Araştırma Makalesi

EVALUATION OF UNIVERSITY CAMPUSES FOR PHYSICAL ACCESSIBILITY

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ABSTRACT

Accessibility is an important part of urban mobility public policy and one of the priorities of inclusive public spaces for all members of society. Increasing accessibility in campus areas is also a prerequisite for ensuring equality of opportunity among all students in higher education institutions. Since campus spaces are disadvantageous in terms of accessibility, disabled students generally cannot benefit from educational opportunities equally and cannot participate in campus life. Universities should be trailblazing in their support of and actions to guarantee equal opportunities for everyone in society, including students, since they are regarded as premier institutions in a city when it comes to their contributions to the social, cultural, economic, political, and technological development of the nation. In this study, the current accessibility status of Siirt University Kezer Campus and the buildings within the campus for disabled students was investigated. As a result of the findings, existing accessibility problems in the campus area were identified and priority areas that needed improvement were identified. The ultimate aim of the study is to reveal the spatial accessibility possibilities of the facilities and buildings in the campus area, to identify deficiencies within the scope of relevant standards and to determine the areas that need to be improved first. The result is to create a campus that is accessible in every sense.

Keywords: Accessibility, Education, Campus Areas, Planning

ÜNİVERSİTE YERLEŞKELERİNİN FİZİKSEL ERİŞİLEBİLİRLİK KAVRAMI YÖNÜNDEN DEĞERLENDİRİLMESİ

ÖZET

Erişilebilirlik, kentsel hareketlilik kamu politikasının önemli bir parçasıdır ve toplumun tüm üyeleri için kapsayıcı kamusal alanların önceliklerinden biridir. Kampüs alanlarında erişilebilirliğin artırılması, yükseköğretim kurumlarındaki tüm öğrenciler arasında fırsat eşitliğinin sağlanması için de bir ön koşuldur. Kampüs mekânlarının erişilebilirlik açısından dezavantajlı olması nedeniyle engelli öğrenciler genellikle eğitim olanaklarından eşit şekilde yararlanamamakta ve kampüs hayatı içerisinde bulunamamaktadır. Üniversiteler, bir kentte ülkenin sosyal, kültürel, ekonomik, siyasal ve teknolojik gelişimine katkı sağlamada öncü kurumlar olarak görüldüğünden, toplum içinde öğrenciler de dâhil olmak üzere herkese fırsat eşitliği sağlanmasına yönelik destek ve tedbirlerin alınması konusunda öncü bir karaktere sahip olmalıdır. Bu çalışmada, Siirt Üniversitesi Kezer yerleşkesinin ve yerleşke içerisinde bulunan binaların engelli öğrenciler için mevcut erişilebilirlik durumu araştırılmıştır. Elde edilen bulgular neticesinde kampüs alanında mevcut erişilebilirlik sorunları tespit edilmiş ve öncelikli iyileştirilmesi gereken yerler belirlenmiştir. Çalışmanın nihai amacı kampüs alanında yer alan tesis ve binaların mekânsal olarak erişilebilirlik olanaklarını ortaya koyarak, ilgili standartlar kapsamında eksikliklerin tespit edilmesiyle öncelikle iyileştirilmesi gereken alanların belirlenmesidir. Sonuç olarak her anlamda erişilebilir bir kampüs ortaya koymaktır.

Anahtar Kelimeler: Erişilebilirlik, Eğitim, Kampüs Alanları, Planlama

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1. INTRODUCTION

When designing buildings and open spaces, architectural possibilities that can be easily accessed by everyone, regardless of person, should be considered. For this purpose, the accessibility standards included in the legislation should be considered at the very beginning of the design and the built environment should be created accordingly. Thus, there will be no need for additional processing or improvement later. In practice, the possibility of comfortable movement is restricted or prevented by deliberately or unknowingly making designs outside the standards. Disabled people, elderly people, pregnant women, people with baby strollers and children are among the primary disadvantaged users. Most of the time, the movements of these users within the built environment are restricted, obstructed, and even pose the risk of an accident. In order to prevent these negativities, designs should be made in appropriate sizes, and accessibility should be the first priority so that everyone can reach everywhere safely at all times.

According to the Accessibility Guide (Republic of Turkey Ministry of Family and Social Services, 2024) accessibility; It is the ability of everyone to access and use any place and any service they want, independently and safely. The concept of accessibility was first included in the legislation in our country in 1997. In our country, there are legal regulations that will ensure that the design of spaces and buildings is accessible to everyone. Zoning Legislation, especially the Zoning Law No. 3194, Planned Areas Zoning Regulations, Parking Lot Regulations and Building Inspection Implementation Regulations; On the other hand, in accordance with the provisions of the disability legislation including the UN Convention on the Rights of Persons with Disabilities and Law No. 5378 on Disabled Persons, it is mandatory to make accessible design in the planning and project stages. The main standards regarding accessibility in our country are: TS 9111, TS 12576, TS 12460, TS ISO 23599, TS 13536, TS 23600, TS 13622 and TS 13882 standards (Republic of Turkey Ministry of Family and Social Services, 2024).

Within the scope of accessibility in universities, the "Higher Education Institutions Disabled Persons Consultation and Coordination Regulation" was published in 2010. The purpose of the regulation; To regulate the working procedures and principles of relevant commissions and units in order to facilitate the educational life of disabled students receiving higher education and to take the necessary measures and make arrangements in order to prepare the necessary academic environment and ensure full participation in education and training processes. Within the scope of this regulation, Disabled Student Units within the university and a Disabled Student Commission within the Council of Higher Education were established. The duties of the Disabled Student Commission and the Disabled Student Units include "to follow or ensure that the structures regarding the arrangement of university campuses for disabled people are made, to ensure that university campuses and the buildings and open areas in the campuses are accessible to disabled students, and to provide solutions to the accessibility and accessibility problems that disabled students may encounter in higher education." (Özkaraca and İnceoglu, 2021; Republic of Turkey Presidency Legislation Information System, 2010).

Success in accessibility of educational environments can improve the quality of community life as well as full participation in educational services and facilities. Since universities are seen as leading institutions in a city in contributing to the social, cultural, economic, political and technological development of the country, they should have a pioneering character in taking support and measures to ensure equal opportunities for everyone, including students, in society. However, there is still an inconsistency in the approach to planning inclusive campus design (Uyaroglu, 2015). Necessary importance is not given, especially during the implementation phase.

Recently, international researchers have also shown great interest in accessibility and sustainability on campuses. In order to provide an equitable education, campuses should be designed to meet the needs of everyone (Marcus and Wischemann, 1997; Mishchenko, 2013; Cadena, 2017; Cadena at al., 2020). In his study, Kim evaluated 4 universities in the USA within the scope of ADA (Americans with Disabilities Act) and UD (universal design) and aimed to provide an improvement direction for the Korean universal design application in line with the results. As a list of evaluation criteria; It covered the parking lot, main entrance, corridor, stairs, elevator, information system and public toilets, including disabled people. The evaluation level was created as a three-point Likert scale; good, medium, poor. Differences that will maximize the potential of Korean UD principles; Parts that do not have Braille signs for visually impaired individuals should be supported with electronic devices, the proportion of public spaces should be increased, attractive common physical space that can be easily used by everyone rather than a corporate appearance, and regular maintenance and improvement. The study was evaluated objectively through a checklist and subjectively through participatory workshops and meetings on a university campus in Turkey to identify the needs of disabled users in campus environments. The results obtained were used to inform practitioners (Mishchenko, 2013). In another example, types of barriers and facilitators were investigated for different disability groups in the USA. While structural obstacles constituted a problem for wheelchair users, navigation was a major problem for visually impaired individuals (Thapar at al. 2004).

In Türkiye, research on accessibility has begun to be given more emphasis in recent years. The restrictions that occur in practice as a result of design that is not made in accordance with standards have created the necessity of investigating this problem. The basis of the first and all studies is to determine the current situation. In other words, it is the comparison of the measures and criteria that should be in line with the standards and the measures and criteria designed in practice. In this direction, studies have been conducted on accessibility for open and public spaces (Ekici, 2021; Cüce and Ortaçeşme, 2020; Yenice, 2012; Onay at al., 2022) accessibility for buildings (Özdemir, 2020; Orakci, 2010) and university campuses, which are defined as miniatures of cities. They are grouped as evaluation of accessibility [Özkaraca and İnceoglu, 2021; Arat and Güner, 2020; Tutal, 2018; Berktaş, 2016).

For example, in the study conducted by (Özkaraca and İnceoglu, 2021), the current accessibility status of Düzce University Konuralp campus for disabled users was revealed and a campus accessibility map was created. Another study focused on the accessibility of the Faculty of Engineering, located in Eskişehir Technical University İki Eylül Campus, which received the Spatial Accessibility Orange Flag award in 2018. Qualitative research method was used in the study and a case study was conducted on the accessibility of places (Tutal, 2018). Within the scope of the master's thesis study, the concept of disability and the accessibility of university buildings were examined through the examples of Maltepe University and Sabancı University. While it was determined that Sabancı University Campus was accessible within the framework of standards, it was determined that the only accessible building in Maltepe University Campus was the Cultural Center. Improvements should be made to ensure that all campus areas comply with accessibility standards (Berktaş, 2016). Baju and Kurnia (2019) examined the buildings on the campus in accordance with the relevant regulations and scored them according to whether their current state complies with the standards. The scores obtained as a result of the building evaluation results in terms of accessibility show that it is possible for disabled individuals to access all buildings independently.

In this study, the physical accessibility of Siirt University Kezer campus and the buildings within the campus, especially for physically and visually impaired students, was investigated in line with the standard (TS 9111) values used in Turkey. Outdoor walkways and ramps on walkways, access to sports fields, use of ATMs and car parks were examined. In the building interior evaluation, building entrances, building entrance ramps and doors, stairs, handrails, guideways and elevators were examined. These selected criteria were determined as a result of the study scans (Çivici and Gönen, 2015; Özkaraca and İnceoğlu, 2021). Compliance with the standard value of existing criteria; It was expressed in three categories as conforming to standards, not conforming and not available through measurements, observations and photographs. With the study, the current situation was determined, which parts were not done in accordance with the standards during the implementation phase and the areas that needed to be improved first were identified.

2. MATERIAL AND METHODS

The main material of the study consists of Siirt University Kezer Campus located in Siirt province and the faculty buildings within the Campus. The buildings examined are shown in Figure 1. Other study resources include; It includes literature review on the subject, photographs taken in the study area, observations and measurements.

Siirt University was established with the law numbered 2809 published in the Official Gazette numbered 26536 dated 29.05.2007. It is a university open to development due to its new establishment. Within the university; 10 faculties: Education, Engineering, Faculty of Arts and Sciences, Economics and Administrative Sciences, Agriculture, Theology, Veterinary Medicine, Fine Arts and Design, Health Sciences and Medicine Faculty; 3 colleges: School of Physical Education and Sports, School of Foreign Languages and Tourism Management and Hotel Management; 4 institutes: Science, Social Sciences, Living Languages and Health Sciences Institute; There are 6 vocational schools: Social Sciences, Technical Sciences, Health Services, Kurtalan, Eruh and Design Vocational School. More than one faculty and department can share a building. The building locations considered are shown in Figure 1.

Figure 1. Study area-Siirt University

Research method; It consists of data collection through observation and photographs, measuring the necessary parts with a meter and comparing them with the standard value, analysis and evaluation. Within the scope of the study, the building interiors, building entrances, internal ramps and doors, access roads to the building, car parks, open areas, sports fields, ATMs and classrooms in the Kezer campus were examined and their current accessibility status was revealed. A total of 10 buildings on the university campus were evaluated, including the Rectorate, Engineering A, B, C Block, Education, Arts and Sciences, Physical Education and Sports, Theology, Agriculture and Library buildings. Priority accessibility criteria considered in buildings and access to buildings; pedestrian paths and sidewalks, disabled parking areas, building entrances, ramps and stairs.

3. RESULTS AND DISCUSSION

Kezer Campus can be accessed from a total of 4 entrances. One entrance is used for pedestrian access only, allowing students living in the girls' dormitory located just outside the campus to easily access the campus. While both pedestrian and vehicle entrance is provided from the other three entrances, pedestrian entry is mostly from the main entrance. There is a turnstile system only at the main entrance, and disabled people can easily pass through that part. The door opened for transportation from the girls' dormitory is not suitable for wheelchair users. There is a level difference at the entrance and since the route ground is a stabilized road, it is difficult for wheelchair movement. Students and staff can come to the campus by personal vehicles and public transportation. While municipal buses have equipment that facilitates access for individuals with wheelchairs, unfortunately, minibuses do not have this facility. People coming by private vehicle can park in the parking lots close to the buildings and reach their buildings directly and easily. Although the parking lot is located close to each building, there is no special parking area reserved for the disabled in every car park.

3.1. Entrance to buildings

According to TS 9111, barrier-free access must be provided to at least one entrance of the buildings. Entrances must be at least 90 cm wide. If a ramp is required, the slope of the ramps should not be more than 1:12 (8%). There should be railings on both sides of ramps that go higher than 15 cm. Railings should be 90 cm high from the ramp surface, and edge protections on the edges of the ramps should be at least 5 cm high (Republic of Turkey Ministry of Family and Social Services, 2024; ADA, 2010).

Figure 2. Accessibility at building entrances

Under this heading, an evaluation was made in terms of door size values and ease of entry into the building for disabled individuals (Figure 2). While the door widths of the buildings marked as not complying with the standards in Table 1 meet the minimum requirement of 90 cm, the doors' opening towards the outside and with difficulty makes it difficult for individuals with wheelchairs to enter the building. The use of photocell doors at building entrances makes it easier for disabled individuals to enter and exit the building. Photocell doors are marked with red stripes so that visually impaired people with limited vision can easily distinguish the glass door. In all buildings, tactile surfaces for the visually impaired have been created in front of the building entrance doors. At the entrances of buildings with ramps, the ramps are built in accordance with the standards.

3.2. Ramps

According to TS 9111, places at different levels at building entrances should be connected to each other with ramps. Ramp surfaces must be hard, non-slip and smooth. Ramps near building entrances should not be steeper than 1/12 (approximately 5°). It is recommended that the length of the ramps is not more than 6 m. For slopes between 1/15 and 1/12 (approximately 4° and 5°), the ramp length should be maximum 10 m. The net width of the ramps must be at least 100 cm, excluding all equipment on them such as protection curbs and handrails.

Figure 3. Building entrance and ramps inside

Since the Engineering A, B and C blocks and the entrance of the Faculty of Arts and Sciences are at the same level as the road level, there is no need for any ramps at the entrances of these buildings. Other building entrances have ramps and are suitable for wheelchairs. The ramps inside the building are built in accordance with the standards. The ramp column in Table 1 was evaluated over the ramps at the building entrances.

3.3. Ramps on the pedestrian way route

A ramp should be built to eliminate level differences on the pedestrian path. If the level difference is more than 1.3 cm, a ramp must be built. Ramps must have a flat, hard, stable and anti-slip surface, and there must be no drainage grids on them. The ramp surface length should not be more than 9 m. The slope of the ramps on the pedestrian route should be at most 5%. If the horizontal length of the ramp is more than 2 m or the height of the ramp is more than 15 cm, there must be guardrails on both sides of the ramp (TS 9111).

Figure 4. Ramps on pedestrian ways

Although the building entrance and the ramps inside them comply with the standards, the ramps on the pedestrian walkway have a maximum slope of more than 8%. It is not possible for a wheelchair user to use these ramps safely without assistance (Figure 4).

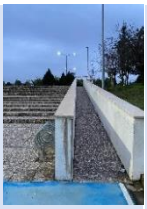
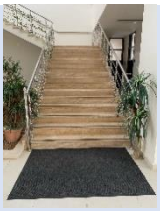
Additionally, there are no perceptible and guiding guide lines on the sidewalks within the campus. It was observed that the height of the pavements above the road level was close to the upper limit of 15 cm and higher (Figure 5). It has been observed that there are no ramps required to reach the pavement height, and the existing ramps are not continuous enough to ensure accessibility. It has been observed that equipment such as lighting lamps and garbage bins on the pavement are not placed in accordance with the standards in some places, reducing the effective walking width.

Figure 5. On-campus sidewalks

Accessibility conditions for entering the faculty buildings, rectorate and library buildings on the campus have been checked within the standards and are given in Table 1. In addition, the accessibility of places such as parking lots, walking paths and ATMs is also evaluated below.

Generally, when the accessibility levels of buildings on campus are evaluated on the basis of building entrance (Table 1); Since the building entrance doors of the Rectorate, the Faculty of Engineering, Block C, Faculty of Arts and Sciences, Agriculture and the School of Physical Education open outwards, it becomes difficult or even impossible for a wheelchair user to enter the building without assistance. Since other faculty building entrance doors are photocell-operated, entry and exit are very easy. Ramps have been built in buildings where there is a difference in elevation between the building entrance and the road. Ramps are built in accordance with standards. In 4 buildings, there is no need for a ramp element (Table 1). Stair and banister dimensions are suitable for all buildings. The guide lines intended for visually impaired individuals are not available in other buildings except the Faculties of Theology, Agriculture and Faculty of Arts and Sciences.

Table 1. Accessibility level of campus buildings

Buildings	CRITERIA				
	 Building Entrances	 Ramps	 Stairs	 Banisters	 Guide Traces
Rectorate	-	X	✓	✓	X
Engineering Fac. A Block	✓	/	✓	✓	
Engineering Fac. B Block	✓	/	✓	✓	X
Engineering Fac. C Block	-	/	✓	✓	X
Education Fac.	✓	✓	✓	✓	X
Arts and Sciences Fac.	-	/	✓	✓	✓
Physical Education and Sports	-	✓	✓	✓	X
Theology Fac.	✓	✓	✓	✓	✓
Agriculture Fac.	-	✓	✓	✓	✓
Library	✓	✓	✓	✓	X

✓ Compliant with standards, - Not conforming with standards, **X** Not available in area, / Not needed

There are elevators inside the building to reach the upper floors. Generally, the elevators in the buildings are usable. At the time of the observation, only the elevator in Engineering C Block was out of use and there was no guide line in front of the elevator (Figure 6). Voice information is available in the elevators via Brail alphabet.

Figure 6. Elevators in buildings

There are ATMs in two different places on campus (Figure 7). When ATMs were examined in terms of accessibility, it was determined that ATMs were not usable and accessible. ATMs are placed on a platform above the road level. These units are not accessible to individuals in wheelchairs. There are no voice menu functions and embossed keyboards for visually impaired individuals, and there are no guide lines that will allow access to ATMs.

Figure 7. ATMs on campus

Sports fields on campus are not accessible to the visually impaired. Because there are no perceptible and guiding guide marks on the walking paths. Only two sports fields are suitable for individuals with wheelchairs. Because there is a level difference between the sports field and the road and there is no suitable ramp to overcome this level difference (Figure 8).

Figure 8. Access to sports fields

Additionally, there is a specially marked disabled parking space for one vehicle only in the Faculty of Engineering Block C parking lot. On the other hand, there is no suitable route to get out of the car in the parking lot and reach the building entrance. Individuals with walking disabilities are not considered in the classrooms, and there are no adequately wide desks for them. Since there are no parking lots or classrooms suitable for disabled students, their images are not included.

4. CONCLUSIONS

Accessibility is an important concept in the construction of social inclusion. Universities provide individuals with social skills as well as education. At this point, accessibility directly supports the inclusion of disabled students in the entire university campus life. For the accessibility target, international and domestic standards should be taken into consideration during the design and construction of living spaces.

Within the scope of the study, the buildings and access to buildings within Siirt University Kezer Campus were examined within the concept of accessibility and under the supervision of current standards. Walking paths, sidewalks and ramps, parking lots, sports fields, ATMs, building entrance ramps and doors, stairs, handrails, guide tracks, elevators and classrooms within the study area were evaluated in terms of accessibility for disabled individuals. The lack of ramps on the roads and sidewalks that a disabled individual who comes to the campus by public transportation or private vehicle will use between getting off at the bus stop and reaching the buildings makes it very difficult to cross to the other side of the road and makes it impossible for disabled individuals who use wheelchairs. The same situation applies to a visually impaired individual because there are no perceptible and guiding guide lines. An individual in a wheelchair who reaches the entrance of the building experiences problems at the building door of the Rectorate, Engineering Cblok, School of Physical Education and Sports, Faculty of Arts

and Sciences and Agriculture. Because the doors of this building are doors that open outwards with difficulty. If these doors are converted to photocell doors like other faculty doors, the goal of accessible building entrance will be achieved.

In order to remove obstacles to accessibility; It is important to ensure the continuity of pedestrian paths, pavements and ramps by arranging pedestrian paths and ensuring that building entrances comply with the specifications specified in the standards. Except for Engineering C Block, there is no separate parking space reserved for disabled people in the parking lot of any building. In addition, the lack of ramps to reach the building from the parking lots significantly affects accessibility for disabled use. None of the ATMs belonging to different banks on campus are suitable for disabled use. There are no tables and chairs in the classrooms for the use of disabled individuals.

Within the scope of the study, determinations and evaluations were made through TS 9111 used in our country, and the importance of increasing the accessibility of pedestrian paths, parking lots, ATMs and building entrances, and building interior elements with the determined regulations was emphasized. Although the standard used in our country provides transportation comfort in favor of disabled individuals, the main problem is that the standards are not adhered to in the application part. Providing precise inspections during the implementation phase will eliminate this problem. In addition, taking into account the universal design principles in the implementation part, as well as the TS 9111 standard, will be an important step in internationalization. Additionally, as a result of not taking spatial needs into account, user feedback on the use of the design is often missing and thus little is actually known about users' spatial experiences. Communication between disabled individuals and designers will ensure the emergence of reliable information regarding the inclusive design process. For a barrier-free university, requirements must be taken into account in the planning, design and implementation stages.

Additionally, today is the age of technology. With technology-based applications on campus, the movements of disabled individuals will become easier and they will be able to socialize faster. For example, the application of an audio portable device that can guide visually impaired individuals in places where there is no Braille alphabet and guide lines will create a practical and safe movement area. Additionally, charging stations for wheelchair users should be considered within the campus area.

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