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Outdoor heals: An example of a healing garden in a rehabilitation centre

Şehriban ERASLAN[1], Ayşegül AYAZ[2]
[1] sehribaneraslan@sdu.edu.tr • Department of Landscape Architecture, Faculty of Architecture, Suleyman Demirel University, Isparta, Turkey
[2] pmaysegulozata@gmail.com• Department of Landscape Architecture, Faculty of Architecture, Suleyman Demirel University, Isparta, Turkey

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Abstract
Healing gardens are thematic areas where users spend quality time, supporting recovery, making them feel better than they are. Many health care providers have gardens on the outside. However, these gardens are inadequately equipped and have unsuitable designs. It is irresponsive to the requests and needs of users, from plant selection to structural solutions and equipment used. It should be known that the space organization of healing gardens should be designed with the special needs of individuals with different obstacles prioritized. In this study, the outdoor space of a rehabilitation center is designed as a garden of improvement for the physical and mental health and comfort of individuals. In line with the on-site observations (feasibility studies, drone shootings, potentials of the field) and the needs of the users (students, student relatives, staff), a concept diagram for this area was developed with the opinions of the expert psychologists working in the rehabilitation center and the recommendations for each place were visualized with illustrations. Module designs included in illustrations can be applied to all kinds of healing gardens.

Keywords
Healing garden, Rehabilitation center, Space organization.

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1. Introduction

The healing gardens are employed to reduce the stress and improve the well-being of the occupants by evoking their senses and emotions and have a positive impact on individuals. The definition of the healing garden is actually quite clear and simple. A garden should have green vegetation, various flowering plants and natural elements such as water. However, a healing garden should provide certain positive benefits and therapeutic properties for the occupants (Marcus & Barnes, 1999). Eckerling (1996) described the healing garden as a specially designed area to make people feel better. No matter how good the design, if a healing garden does not provide adequate benefits for the occupants, it could not be designed as a healing garden (Serez, 2011).

The concept of gardening is multicultural and has a long history. Improvement in the garden occurs through direct interaction between the patient and the natural environment (Marcus & Barnes, 1995). Healing gardens, used as places that have a positive effect on people, allow users to get away from stress by mobilizing their feelings and senses. In order to become a garden, a place must have natural elements such as various flowering plants and water. But in order to call a garden a garden of healing, it must have some therapeutic and positive benefits to its users (Marcus & Barnes, 1999). If the garden can have some positive effects on users, then it can be referred to as a garden of healing (Pouya & Demirel, 2015), Eckerling (1996) refers to areas with a certain layout and component of various plant species, specially designed to make people feel better.

Throughout history, the mankind has been interacted with nature, which has many benefits in terms of physical and psychological health (Özgüner, 2004); it is known that healing gardens have healing power (Marcus & Barnes, 1999). There are many developments of the garden from the early ages to the urbanization period with the belief that it helps to relax psychologically and physically to people in touch with nature. Nature has been used as a resource to help people feel good with their rehabilitation and treatment and to improve their quality of life.

In all cultures, the relationship between man and nature is always vital. The feeling of being good in natural or nature-like areas and consideration of being a part of nature reinforces one's confidence in life (Özdemir & Vural, 2015). For example, creating the garden with children and playing in the garden provides strong improvements in participation in the life process in children (Moore & Wong, 1997); that play activities organized with natural elements (topography, animals, plants, water, soil and sand) in disabled children's playgrounds have positive mental effects on children (Pouya et al., 2016); outdoor play, children discovering their social environments; get fun sense experiences with water, sand and mud; find or create environments specific to their own games; opportunities to collect objects and develop hobbies (Clements, 2004).

It is known that it supports the well-being of every person treated in hospital for physical or mental disabilities when the educational, developing and healing effects of nature, including plants and soil, are taken advantage of (Uslu & Shakouri, 2012). For example, it demonstrates that buildings should be designed as a part of healing gardens for cognitive and psycho-behavioral rehabilitation of Alzheimer's patients, that the benefits of green spaces show psychological, physical and sociological improvement (Rivasseau-Jonveaux et al., 2012), and that the benefits of healing gardens have been seen as mental improvement, social interaction, sensorial stimulation, cognitive development and sensory motor functions improvement (Söderback et al., 2004), on patients with a brain damage.

Severe patients' postoperative recovery processes decreased with the natural landscapes they saw in their windows (Ulrich et al., 1991); it is known that natural environments have the ability to heal them to reduce the effects of fatigue and stress on humans (Kaplan, 1995). Easy access to the natural landscape or garden increases patients' ability to cope with stress (Marcus, 2007); it is

also emphasized that plants in hospital gardens have many functions for users, and therefore these gardens should be carefully designed (Şahin et al., 2016). Landscape features such as the presence of green areas, calmness of rural areas, bird sounds, flower and soil smell have a positive effect on patients (Balode, 2013).

2. Theoretical background

Previous studies reported various health garden and open space design principles. These design principles could be summarized as follows:

According to Allison et al. (1998), designing safe areas was the most important criterion, the garden should be integrated with nature, inner gardens and courtyards should be connected to the rooms, and include water and natural materials, and the garden should be diverse.

Scarfone (1996) reported that the garden should evoke the senses, be visually clear and accessible, also ensure socialization while allowing personal spaces, and allow for independent movement.

According to Eckerling (1996), the designed garden should have a soul, it should have a view at all sections, the garden location should be connected to the interior of the health facility, it should be designed based on the senses and it should interact with the senses.

According to Ulrich (1999), it should provide a sense of control and privacy, support socialization, encourage physical movement and exercise, and be natural.

Based on the approach proposed by Kaplan et al. (1998), it should relieve fatigue and provide a distance from the place associated with the problems, dimensions should be improved with areas that create a sense of wonder, natural materials should be employed to create attractive spaces, and the spaces should be compatible.

According to Marcus & Barnes (1999), socialization and sense of privacy should be prioritised, the garden should be suitable for recreational activities, provide exercise spaces, be designed to benefit from the sun and the shade, offer naturally aesthetical spaces, the location and layout of the healthcare facility should be selected meticulously, planting, seating units and aesthetic details should be prioritised in the design, the design should be based on the vision of the healthcare facility management, and the maintenance of the garden should be ensured.

Healing gardens are often designed by institutions that aim to reduce stress and improve health. Usually these organizations are care institutions and rehabilitation centres such as nursing homes, senior centres, etc. (Elings, 2006). Especially in the design of educational venues, taking into account the requirements of different user groups (Kılıç & Şahin, 2019), these gardens should be designed. In this context, this study takes place in the case of a rehabilitation centre. In the case of Antalya Special Rehabilitation and Education Centre Garden, the outdoor space of the rehabilitation centre was evaluated as a healing garden and concept diagrams and illustrations were developed taking user needs into account in the rehabilitation centre. As it is known, mental, physical, visual, hearing, language and speech impaired individuals who need special rehabilitation are expected to carry out their daily activities, socialise and participate in society. The main purpose of healing gardens is; to ensure that design criteria are determined to allow correct and qualified use to improve the physical and mental health of individuals who are physically or psychologically disadvantaged or who have lost some of their ability afterwards.

3. Study area

The study was carried out within the boundaries of Antalya city in the Mediterranean region of Turkey. The study area is the Metropolitan Special Education School and Rehabilitation Centre, which has an area of approximately 26,000 m^2, located in Antalya province, Döşemealtı district, Çıplaklı neighbourhood.

Metropolitan Special Education and Rehabilitation Centre is in a countryside surrounded by the woods. The study area is an educational centre that was opened in 2011 with the aim of providing both individual education and physical therapy to individuals with

special needs. This area, which has an area of 26,000 m², constitutes 14,000 m² of interior and 12,000 m² of outdoor space. There are 48 classrooms, 13 workshops, multipurpose showrooms, gym and physiotherapy rooms, accommodated with a capacity of 20 rooms, with a capacity of 86 beds, indoor and outdoor pools, cafeteria, restaurant, administrative offices and security service to serve different age groups in the study area (Figure 1). A drone shot was made for revealing the current view of the study area (URL-1).

This rehabilitation centre has 633 students with various disabilities including physical, mental, vision, hearing and autism. 35% of these students are boys and 65% are girls. 89 of the students are autistic, 283 are intellectually disabled, 125 are orthopaedic (physically) disabled, 124 are language and speech impaired and 12 are hearing impaired individuals.

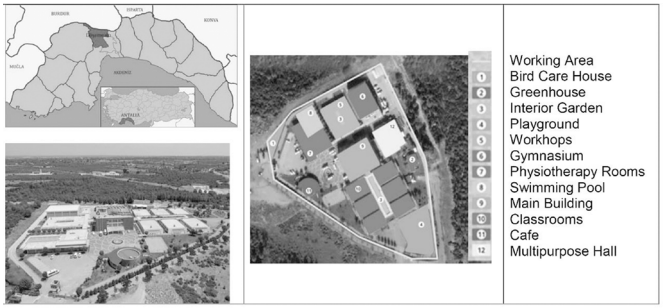


Figure 1. *Current use of the rehabilitation centre.*

4. Method

Outdoor spaces of the rehabilitation centre were designed as a healing garden in order to improve physical and mental health and comfort of the users. Integration of design and research practices is a complex challenge and landscape architecture discipline combines different media and techniques of graphic representation in landscape research (Steenbergen, 2008; Deming & Swaffield, 2011). Design studies requires a statement of objectives, a critical review of the substantive focus of the work, an explanation of process, and a summary of outcomes that demonstrate imaginative work and new insights (Bowring, 1997; Milburn et al., 2003). Accordingly, this study sought to develop a variety of design modules that can be used for the design of outdoor spaces in similar health institutions elsewhere. Therefore, a descriptive research strategy is used in this study.

The descriptive design studies involve providing a systematic and theoretically informed account of a work and its landscape context (Riley, 1990). There are a number of ways in which practice-based design projects can be framed within established research methodologies such as case studies (Deming & Swaffield, 2011). Descriptive research includes to record the features and characteristics of a site or landscape or to ask people what they value in a landscape. It is well suited for landscape characteristics and community values and activities to provide evidence in support of proposed design principles or local policy initiatives as well as project-based investigations such as predesign inventories. Design research provides a different profile of quality measures than conventional strategies. Therefore, reliability and validity in design research relate not to the specific details of every step in a process, but to the overall logic and structure of the investigation (Deming & Swaffield, 2011).

The method of the study is, therefore, consisted of physical analysis of the rehabilitation centre, interviews with administrators, and on-site observations. Following a comprehensive review of the related literature and a careful examination of the information about the study area, the existing situation of the site was first evaluated in terms of landscape design principles. In this context, structural and vegetation features in the outdoor spaces of the rehabilitation centre were analysed in terms of space organization. In order to determine the spatial features of the area drone shots were taken in the area (URL-1). Problems and opportunities related to the study area were also determined. Design theorists argue that the core activities of landscape architecture discipline including design, critical thinking, and critique are valid forms of research (Deming & Swaffield, 2011). For example, LaGro (1999) recognises that the design process involves research tasks such as inventory, analysis, evaluation, etc. It is also suggested that there are parallels between predesign

procedures (inventory and analysis) and classification as a research strategy and that design-based investigation can meet the different criteria of research quality (Deming & Swaffield, 2011).

Secondly, interviews with administrative staff, including a specialist psychologist, working in the rehabilitation centre were carried out in order to determine user (students) needs in the study area. Interviews are probably the most effective way of enlisting the co-operation of the interviewee (Sheskin, 1985). Face to face interviews allow individuals' responses to be explored and probed in depth, and thus provide a more complete understanding of the issue under the investigation. Therefore, ideas of the administrative staff in the rehabilitation centre were obtained to improve the healing effect as well as efficient use of the area through design solutions. These interviews helped to define a variety of user needs and gave directions to develop design modules for outdoor spaces of the centre.

Finally, in order to determine how users experience the area, on-site observations were carried out in the interior and exterior spaces of the rehabilitation centre. These observations contributed to the developing educational activities in the healing outdoor environment. Observations and records can be ordered by reference to a particular site where biophysical features, human activities, and social and cultural meanings and values combine to create a distinct identity (Relph, 1976).

In the light of the findings, various design solutions that contribute healing of people with physical, mental and sensory disabilities were developed. As the spatial organization of healing gardens needs to be designed by prioritising the special needs of individuals with different disabilities, a concept diagram for the area was developed accordingly and design proposals for outdoor areas of the rehabilitation centre were visualized through illustrations. It is expected that design modules, proposed for healing gardens in this study, will contribute to improve outdoor spaces of similar health institutions and will be a useful design guidelines for individuals and bodies responsible for such areas.

5. Research findings

Healing is the improvement of stressful and health conditions of individuals with disabilities or the self-improvement and acceptance of the current conditions by the disabled individual and feeling better than the previous state. The concept, called as healing gardens, include gardens that would allow accurate and qualified rehabilitation of physical and psychological health of individuals with physical or psychological disadvantages or those who lost their abilities later in their life. The accurate and effective employment of healing gardens depends on certain design criteria.

Following the careful examination of data obtained through physical analysis, interviews and observations, the existing situation of the rehabilitation centre and design considerations have been presented from different aspects as follows.

5.1. Environmental organization

The rehabilitation centre, located in a rural area, can be reached by public transport due to its distance from the city centre. As the centre is located in a quiet wood far away from the city centre, it is free from noises. The results the analysis indicated lack of thematic areas in the rehabilitation centre. The outdoor areas of the centre were extremely monotonous and inadequate for physical, cognitive and psychological improvement. There were not any shaded sitting areas to relax as well.

Not only, there is no space in the garden to encourage children to explore, but also no area charming for children. The garden is quite open and has a flat area structure. Physical analysis of the study area showed lack of undulating grounds as the outdoor areas of the centre is consisted of open flat surfaces. The results of the observations indicated that although the area has children's playground, sports field and basketball court, they were not suitable for the use and movement of the disabled people. Some of the educational tools and toys were also left on the grass impractically.

The greenhouse area in the rehabil-

itation centre was also inadequate and uncared. The results of interviews with administrative personal revealed that the vegetable garden was difficult to reach for the individuals with a wheelchair and visually impaired.

In terms of spatial organization, vegetation characteristics in the outer spaces of the rehabilitation centre were analysed and creating habitats for wildlife in the garden emerged as an important issue. It is expected that creating appropriate habitat for wildlife in the garden can attract some animals. Therefore, analysis of the results led to establishment of habitat for a wildlife garden which attracts some butterflies and birds. This was also a suggestion of the psychologist who recommended including mystery and some on-off games into the area.

5.2. Circulation and movement

The results of physical analysis revealed that the existing circulation routes were consisted of formal lines and that there was lack of informal circulation routes in the outdoor area of the centre.

According to Ulrich (1999), for rehabilitation centre users, the garden should be designed with walkways that allow it to be independent in the garden, allowing easy navigation. In different patient, disability or disadvantaged groups, informal navigation routes or formal areas should be provided to users according to user types. It provides a positive effect on informed roads, reducing stress, arousing and exploring curiosity, healing, meditation, peace and relaxation (Keçecioğlu, 2014).

Site observations showed that there was not any distinction between pedestrian and vehicle roads and that pathways designed to carry out walking and jogging activities were not appropriate in the garden. During the interview, the psychologist was also suggested that the roads should be designed to provide equal access and use to all users. Appropriate equipment, materials and products should be used in the roads (Tandoğan, 2017).

Site observations also revealed that there was not enough space for warning and guiding signs on the roads that will get users to where they want to go. To use the place, guidance and caution marks must be clear, easy to see, understandable, consistent, and complete. These should be convenient and understandable for all users (Özdingiş, 2007; Eşkil, 2011). The results obtained from interviews suggested that warning signs should be placed lower at eye level, especially in areas where the wheelchair users use frequently and that they should be designed in various colours, and sizes to allow users perceive them easily.

In addition to the audible warning systems for the visually impaired, it is possible for people who can see or not, navigating the garden with the smells emitted by plants (Akın, 2006). The presence of dense and strongly scented plants at certain points in the garden makes it easier for people to get an idea of where they are in the area (Marcus & Barnes, 1999).

5.3. Functionality

The findings obtained through the physical analysis and site observations regarding the functionality of the study area are presented as follows.

On the roads, the choice of surface material was made appropriate and proper for all patients, but there was no variety and inadequacy in terms of safety, equality, flexibility, minimal effort and conformity to multiple users, which are outlined in the universal design criteria.

The widths of the gardens were quite appropriate in size. It was created for students to spend time in the break time hours. However, there was no plantation in general in those areas or a design that adds functionality to that garden.

There was no design that provides the possibilities of use in all seasons to create shading elements and rain-sheltered areas, with the idea that being outdoors can be accessible to users in all seasons, thinking that being in nature can make them better.

5.4. Planting design

Physical analysis of the rehabilitation centre indicated that native plant species have been used to suit local climate and soil structure, but planting design was not quite appropriate for

the centre. Planting designs should be made considering functional and aesthetic goals and encourage diversity to support users. It should allow users to spend their learning and therapy processes more peacefully, stress-free and happy (Açıksöz et al., 2016). At the same time, in the botanical designing, stimulating properties for five senses should be included (Şensoy, 2017). Physical analyses of the study site and existing plants showed that the balance of the sunny and shaded areas could not be achieved with the planting design. In addition, buffer plantation was not used to separate sitting and resting areas.

5.5. Equipment

According to the results of physical analyses, the equipment was inadequate in the area and there were no resting areas, seating units except the cafeteria. There was no appropriate lighting system to increase safety of the site for users as well. Trash cans and tap water were also necessary in the area.

The healing effect of water should be utilised through water shows in the healing gardens. During the interviews, administrative staff complained of the water show areas because they think that the area does not have an appropriate design for the users. The psychologist, for example, suggested that quiet and moving water surfaces should be designed with natural materials and landscapes and that sounds of water should be utilised.

6. Design recommendations

The rehabilitation centre has students with mental and physical disabilities, and each of these students has different needs. Considering the differences of everyone in the rehabilitation centre, the design process has been studied carefully. In general, natural environments should be created according to the disability situations of individuals and their sense of vision, hearing, touch and smell should be activated by using these environments. In a garden designed to create hills and sloping areas with natural elements, develop their creativity, create active and passive playgrounds, and create spaces where they can discover different elements, children will be able to develop as calmer, sharing, docile, more cheerful, problem solving and decision-making individuals who believe they can succeed.

To be able to meet the needs of visually impaired individuals by touching, hearing or smelling; visually the needs of hearing impaired individuals; The needs of non-literate individuals can be met with diagram narrations. Therefore, having different needs of users requires different design needs. The goal is "improvement" when the rehabilitation centre proposes a healing garden project. The concept of recovery is not synonymous with the concept of treatment. Gardens are healing environments that help with treatment, not therapeutic (Poyraz, 2015).

Design considerations, derived from physical analysis, interviews and on-site observation of the rehabilitation centre are summarized as follows:

- In improving garden designs, the designer should prefer space designs for the user needs rather than his own aesthetic concerns.
- A design should be made to suit the needs of all users and a design approach should be appropriate for everyone.
- A balanced composition should be provided in the garden with the use of materials with various colours, forms, textures and norms.
- A circulation network should be established for the comfortable transportation of users for each area; the legibility of the venues should be increased and landmarks should be included.
- A variety of functional and experiential areas should be created to meet user needs.
- Natural materials should be used and variety should be ensured.
- The use of poisonous, allergic and thorny plants should be avoided in planting design. Plant diversity should be encouraged.
- Roads should be designed where garden users can walk around the garden comfortably and safely. It should be noted that the walkways are at least 150 cm wide and at a maximum slope of 5%.
- Flat, smooth and hard floor material

resistant to slippage and glare should be used. Visually impaired individuals should be able to walk freely with palpable floors.

- In rehabilitation centres, resting areas should be designed where not only students, but also families, teachers and rehabilitation centre employees can interact and communicate together.

In summary, simple and easy-to-understand, legible and liveable spaces should be designed away from confusion by considering each group of disabled people.

As a result of the findings, a concept diagram of a healing garden was designed for Antalya Metropolitan Special Education School and Rehabilitation Centre. The diagram (Figure 2) shows the location of proposed design modules of including sensory park, common areas, maze and emotion sculptures area, children's playgrounds, archaeological excavation and exhibition area, indoor water show area, grass amphitheatre, greenhouse and gardening areas.

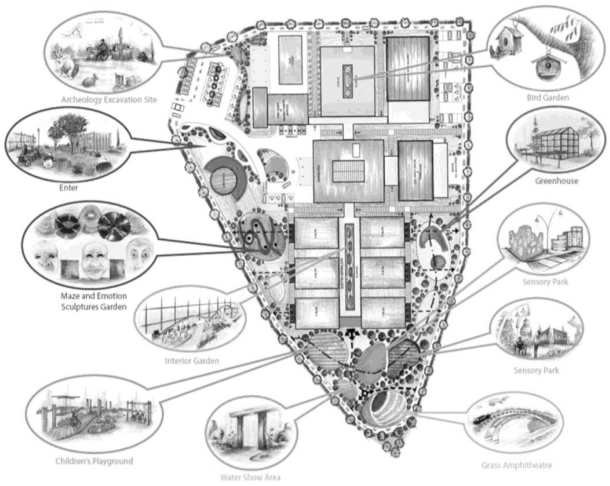


Figure 2. *Concept diagram of the healing garden for Antalya Metropolitan Special Education School and Rehabilitation Centre.*

Figure 3. *Resting areas & Common usage areas & Inner garden.*

6.1. Resting areas

Resting areas have been created for rehabilitation centre users to spend time with their families (Figure 3a). In these areas, plantation and structural materials in accordance with general design principles have been preferred in order to serve students, families and teachers, rehabilitation centre employees. The relaxation area is located close to the entrance.

It is intended to offer seasonal transitions with species that shed leaves and show discoloration, such as shallow (*Liquidambar orientalis*), to provide natural ambience in common areas (Figure 3b). Regions with seasonal transitions attract the attention of users, arousing their feelings such as curiosity and discovery and therefore contributing to the joy of life.

In order to take advantage of the effect of the water sound and to use the healing effect of water, a moving water element was proposed in the first of the inner gardens in a moving and vocal way. Here, users who want to listen to the sound of water and want to stay isolated can spend their time in the inner garden. The visual effect of water can also be seen by classrooms through corridors. The area designed as an example is shown in Figure 3c.

6.2. Gardening therapy area

It is recommended to establish a bird care unit in the inner gardens, where the children undertake bird care, in order to gain responsibility and be in touch with natural environments and wildlife (Figure 4a). In this area, it is considered that both the effect of the sound of the birds on the improvement and the students will be able to follow the processes related to the care, breeding and growing up of the birds. In the bird care centre, natural materials should be used to show the natural life.

In order for the users to feel good, to take responsibility and to support physical development, areas where they are interested in the plant, the soil and the nature are considered. In the greenhouse, attention has been paid to the manoeuvring areas of wheelchairs and to be large enough for all disabled individuals (Figure 4b).

The production, cultivation, care,

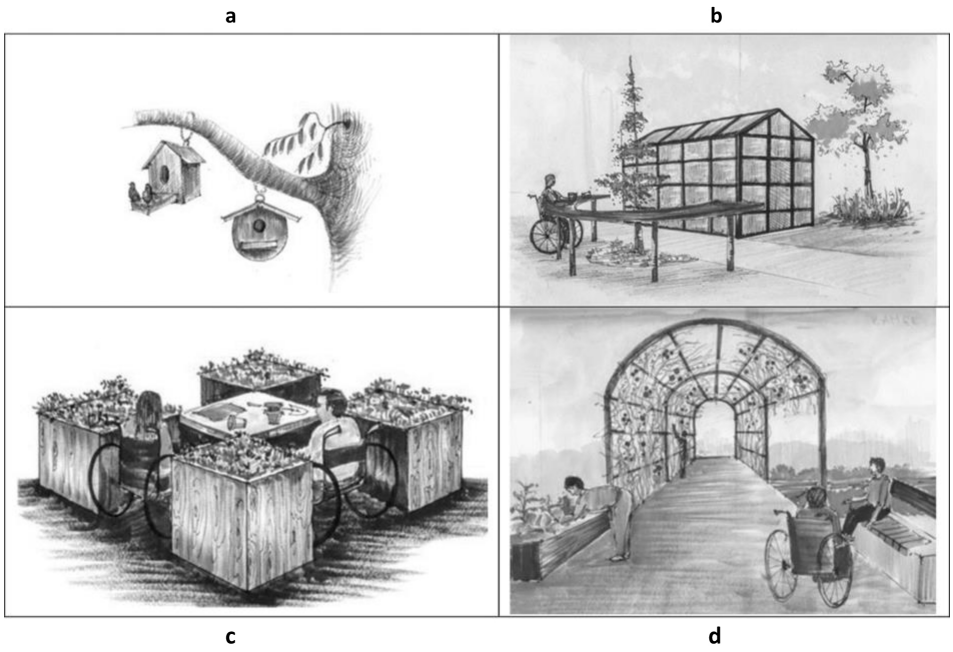


Figure 4. *Gardening therapy area with greenhouse, edible garden, bird care units.*

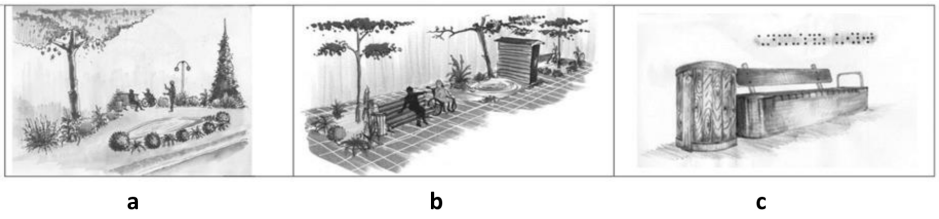


Figure 5. *Common areas.*

preparation, collection of vegetables, fruits and ornamental plants in which production activities are carried out are seen as activities that support feelings of psychological satisfaction or self-confidence by giving people with physical or mental disabilities a sense of achievement, observation, intriguing, smelling, touching, vision, taste, and supporting feelings of psychological satisfaction or self-confidence. By keeping gardening and renewable garden designs together near the greenhouse, it is designed to allow users to participate in production and to benefit from this area in the maximum way. Gardening area and proposed equipment representation are given in Figure 4c.

An edible garden is considered for the users of healing garden in the rehabilitation centre (Figure 4d). Raised flower beds, parterres, shade elements and wood panels were used on which wrapped with species such as grape vines (*Vitis vinifera*) and crabapples (*Malus spp.*).

6.3. Common areas

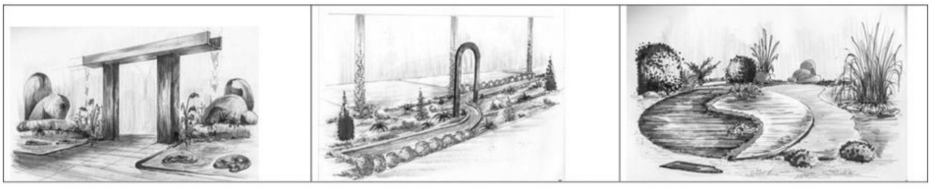
A resting area is also designed in the common areas within the healing garden. It is considered as a quiet and isolated area for rehabilitation centre users (Figure 5a).

It was tried to give the feeling of being in the natural environment by applying planting design applications that make nature feel as much as possible in the field; attention was paid to the use of braille alphabet markings on the equipment and maps showing the location of the area (Figure 5b).

The benches are designed with unsharpened natural materials and armrests with backrests that allow users to sit and get up easily (Figure 5c). The care has been taken to place benches at intervals of 30 m. Trash cans and shading elements are also included in the resting areas.

6.4. Water show areas

Quiet and moving water show areas are included in the common areas at the outdoors. A care has been taken not to be deep in the water pool, the sample



a b c

Figure 6. *Water surfaces.*

designs are shown in Figure 6a-6b.

Regardless of moving or quiet water, it was intended to create a calm and peaceful ambience in the healing garden and the use of water was intended to provide audio-visual effect (Figure 6c).

6.5. Sensory park

It has been considered to use aromatic plants in some places to identify areas with fragrance identities for visually impaired and other users throughout the garden. For this reason, green scented plants such as Lavender (*Lavandula officinalis*), Thyme (T*hymus vulgaris*) and Rosemary (*Rosmarinus officinalis*) have always been used in the field (Figure 7a). Examples related to sensory garden are grouped as hearing, smell and touch sensations. Sensory considerations include areas designed to encourage and explore children's ability to make and follow sounds (Figure 7b). The use of natural materials, availability and perceptibility of functions for everyone in the music garden are given importance. By combining colours and games, attention can be drawn to hearing impaired children.

An experiential area has been created in which different textures are used together and awareness was raised for students on the textured wall. In addition, a space was designed as walls formed with plants (plant branches, flowers and leaves) in another textured wall designed with different plant tissues (Figure 7c). Soft textured plants such as garden sages (*Salvia officinalis*) and Lion's Tail/Motherwort (*Leonurus cardiaca*) are preferred on the wall. With informational signs, textured walls also direct children to identify different textures.

6.6. Grass amphitheater

A mini grass amphitheatre (Slope: 2%-5%) has been considered in the healing garden, which adds movement to the area topographically, can be a gathering point for the users and can

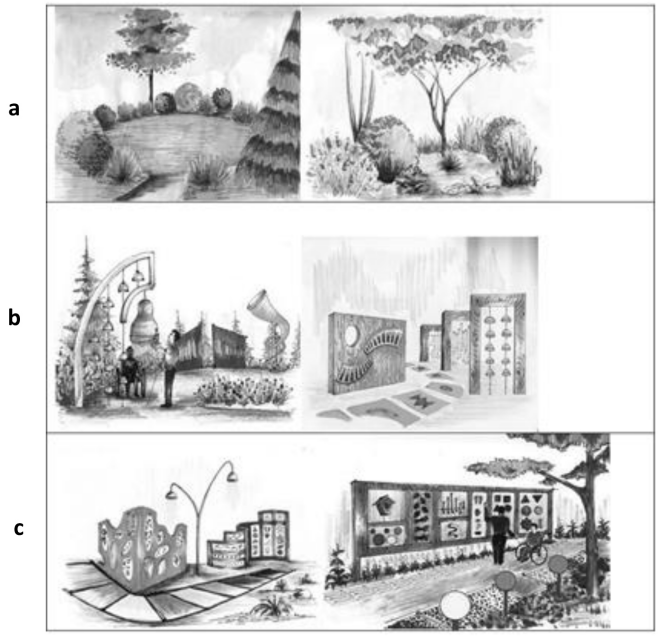


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Figure 7. *Fragrance Garden & Tissue Wall & Music Park (Sensory Park).*

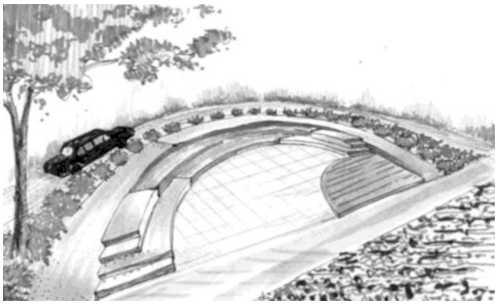


Figure 8. *Grass amphitheatre.*

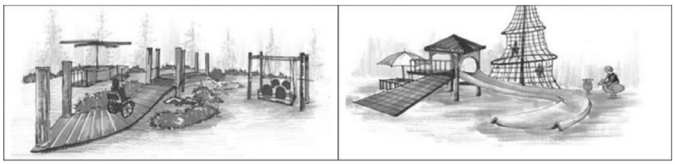
be a place to perform outdoor activities (Figure 8). Some steps are made easy with hard floors and ramps so that the grass lecture hall can be used by individuals using wheelchairs. Kidney weed (*Dichondra repens*), a type of grass resistant to physical pressure, is generally used as ground cover.

6.7. Archeology excavation site

In order to trigger a sense of curiosity and discovery among children, it was suggested to create an artificial archaeological excavation area (Figure

a b

Figure 9. *Archaeological excavations and exhibition area & painting wall.*



a b

Figure 10. *Playground.*

9a). In this area, students are expected to detect and find materials hidden in the area by doing physical activity. After these materials are found, children also do their artistic activities by exhibiting the materials they find in the exhibition area. In order to allow the use of all children, it has been applied both on the ground and in elevated areas.

By making painting wall in the archaeological excavation and exhibition area, games such as defining the area were considered by allowing them to paint the materials in the archaeological area, the plants in the rehabilitation centre or the illustrated versions of the landscapes (Figure 9b).

6.8. Playground

A playground that can be used by all disabled individuals in the rehabilitation centre is also considered (Figure 10). In the playground, physical activity is encouraged with ramps in some places and not very high climbing walls in some places. It has been considered that natural materials are used and the flooring of the playground is non-slippery.

7. Conclusion

Nature and garden have been used as a resource for the rehabilitation and treatment of individuals to help them feel good and to improve their quality of life. The relationship between human and nature has always been of vital importance in all cultures. Human beings form a bond with nature during their development. Feeling good in natural or nature-like spaces and being a part of nature strengthens the individual's confidence in life. Thus, the garden is an expression of the relationship between human and nature and human and themselves.

Natural landscapes contribute to bringing in physically, mentally and spiritually healthy individuals in the society and being in contact with these areas has positive effects on individuals. The functional and aesthetic design of the gardens to support the users will enable the users to spend their learning and therapy processes more peaceful, stress-free and happy. In institutions and organizations such as private rehabilitation and special education centres, interior spaces are generally considered important, and the positive contributions of outdoor spaces to users are often ignored.

Today, design approaches towards the healing power of nature have begun to be noticed. Nature is an invaluable opportunity for human beings to improve life and the environment we live in. The importance of nature in human life cannot be denied. In the healing gardens, evaluated within this scope, there should be nature-oriented, easily understandable and functional spaces that can be used easily without experience that all users can access and benefit from every area equally. The outdoor use of the rehabilitation centre has diversity such as courtyard gardens, inner gardens and intermediate gardens between each building. However, these areas need to be made thematic within themselves, or they need to be made more qualified by loading different functions into various areas, offering a variety of uses for users.

Certain principles should be taken into account in the design of healing gardens. Healing gardens are special areas that should be designed based on the needs of user groups.

Individuals with psychological, physical, visual, auditory, language and speech disabilities and special rehabilitation needs are expected to conduct their daily activities, socialize and participate in the society. Landscape design should consider every individual and should be based on the special needs of disabled individuals. The accurate and effective design of healing gardens should take certain criteria into con-

sideration during the design of the garden. Healing gardens should be natural and include design elements that allow individuals to socialize, spend time together, provide sunny and shady spaces where users could walk alone and with others and exercise comfortably.

While designing gardens in rehabilitation centres, spaces with scientific and educational priority should be created by including functional, safety and aesthetic parameters, and using vital, artistic, symbolic and cultural elements, and designs that meet the needs of the users should be included. Form, scale, colour, texture, rhythm and movement, balance, time and change components should be taken into acoount in the designs. User perceptions should be addressed with physical, social and sensory stimulation areas. Priority should be given to designing simple, functional spaces that are far from complexity, and a design approach should be adopted for everyone.

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