

Design guideline for life center unit for inclusive schools in Turkey

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Abstract

Supportive educational services in inclusive education (IE) are important for providing equal education rights to students with special needs and ensuring their participation in society. In Turkey, life center units, which were not included in IE legislation, were first established as a supportive educational service of inclusive schools at the primary schools and furthered throughout the secondary settings. Universal design (UD), which supports the accessibility and usability of the built environment for all, is recommended to guide the design of the IE schools. Thus, the aim of the study is to develop UD-compliant interior design guidelines for life center units by using a two-stage methodology. First, the dimensions of IE and the related physical environments in Turkey were examined. Second, periodic visits to life center units of Ankara Gökkuşuğu Primary School and SERÇEV Accessible Vocational Anatolian High School were conducted by on-site observations and architectural plan reviews. The obtained data were analysed to acquire the interior space requirements, revealing the necessity of the life center unit for IE in Turkey and the need for design guidelines. The study is expected to fill an important gap in the field of interior architecture in terms of proposing a design guideline for supportive educational services in IE school environment. Moreover, the study is expected to provide a design guideline, specifically for designers, practitioners, academicians, and relevant stakeholders.

Keywords

Inclusive school, Interior architecture, Life center unit, Supportive educational service, Universal design.

1. Introduction

The Education for All (EFA) movement, initiated by United Nations Educational, Scientific and Cultural Organization (UNESCO), states that education policies worldwide should be updated by socially integrating approaches for people with special educational needs (SEN) and promoted equal access to education (Ainscow & César, 2006; Miles & Singal, 2010; Peters, 2007). The special needs might be cognitive, behavioral, emotional, social, sensorial, and physical (De Boer & Kuijper, 2021; Education Funding Agency, 2014; Miles & Singal, 2010). Concerns about curricula for people with SEN have increased to eliminate the discriminative approach in regular education policy at the end of twentieth century (Riddell, 2007; Tomlinson, 2015). With the Salamanca Declaration (1994), inclusive education (IE) was expanded in special education practices, and the necessity of raising individuals with SEN in a student-centered education approach in mainstream schools was emphasized (Ainscow & César, 2006; Peters, 2007; UNESCO, 1994).

Studies carried out to ensure the social integration of people with SEN include education policies as well as policies that support participation in the physical environments due their learning difficulties. Thus, inclusive approach is needed for designing the physical environment of inclusive schools (Gathorne-Hardy, 2001; Li et al., 2005). Regulations such as the American Disabilities Act (ADA) and Disability Discrimination Act (DDA) gave rise to approaches that support the compensation of accessibility concerns in the built or physical environment for people with disability (Guffey, 2021; Imrie, 2012; Luck, 2000; Ostroff, 2011). Additionally, the Center for Universal Design defined “universal design” (UD) as “the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design”, and developed “UD principles”: “equitable use”, “flexibility in use”, “simple and intuitive use”, “perceptible information”, “tolerance for error”, “low physical effort”

and “size and space for approach and use” (The Center for Universal Design [CUD], 1997). These principles focused on the user requirements during the design process (Borowczyk, 2017; Dostoğlu et al., 2009; Edwards, 2011; Mace et al., 1996; Story, 2011). UD was also suggested by international organizations such as World Health Organization (WHO) and UNESCO in the creation of the built environment for people with special needs (UNESCO, 2009; WHO, 2001). Thus, with the UD, the necessary precautions can be taken in the built environment for people with SEN (Lid, 2014), and UD principles can be integrated into the design and application process (Imrie, 2012; Jones, 2014; Null, 2014; Story, 2011; Watchorn et al., 2014).

To provide equal opportunities in education for students with SEN, supportive facilities such as medical rooms, therapy rooms, recreation areas, social activity areas, resource rooms and exercise rooms are existed in mainstream schools (Education Funding Agency, 2014). As a special case for Turkey, the life center unit as a supportive education service was first implemented in Ankara Gökkuşuğu Primary School and then included in the building program of SERÇEV (Association for Children with Cerebral Palsy) Accessible Vocational and Technical Anatolian High School. However, there is no information in the literature regarding the life center unit in inclusive schools in Turkey. Thus, this study focuses on the design of life center unit. The aim of the study is to develop a design guideline that implements UD principles for developing design solutions appropriate to user’s needs for life center unit’s interior spaces. Accordingly, the methodology of the study has two stages. First, a comprehensive review of the literature regarding IE, legal legislations, e.g. regulations, legal decisions and agreements, and the design guidelines for the physical environment of inclusive schools published by the Ministry of National Education (Milli Eğitim Bakanlığı [MEB]) in Turkey are reviewed. Second, the life center unit of the Ankara Gökkuşuğu Primary School and SERÇEV (Association for Children with Cerebral Palsy) Accessible

Vocational and Technical Anatolian High School in Ankara in Turkey were exemplified to collect data from the site visit. According to the collected data, the spatial requirements of the life center unit were determined and associated with the UD principles to create an inclusive and holistic design guideline. Thus, this study is expected to provide a design guideline, specifically for designers, practitioners, academicians, and relevant stakeholders, in order to guide the design process of life center unit.

2. Legislation for IE in Turkey

The 'Children with Special Educational Needs Law' adopted in 1983 in Turkey is the first comprehensive initiative specific to students with SEN. IE in Turkey has gained importance since the 1990s (Yazıcıoğlu, 2018). With the Decree Law on Special Education No. 573 in 1997, another step was taken for the education of those students (Kargın, 2004; Sucuoğlu, 2004; Yazıcıoğlu, 2018). IE was also handled as a separate section in the 'Special Education Services Regulation' in 2000 (Kargın, 2004; Sucuoğlu & Kargın, 2014). These initiatives and updates reflect the effort to expand and develop legal dimensions of IE in Turkey (Akkok, 2001).

IE in Turkey is practiced considering three inclusion types: Full-time, part-time and reverse inclusion (MEB, 2013; Sakız & Woods, 2015; Yazıcıoğlu, 2018). Full-time inclusion allows students with SEN to continue their education with their peers without SEN in the same classroom and school environment. Part-time inclusion is for the participation of students with SEN in some classes or extra-curricular activities together with their peers without SEN. Reverse inclusion is implemented through the education of students with SEN in the same class as their peers, or by opening a separate class for the other students in the same school (MEB, 2013). On one hand, the common type of IE in Turkey is the 'full-time inclusion model' (Yazıcıoğlu, 2018). On the other hand, the first attempt regarding the 'reverse inclusion model' was initiated by SERÇEV in 2006 at Ankara Gökkuşağı Primary School, and this

practice continued with SERÇEV Accessible Vocational and Technical Anatolian High School in 2017 (Yazıcıoğlu, 2018).

Durak and Erkilic (2012, 36) stated the criteria for meeting standards of IE in Turkish schools as follows:

- (1) Individualized education program (IEP)¹ for students with SEN,
- (2) Cooperative teaching methods,
- (3) Participation of families,
- (4) Educational adaptations,
- (5) Additional supportive services,
- (6) Provision of multiple means for achieving knowledge in an effective education environment,
- (7) School facilities, learning resources, curriculum and professionals centered around students' capabilities and needs,
- (8) School-centered supportive services and facilities,
- (9) Additional community facilities and community involvement.

Individualized education program (IEP) helps students with SEN to have extra support in their education (De Boer & Kuijper, 2021; MEB, 2010; MEB, 2013; Sakız & Woods, 2015). It is essential to provide the necessary support training services by determining where, how, by whom and how long these behaviors will be taught by a team including the families of the students with disabilities (MEB, 2013). Support services determined by the IEP are important in terms of providing life skills to students with SEN and improving their academic and social skills in IE. Support services, which are a requirement of the student-centered education approach of inclusion practices, can be diversified into medical rooms, therapy rooms, multi-perception rooms, social skills development areas, recreation areas, social activity areas, and family, exercise and resource rooms.

Supportive educational services, which can provide equal education opportunity to students with SEN with their peers, are required for IE to be successful (Sucuoğlu, 2004). Additionally, these services have an important role for contributing to the social and academic development of students with SEN by taking part in IEP (Kargın, 2004; Sucuoğlu & Kargın, 2014). In the

Special Education Services Regulation (2018), the supportive educational service is defined as the consultancy service provided by the expert staff to the individuals with SEN, in line with their educational needs, to their families, teachers and other staff at the school (MEB, 2018). In this sense, the Ministry of National Education determined the procedures and principles regarding “practice house” to provide life skills for individuals with SEN in 2017 (MEB, 2017). What is meant by independent life skills is the acquisition of personal hygiene, eating habits, dressing skills and indoor and outdoor life skills of individuals with SEN (MEB, 2016). It is aimed that all students benefit from the education that will be given in the ‘practice house’ (MEB, 2017). Although there is no definition of a life center unit, which was included in the building programme with the SERÇEV Accessible Vocational and Technical Anatolian High School, this space is a support service unit with the aim of providing life skills to students with SEN.

3. Regulations for the physical environment of IE schools in Turkey

While the legislations for IE in Turkey are updated (Sakız & Woods, 2015), there are still uncertainties in IE practices. These uncertainties because of implementation of IE practices cause problems in designing the appropriate physical environment (Erkılıç & Durak, 2013; Sakız & Woods, 2015; Yazıcıoğlu & Kargin, 2018). On the contrary, IE

needs its own practices for designing inclusive school environments.

Inaccessible buildings are one of the barriers within the educational system that has to be considered in IE (UNESCO, 2001), which is necessary for all people with special needs to support equal access and use of the physical environment to ensure the right to equal education. It is important to determine the type of user, type of use, period of use and spatial requirements (Table 1) to be able to define equal usability in schools that provide IE (Durak, 2010; Erkılıç & Durak, 2013).

In Turkey, ‘The Arrangements to be Made in School Buildings for the Physically Disabled Circular No: 2009/90’ published in 2009 includes the precautions to be taken for students with SEN to continue in the same environment with other students (MEB, 2009). This circular contains the dimensions of corridor, classroom, toilet and garden arrangements in inclusive school buildings and guidelines regarding the standards published by the Turkish Standards Institution (TSE). It is also expected to ensure the color, light, material, and orientation in compliance with physical environment in inclusive schools.

In the guide titled ‘Why, How, What for Mainstreaming Education at Our Schools? A Guide Book for School Principals, Teachers, Parents’ published by the Ministry of National Education in 2010, 14 design criteria regarding the physical environment in IE schools have been determined under

Table 1. Spatial requirements in inclusive schools in Turkey (Durak, 2010, 128).

user type	<ol style="list-style-type: none"> 1. students 2. teachers, advisors, therapists, other staff 3. parents, caretakers 4. local community 	Spatial Requirements: <ol style="list-style-type: none"> 1. formal learning spaces 2. informal learning spaces 3. non-specialist spaces 4. spaces for medical treatment 5. spaces for guidance and counseling 6. spaces for therapy 7. storage spaces for medical equipments 8. teachers', advisors' and therapist's room 9. family room for waiting, meeting and training activities 10. ICT-enabled meeting room for face to face and teleconference interviews 11. waiting hall, lobby, cafeteria and spaces for personal care 12. easily controllable, specialized or multipurpose spaces used after school hours with separate entrance
type of use	<ol style="list-style-type: none"> 1. curriculum-based use (educational activities) 2. rehabilitation facilities (medical facilities) 3. collaborative use (cooperative teaching, cooperation between general education teacher and parents/ caretakers, advisors, special education teachers and learning assistants) 4. additional community facilities (community based facilities, performing vocational training, music, sports and arts activities, conferences) 	
period of use	<ol style="list-style-type: none"> 1. during school hours 2. out of school hours 	

the section of ‘What arrangements in physical and environmental aspects are required for schools where inclusion education is offered?’ (MEB, 2010). It was also emphasized that the regulations for students with SEN should be considered when designing the physical environment. On the other hand, there was no information in the guide about the spaces and equipment that should be included in the building programme of IE schools.

In the ‘2015 Minimum Design Standards for Educational Buildings Guide’, the criteria that guide the design of inclusive schools have been determined, but the spatial requirements were not determined (MEB, 2015). Under the title of ‘Design Standards for the Disabled’ in the same guide, it was declared that the physical environment for people with SEN should meet the access standards of the legislations such as Building Regulations, Administrative Regulations complying with the principles of its following sections, ‘Law on the Disabled’ (no. 5378), the Accessibility Guide of Educational Institutions prepared by Special Education Guidance and Counseling Services and the ADA Standards. Additionally, it was also expected to follow the regulation on ‘The Establishment, Working Procedures and Principles of Project Modification Commissions for the Use of Disabled People in Buildings’. The proposed criteria supported uniformity in the design of IE school’s spaces and standardized the user profile. Contrary to this, the ergonomic needs of students at different education levels differ, such as in ‘Standard Equipment Guide for Special Education Schools’ (MEB, 2020). Equipment names, features and visuals of the equipment for the spaces in special education schools were determined with the dimensions, materials and pictures. On the other hand, there is no information regarding the user profiles or dimensions and features of the spaces. In the ‘2015 Educational Buildings Minimum Design Standards Guide’, there is information for architectural design regarding building elements such as walls, ceilings, floors, doors, windows, and environmental aspects such as acoustics, heating-ventilation, and lighting.

Additionally, suggestions were given in terms of wayfinding, graphic elements and materials, and colors at school design. On the other hand, the suggestions are mainly related to architectural design, and information about indoor spaces is limited. Shortly, the aforementioned regulations² published by MEB define spatial requirements, user profiles and needs in general.

Due to the limited information about the physical environment of IE schools in Turkey, more holistic information is needed for design of IE schools (Erkılıç & Durak, 2013). In other words, providing holistic information for design process under the design guidelines will facilitate the designers in the design process. In this sense, it is important to develop design guidelines for IE schools in terms of minimizing the problems and difficulties in the application process and use (Ergenoğlu, 2014). In this sense, UD can provide physical solutions to the spatial problems appropriate to all user type (Erkılıç, 2012) and guide inclusive design in the IE school environment.

Within the scope of UD principles, considering the interior elements will help to minimize the problems and difficulties that may be encountered in the design, application, and use stages of IE schools and supportive educational services. Thus, life center unit in Turkey might increase the spatial quality by finding solutions of accessibility and usability problems with the help of UD compliant design criteria (Gülbağhar & Cordan, 2018).

4. Method

In this study, developing a design guideline for interior spaces of life center unit as a supporting educational service in IE schools in Turkey was aimed. The field study was conducted in two inclusive schools, which was programmed and built according to IE, in Ankara, and multiple research techniques were used for data collection and analysis.

4.1. Materials and instruments

The data was collected to develop a design guideline for interior spaces of the life center unit in accordance with UD principles, which focused on

Table 2. Data collection procedures.

	Ankara Gökkuşuğu Primary School	SERÇEV Accessible Vocational and Technical Anatolian High School
2015	<ul style="list-style-type: none"> On-site observations (recording physical traces of space requirements with photography, field notes recorded by the researcher) 	<ul style="list-style-type: none"> Architectural plan reviews
2017	<ul style="list-style-type: none"> On-site observation (recording physical traces of space requirements with photography, field notes recorded by the researcher) 	<ul style="list-style-type: none"> On-site observations (recording physical traces of space requirements with photography, field notes recorded by the researcher)
2019	-	<ul style="list-style-type: none"> On-site observation (recording physical traces of space requirements with photography, field notes recorded by the researcher)

creating solutions for user diversity and more than one type of usability (Luck, 2000). In the first stage, the needs for use, user and IE environment were revealed by the literature review on IE, legal legislation and design guidelines on IE schools in Turkey in order to discover the role and the requirements of life center unit in IE schools. In the second stage, the site visits to life center units were conducted in the Ankara Gökkuşuğu Primary School and SERÇEV Accessible Vocational and Technical Anatolian High School. Besides the architectural plan reviews, the schools were visited in different periods with the presence of SERÇEV officials and school administrators. Accordingly, the physical traces were recorded through photography technique for observing the physical/spatial requirements and equipment needs of life center unit and taking notes at site. Thus, the information regarding the spatial requirements, type of user and use, and period of use was collected from the site-visits to develop the design guidelines of the life center unit.

4.2. Case study

Ankara Gökkuşuğu Primary School, the life center in Turkey, was visited in 2015 and 2017, and SERÇEV

Accessible Vocational and Technical Anatolian High School, which was the first life center included in the building programme in Turkey, was visited in 2017 and 2019 for collecting data (Table 2). These IE schools have two-story and U-shaped buildings.

While classrooms were located on one side of the ground floor of Ankara Gökkuşuğu Primary School, there were special education classrooms and supportive educational services including life center unit on the other (Figure 1). Additionally, the dining hall, canteen, teachers' room and counseling service located on the ground floor. All spaces on the ground floor have a direct access to the outside. The special education kindergarten, sports hall, multipurpose hall, family room, library, and administrative rooms located in the first floor. During the site visits of Ankara Gökkuşuğu Primary School accompanied by SERÇEV official in 2015, the information was acquired that the life center unit was added to building programme later for gaining fundamental life skills such as personal care, eating habits, in-home and out-home abilities for students with SEN. Physical traces were recorded to analyze the plan schema and document the interior space of the life center unit via photography technique (Figure 1).

**Figure 1.** Ankara Gökkuşuğu Primary School life center unit in 2015.

SERÇEV Accessible Vocational and Technical Anatolian High School was also visited in 2015 when the building was under construction. At that stage, architectural project of building was investigated. The building was two-story, and each story had separate entrance. On the ground floor, the conference hall, library, dining hall, labs, ateliers, family room, infirmary and counseling

service were located. On the first floor, the administrative offices, teachers' room, sports hall, general classrooms, special education classrooms, resource rooms and life center unit were located. The plan of the life center unit included three rooms: life center, kitchen, and practice room. In addition, life center unit has also a separate entrance from outside. The architect³ of the project stated that “the life center unit was designed to create a ‘1+1’ house experience to gain fundamental life skills for students with SEN (Figure 2).

During the site visit to Ankara Gökkuşuğu Primary School in 2017, the spatial organization of the life center unit was made as a ‘1+1’ house plan typology considering different functions (Figure 3).

The first site visit to the life center unit of SERÇEV Accessible Vocational and Technical Anatolian High School was conducted with SERÇEV officials in 2017. This life center unit was designed within a similar approach to that of the Ankara Gökkuşuğu Primary School. The interior space is recorded by photography technique and processed into plan (Figure 4).

SERÇEV Accessible Vocational and Technical Anatolian High School, which starts education in 2017-2018 academic year, was visited again in 2019, and physical traces for indoor spaces are recorded by photography technique (Figure 5). Additionally, the information about users and type of use in the life center were provided by school authorities through informal interviews (Gülbahar, 2017).

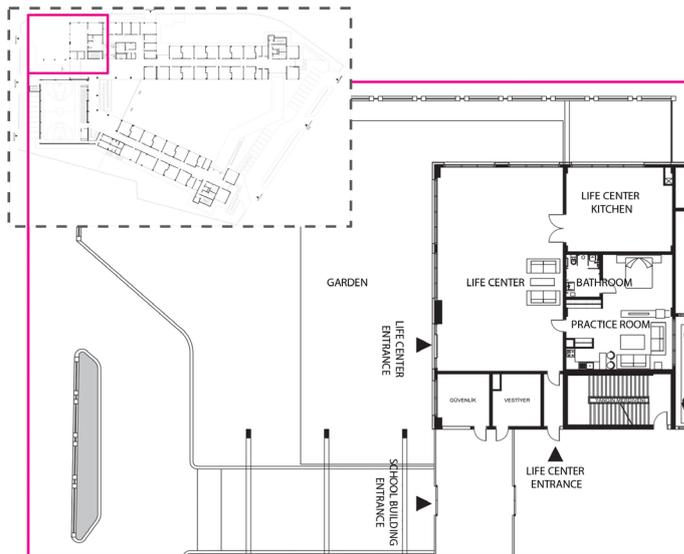


Figure 2. SERÇEV Accessible Vocational and Technical Anatolian High School life center unit's plan.

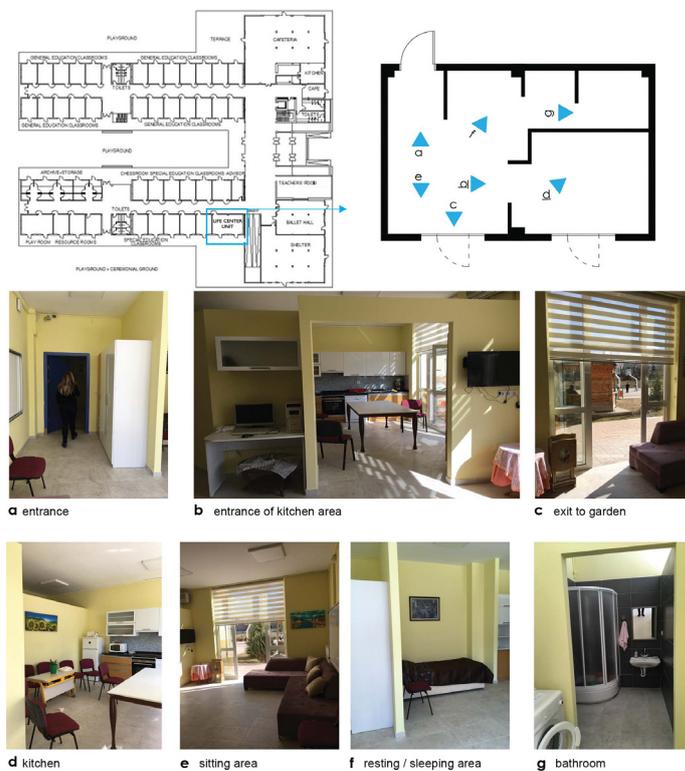


Figure 3. Ankara Gökkuşuğu Primary School life center unit in 2017.

5. Results

This study confirmed previous results⁴ regarding expectations for a life center unit. Data were collected from observations of site visits to the life center units of Ankara Gökkuşuğu Primary School in 2015 and 2017 and to SERÇEV Accessible Vocational and Technical Anatolian High School in 2017 and 2019. The results revealed that the life center unit contributed to the education of students with SEN and raised the empathy of other students and stakeholders in inclusive schools.

In addition to the users and period of use, the study results also revealed

that the life center units of two schools spatial and functional changes and transformations over time (Figure 6). During the first site visit to Ankara Gökkuşuğu Primary School in 2015, the life center unit had an open plan layout that was arranged without boundaries between different functions (Figure 6a). The furniture and equipment also represented the fundamental functions of a common house. During the site visit to Ankara Gökkuşuğu Primary School in 2017, the life center unit had changed according to user needs in terms of the spatial organization of a 1 + 1 house plan, and the wet spaces were separated from the other functions (Figure 6b). The spatial arrangement in Ankara Gökkuşuğu Primary School was called a “practice room” in SERÇEV Accessible Vocational and Technical Anatolian High School (Figure 6c). On the other hand, the appropriate distance for use did not consider kitchen furnishings in the practice room (see Figure 4a). The kitchen furnishings were rearranged to create free space for users in 2019 (see Figure 5a). Although there were practice room, kitchen, and life center spaces (Figure 6c) in the plan of the life center unit of SERÇEV Accessible Vocational and Technical Anatolian High School, only the practice room, which had fixed furnishing in the kitchen and bathroom areas, would be used as the life center unit in light of the information gathered from the site (Figure 6d). Additionally, the other spaces except the practice room, will serve as a canteen in the school, according to the information provided by informal interviews (Gülbahar, 2017). Although both schools were designed with two entrances, one from inside and one from outside the main building, the regulations were made for SERÇEV Accessible Vocational and Technical Anatolian High School, which cut the connection of the life center unit with the garden and reduced its use for users (Figure 6d).

In light of the data collected, the findings about the life center unit were summarized and categorized by definition and spatial requirements, as shown in Table 3.



Figure 4. SERÇEV Accessible Vocational and Technical Anatolian High School life center unit in 2017.

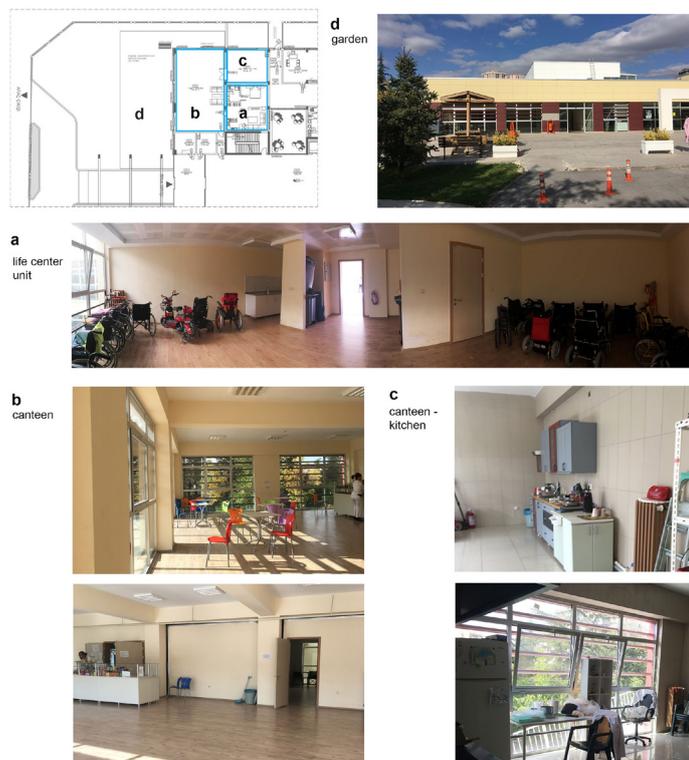


Figure 5. SERÇEV Accessible Vocational and Technical Anatolian High School life center unit in 2019.

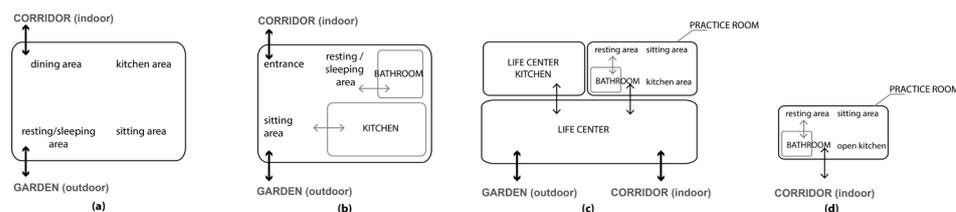


Figure 6. Progression of life center unit's spatial layout; (a) Ankara Gökkuşuğu Primary School, 2015; (b) Ankara Gökkuşuğu Primary School, 2017; (c) SERÇEV Accessible Vocational and Technical Anatolian High School, 2017; (d) SERÇEV Accessible Vocational and Technical Anatolian High School, 2019.

5.1. Defining indoor spatial requirements for life center units

Although there are no legal regulations or design guidelines specifying a space as a life center unit, the benefits and necessity of a life center unit for students with SEN in the building program of IE schools were confirmed by the study results. On one hand, adding the life center unit to the building program of SERÇEV Accessible Vocational and Technical Anatolian High School after Ankara Gökkuşuğu Primary School confirms that this place is considered a support service unit in IE schools. On the other hand, the purpose and content of the life center need to be defined in terms of use type, user type, use period, and spatial requirements in collaboration with all stakeholders.

Although the life center unit is for all user groups and for different uses due to the multi-stakeholder and collective structure of IE, the students with SEN are primary user group of the life center unit. The prevailing spatial requirements of a life center unit is a 1 + 1 house plan for providing life skills for students with SEN, who mostly

have neurological and muscle problems. Spaces requiring expertise, such as medical, therapy, sensory, and resource rooms, are also needed, as well as spaces for parents and the garden to support the learning activities in and out of the curriculum. In light of the study results, the spatial requirements of the life center unit are defined considering the study of Durak (2010)⁵ for the design of inclusive schools.

UD principles eliminate accessibility and usability problems that people with special needs may encounter in inclusive school environments. In this sense, the fact that life centers unit in inclusive schools prioritize user needs coincides with UD principles. Thus, the design requirements related to the type of use, user, and space can also be defined in line with UD principles:

- When evaluated in the context of equitable use—a transcendental principle that compromises when other principles are provided (Durak, 2010)—the life center unit should also meet the needs of other users, especially parents. Thus, the use of the life center unit should be

Table 3. Findings for life center unit.

Definition of life center unit	<ul style="list-style-type: none"> • The life center unit should gain life skills and provide a home atmosphere for students with SEN. • The life center unit should encourage social improvement of students with SEN. • The life center unit should raise awareness of other users in accordance with students with SEN and their needs.
Spatial requirements of life center unit	<ul style="list-style-type: none"> • The life center unit should have a particular space for assistive equipment for students with SEN. • The life center unit should be accessible for students with SEN. • The life center unit should provide a direct exit to outdoor spaces. • The life center unit should provide ergonomic furniture, product, and equipment for students with SEN because most of them have neurological and muscle diseases.

defined to provide equal use for all users.

- The life center unit should be adaptable to the needs of users with different abilities and preferences and should have a flexible plan for the spatial and functional transformation of the life center unit over time according to the principle of flexibility in use.
- The user-friendly approach, which responds to various special needs in the use of equipment/product and space, is an important factor in life center unit design regarding the principles of simple and intuitive use and perceptible information. A variety of pictorial, verbal, and tactile directions covering different abilities should also be considered in spatial use, and current technological developments should be used.
- Minimizing the dangers and negative consequences of activities in the life center unit comes to the fore regarding the principle of tolerance for error. Accessible and easy use should also be provided for students with SEN by the use of assistive equipment/product in space, and taking necessary warnings to the users to minimize the situations that may create accident risk, taking safety precautions due to the garden connection, which can be used especially during non-school hours.
- The physical abilities of the users of the life center unit should be considered in the design of the life center regarding the principles of size and space for approach and use and low psychological effort. In this sense, users should be allowed to meet their needs comfortably and efficiently with minimum physical effort to use both spaces and equipment/product. Appropriate dimensional decisions should also be made for spatial use, while anthropometric and ergonomic requirements should be taken into account to comfort the mobility of users and the use of assistive equipment/product.

Each government tries to develop education strategies that embrace people with special needs by making

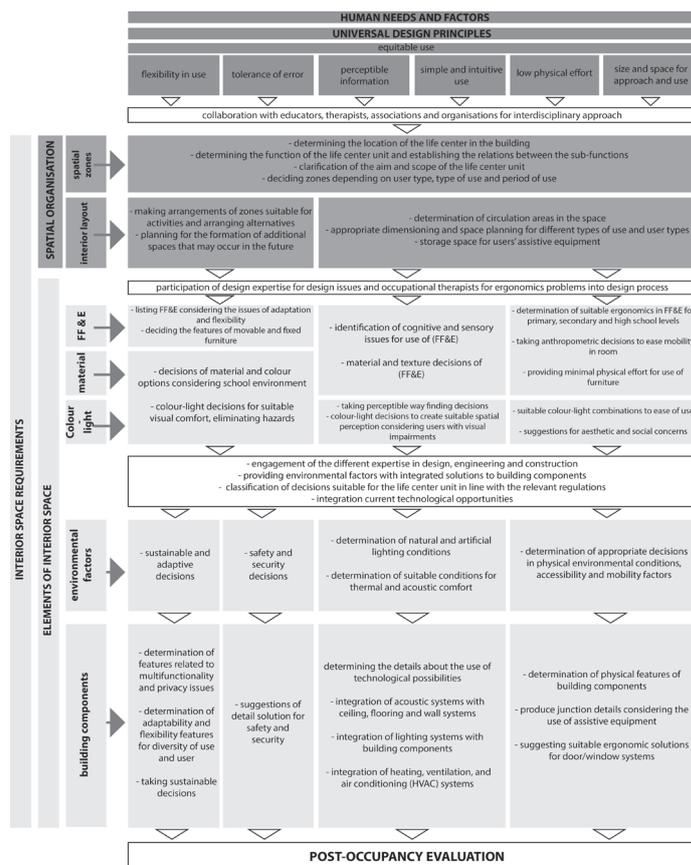
updates to their educational policies (Tomlinson, 2015). Thus, spatial requirements for the physical environment of inclusive schools might differ from country to country. “Designing for disabled children and children with SEN: Guidance for mainstream and special schools” (Education Funding Agency, 2014) is an example bulletin for the design of inclusive schools consisting of user requirements to understand both the needs of students with SEN and their capabilities, and design approaches and technical details detailed separately for spatial requirements in inclusive schools of different education levels. In Turkey, there is no design guide that can be considered in the design of inclusive schools. This makes it difficult for stakeholders in the design of IE schools to meet the spatial requirements of the life center unit. Therefore, a design guideline is needed to guide designers according to ever-changing user needs and physical/spatial requirements.

5.2. Developing design guidelines for life center units

The proposed design guideline for the life center unit, which is based on disciplinary collaborations and is regarding interiors, is grouped under ‘user needs and factors’ and ‘interior space requirements.’ The relationship between these requirements defined on the x and y axes should be considered in the design process (Table 4).

- The initial steps in the design process of the life center unit should be undertaken with the participation of stakeholders, such as educators, physiotherapists, and associations involved in IE, to identify the physical/spatial, user, and product-based requirements of the life center unit.
- User needs and factors have been associated with the principles of UD under the principle of ‘equitable use.’ Equitable use is evaluated as a key principle that encompasses the other principles, and is accomplished when other principles are achieved in the design of the life center unit. The establishment of these relationships acts as a control mechanism in the design process. Thus, it will be possible to respond

Table 4. Design guideline for life center unit.



to future needs in terms of both spatial and user requirements and to develop flexible and adaptable design proposals.

- Interior space requirements are grouped under the ‘spatial organization’ and ‘elements of interior space’. While interior elements are grouped under building components, environmental factors and color/light, materials, furniture, fixtures and equipment (FF&E), and spatial organization are grouped under interior layout and spatial zones. In the design process, spatial organization should first be optimized to determine elements of interior space using interdisciplinary communication between designers and other participants in IE. Spatial zones should be determined according to the type of use and user, and the period of use regarding the placement of the life center in the school building. The interior layout should be determined by planning functions and allowing alternative options for these arrangements as well. Design

decisions regarding color/light, material, FF&E should be made with the collaboration of designers and subject-related specialists. Occupational therapists should be consulted regarding ergonomic solutions for students with SEN. The design of environmental factors, such as acoustic comfort, lighting, thermal comfort, safety, and the design of building components, such as floors, ceilings, and walls, should be done in cooperation with design, engineering, and construction expertise.

- After a certain use period, design guidelines should be kept current with a post-occupancy evaluation. Thus, over time, innovations in education, the use of space, the needs of users, and technological developments will be reflected in life center unit designs.

6. Conclusion

Designing school environments that are appropriate to UD principles allow inclusive school environments for meeting diverse user’s need. Furthermore, it allows inclusive schools for encouraging the social and academic success of the student with SEN. In this regard, spatial, use, and product-based requirements of inclusive schools should be determined and their solutions should be developed. The existence of the life center unit as a new support service space in IE schools in Turkey is important in terms of identifying a spatial and cultural need. Although the life center unit is recommended as a place where students with SEN gain independent living skills, it has uncertainty in terms of spatial needs, type of use and user, and period of use. While the design guidelines, regulations and legal legislation regarding IE in Turkey give an idea about an inclusive physical environment of the mainstream schools, the information and explanations that will guide the design process for the design of IE spaces are insufficient.

Considering UD principles in the development of the proposed design guide for life center units in IE schools will help students with SEN in the

decision process affecting the design of the life center unit. The design of user-friendly spaces will also be supported by including all stakeholders in design process of the life center unit. The design guideline, which emerged as a reflection of the socio-cultural, socio-political and socio-economic situation in Turkey, will contribute to the dissemination and design of supportive educational service, such as life center units in IE schools, with the help of the interior architecture discipline and its knowledge. This study will also contribute to the development of disciplinary collaborations and future studies among designers, academics, practitioners and all stakeholders of IE.

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Endnotes

¹ In the regulations, any spatial requirements regarding special needs were defined as "disabled." This definition has a segregated expression for students with SEN. Therefore, the language of the regulations should meet the UD principles in order to eliminate discrimination.

² Individualized Education Program, Individualized Education Programme or Individual Educational Plan (IEP) is an academic and social support which is applied to students with SEN considering their individual skills. In this plan/program, the way of educational support is described how it is applied by the stakeholders of IE to meet the educational requirements of the students with SEN.

³ Information was collected from the seminar by architect Gökhan Aksoy.

⁴ Besides the informal interviews were conducted to understand the user type, type of use and purpose of life center unit with the officials and administrative staff, the survey was done with the families of students with SEN in Ankara Gökkuşuğu Primary School in the previous study (Gülbahar, 2017). According to the survey results, families stated that the life center unit contributed to the individual development of students with SEN. Additionally, the existence of life centre as a supportive space in IE schools was positive (Gülbahar, 2017).

⁵ Durak (2010) determined the spatial requirements in IE environments in 12 categories and type of uses in four categories. In this study, we used six spatial requirements (1, 2, 7, 9, 11, and 12) and three type of uses (1, 3, and 4) of aforementioned study.

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