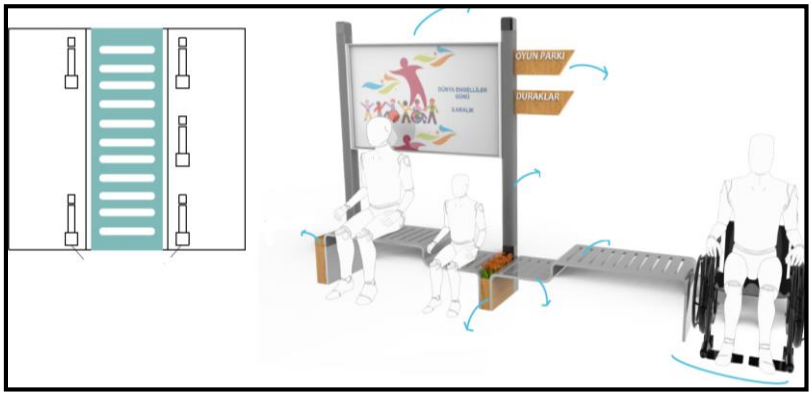

Figure 23. Multi-Modular Street Furniture Design Alternative 2

CONCLUSION

As a result of planning and designing according to healthy individuals of a certain standard, other individuals who are out of this definition taken away from the possibilities of independent and easy to use urban area. Main reason of the adoption and becoming the main topic of the universal design approach is that all people are the subject of the user group. Simple measures to be taken and good design can make it possible to use the cities comfortably and easy for people who are restricted in their movement for various reasons. Reaching the urban area and using the area is the most important requirement to ensuring full participation of social life. It is a condition of human rights and a city right to be able to benefit from the area independently and equally.

Universal design should not be viewed as an approach developed for disabled or elderly individuals. People with different needs and abilities should be able to use urban areas and buildings as

possible as comfortable and safely without special assistance. Opportunities to facilitate the mobility of individuals should be provided outdoor and indoor usages in the cities where they live their lives. In this context, design will be considered good if it designs with considering and covering all user groups.

According to the findings in the case area, the deficiencies in the field study should be eliminated and the necessary elements should be redesigned in integrated city furniture. Also the most important problem is that a barrier-free pedestrian crossing can not be seen and used in the floor material and footprints. The tangible surfaces should be placed for visually impaired. It is suggested that the entrance of commercial buildings should be arranged both with accessible design criteria and in accordance with the principle of equal usage of universal design. It is urgently suggested that the points of intersection of the vehicles-pedestrian roads and the pools must be secured by railing arrangements.

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