

SCHOOL GARDEN DESIGNS FOR EFFECTIVE CHILD DEVELOPMENT: THE CASE OF ÇANAKKALE CITY SCIENCE-MAT-ACADEMY COLLEGE

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ABSTRACT. Education is one of the most important elements in the lives of individuals. Education is effective in the formation of the characters of individuals. Education is carried out as a life plan of individuals. For this reason, schools, which are the areas where education is provided in the lives of individuals, are of great importance. School is the area where children spend most of their days, socialize, and acquire various characteristic features. The most important among the areas that cause these actions to occur are school gardens. Dec. School gardens are the areas where children spend a large part of their time. They are the places where they perform all actions and activities. Considering the importance of the place, the designs and planning of the school gardens are of great importance. For this reason, school gardens created with the right planning and design decisions have a direct impact on the physical, mental, spiritual, cognitive, and communicative development of children. It is extremely important to create activity areas that support children's mental development, playgrounds that support their physical development, and various social areas that increase their interaction with other users. School gardens, created with the right planning and design decisions, offer a safe environment as well as various physical and mental developments. At the same time, it is aimed that users receive education in a holistic environment with nature by ensuring a balance of green space and hard ground. School gardens are also recognized as open green spaces on an urban scale. Landscape designs in school gardens are important due to the mass of users. The preferred plant groups should be thorn-free, non-toxic, and fragrant plants that will attract the attention of the user audience. Within the scope of this study, Çanakkale City Science-Mat-Academy College (FMA) was selected as the research area. Field evaluation was carried out within the scope of the literature reviews. On-site observations and photographs were made within the area. The situation assessment was made by taking into account the school garden design criteria obtained in the literature review. As a result of the evaluations, solutions and design proposals for the Science-Mat-Academy College were presented.

Keywords: *universal design principles, school gardens, school garden designs, school garden landscape design*

INTRODUCTION

The concept of education is one of the most important activities in the life of individuals. There are innate behaviors that individuals have. Some of these are actions such as breathing, and moving. These actions are actions that individuals take just to survive. For an individual to survive and maintain his life, it depends on the level of education. The reason why the concept of education is so important in life is related to the planned execution of life. When viewed in this context, schools, which are the institutions where education is provided, have an important position in the lives of individuals (Karadağ et al., 2012a).

School is a living space that provides support for individuals in terms of rest, learning, and personal development. School space individuals raise environmentally sensitive, physically and psychologically healthier, and socially more active individuals (Özdemir, 2011). Together with the educational and educational concepts that the school provides, it provides a play environment for children with the concept of recess between classes and lunch breaks. Decatur Decatur provides a play environment for children. The game can be performed in a way that meets a specific purpose or not, with or without certain rules. The concept of play is the most effective form of learning for children that enables them to develop physically and psychologically by learning about life, and socializing (Türkan, 2009, Turgut and Yılmaz, 2010). Children create their values by exploring the world through play. However, children are offered the opportunity to live their selves by revealing their identities (Karadağ et al., 2012). The game sharpens the senses in children and develops various abilities and skills. By improving what he learns, he creates a learning environment that allows him to have an original character. This created environment is effective for children to have an awareness of nature by integrating with the environment from a social and physical point of view (Karadağ et al., 2012a).

School gardens provide an outdoor playground and an open green area for individuals at the school, an indicator of health within the community, socialization, and healthy development of children. However, it increases the quality of life in children (Algan and Uslu, 2011). The concept of school and the effect of school garden concepts on children have been studied in a wide variety of studies. Within the scope of the studies; it has been shown that various activities performed in schoolyards have positive effects on children. Along with these positive effects, it has been proven to keep away from and reduce various bad habits (Fjörtoft and Sageie, 2000).

The contributions that school gardens have made to children's development and education have enabled them to have various principles in the design of school gardens in various countries around the world. For example; the 40 m² parcel area decreases in Bulgaria, 30 m² in Germany, 25 m² in England, 20 m² in the USA, 16 m² in Poland, and 15 m² in France and China (Özyaba, 1998). There are certain standards set by the American Public Health Association (American Public Health Association). Within the scope of these standards, an area of 20.24 m² should be allocated per student in the school (Karadağ et al. 2012a). At the same time, school gardens are accepted as open and green spaces on an urban scale in Europe and America. Playgrounds and fields located in school gardens cause injuries to urban residents (Muhacir and Ozalp, 2011).

Deconstruction of school gardens allows for the establishment of a relationship by providing an organic transition between indoor and outdoor space. Within the scope of this relationship, it positively affects the development of children by meeting user demands. Given these effects, school gardens should have a green and functional design. For the designs to address this kind of demand, the participation of users is important (Algan and Uslu, 2009). It is emphasized that it is important for school gardens to meet the needs of students who are a mass of users (Türker and Kircı, 2022). But not all schools in our country have a garden that can meet these needs. When considered within the scope of our country, the existing school gardens remain below international standards (Karadağ et al., 2012).

School gardens in our country are usually inadequate in terms of design and planning. However, there is also a lack in the qualities and quantities of the gardens. To increase the impact of school gardens on child development, design and planning approaches need to be developed. For this development, spatial analyses of school gardens should be carried out.

In the planning of school gardens, it is not enough to create only an open space within the area. The open spaces created should be planned to take into account criteria such as the quality of the school, the degree of education it provides, its formal and functional nature, the social structure of its environment, and recreational opportunities (Şişman and Gültürk, 2011). Some

sections should ideally be in the school garden. These are; recess and ceremony areas, sports field areas, botanical gardens, zoological gardens, classroom gardens, open-air classrooms, theater areas, and private gardens. These must-haves increase their development by appealing to the user audience. Children like to play more in areas that are natural and find them attractive and interesting. Naturally created spaces improve the learning and development of children by positively affecting them (Fjortoft and Sageie, 2000).

The impact of landscape areas as well as structural areas in school gardens is quite large. Some things need to be considered in the use of plant material within the scope of landscape areas. There are general characteristics of the preferred plants. These properties; In addition to aesthetic and technical principles, it is necessary to know and evaluate other properties found in plants. The plants to be preferred should be plants without thorns, and non-poisonous. At the same time, there should be plants that are effective with smell and visual, which will increase visual perception.

Within the scope of this study, the Science-Mat-Academy College located in the city of Çanakkale was determined. On-site observation and photography were carried out within the scope of the study. As a result of the evaluations and research, the school garden was evaluated and suggestions were presented.

MATERIALS AND METHODS

Within the scope of the study, the qualities of school gardens as physical spaces were determined. It positively affects the development of students cognitively, physically, sensually, socially, and communicatively, which will support their development so that school gardens can become physical spaces. These criteria have been evaluated in terms of universal design, how school gardens should be in terms of the school-nature-society relationship by increasing the desire and motivation to learn in children. In this design process, the needs of the user masses (visually impaired, hearing impaired users, parents, school employees) should be included in the process. As a result of the study, literature and current situation analyses were carried out. As a result of the analyses, general design suggestions for the school garden were made.

Within the scope of the study; Science-Mat-Academy College located in Çınarlı village of Çanakkale city (Fig. 1) was considered. Due to the location of the school, which has a large number of users, transportation can be provided by car from the city center. There are some reasons why this school is preferred within the scope of the study. These reasons are as follows:

- Having a large number of activity and sports areas in the schoolyard that is open for examination, evaluation, and development,
- The current location of the school and the fact that the school creates a holistic education model with nature aimed at continuity.

Resource and inventory analysis were carried out at the study stage. These analyses have been synthesized within the study area. The findings and analyses obtained by on-site observations and photographs were compared. After the reviews and evaluations, the results and recommendations were developed, and functional and aesthetic recommendations were developed for the Science-Mat-Academy College school garden for effective child development.




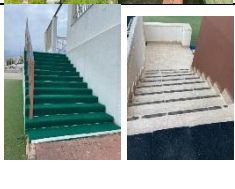


Fig. 1. Working Area (Original, 2023).

FINDINGS

Physical Analysis of the School Garden

Physical Analysis	Description	Visual
Schoolyard Entrances/Security	There are a total of three entrances to the school garden. The entrance connecting to the backyard is opened at certain times during the day and the entrances and exits of high school students are provided. The door located in the front garden is the door that leads to the entrance of the building. The third door is the entrance and exit door directly to the schoolyard. There are security measures on two of the doors.	
Building Entrance	Building entrances are provided through three different doors. These doors, which are Decoupled according to different teaching groups, increase the order between teaching groups, providing a more comfortable entrance and exit circulation.	
Parking	There is a bicycle parking lot for bicycle users on the left side of the front yard. The existing area left on the outside of the school garden is used as a parking lot.	
Seating Elements	There are seating elements in various shapes in the garden. Some of these seating groups are fairy tales, while others are just in the form of benches. Wood is preferred as a material.	
Sports Fields	There are sports fields at two different points of the school garden. These fields are areas where users of different age groups can do physical activities at certain times of the day.	
Floor Covering	The floor covering of the school garden has usually been preferred as artificial grass. The ground, which is green in appearance, makes users feel as if they are in nature. However, in extreme temperatures in summer, the smell of plastic causes it to form. In addition to artificial grass, the floor of the playgrounds is rubber, and the floor of other areas is concrete, stone cladding.	
Green Areas	The green area on the far right of the school garden is an area that supports the green airspace, which provides integrity within itself. There are different plant species in the area. It has been determined that regular pruning and maintenance of the plant species existing in the current area has not been carried out.	

Activity Areas	The existing green area has been valued as an activity area to enable students to get in touch with nature, and to get to know and protect nature. In the activity area, there are vegetable gardens, seating areas for students to socialize, bakeries, workshops, and animal shelters.	
Children's Playground	Access is provided from the right entrance gate of the school garden. The children's playground is made of wood and is an area where there are many playgroups. The floor covering is rubber. This area is also an area used to provide a transition to the activity area where the school's ecology classes are held.	
Animal Shelter	This area, called the ecology garden, is an activity area where ecology classes are held. A functional area has been created in the area where many different activities can be carried out. It is also an area where there are different animals.	
Stairs/Ramps	The school, which is built on a sloping area, is an area with different elevations. The differences in jeans are solved with stairs. Stairs and Deckchairs provide access between the different activities and classrooms of the school garden. There is no ramp resolution for disabled users in the area. This situation has prevented the space from being universal and functional for all users.	

Physical Analysis

In the study, the characteristics of the existing physical conditions and spaces were determined by on-site observation in the schoolyard. As a result of on-site photographs and observations, the layout plan of the school garden has been created (Fig. 2). Within the scope of the physical analysis of the school garden, 11 titles were preferred. These are; school playground entrances/security, building entrances, parking lots, seating elements, sports fields, flooring, green areas, activity areas, children's playground, animal shelter, and stairs/ramps.

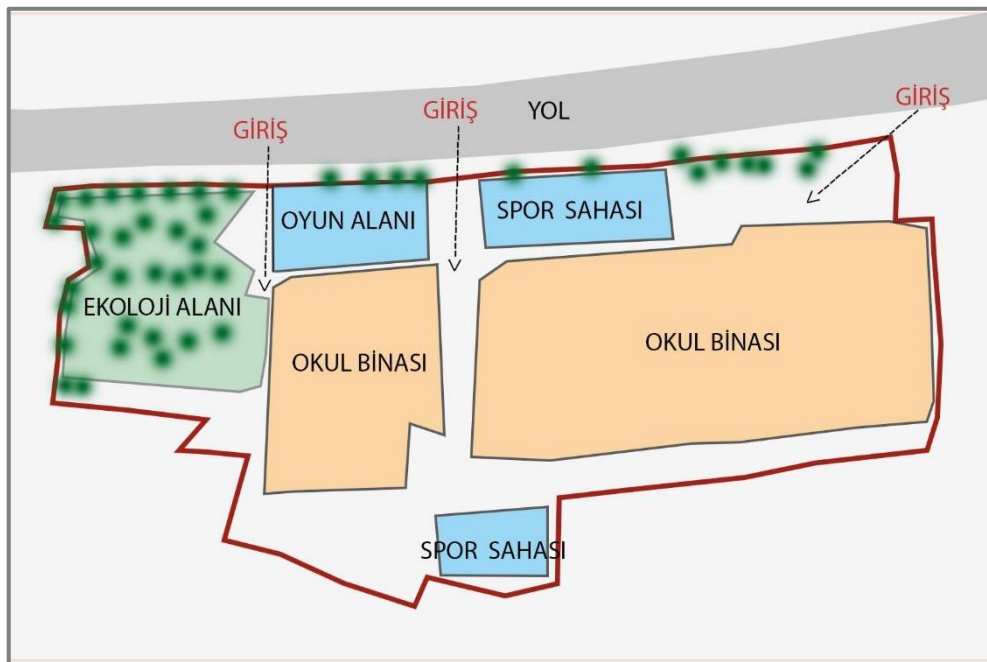


Fig. 2. Science-Mat-Academy College Plan Image

DISCUSSION

As a result of the physical analyses, the evaluation of the school garden was carried out. Within the scope of the evaluation;

- Within the scope of schoolyard entrances /security; the number of entrance and exit doors located in the schoolyard is sufficient. There are security measures at the existing two doors and this was considered sufficient for the students. It is enough for users to be free and safe in the garden. On the other hand, the door without security does not pose a risk as long as it is kept closed.
- Within the scope of building entrances; The entrances for different user groups create a healthier circulation and movement area.
- Within the scope of parking lots, there is no car parking in the garden. This creates problems for users. The presence of a bicycle parking area in the garden is sufficient for these users.
- Within the scope of seating elements; seating groups serving various purposes in the garden meet the needs. However, the fact that the material used is wood reduces the life of the seating elements compared to other materials. If it gets wet in the rain, it should be expected to dry out for use. Seating groups with different materials can be used. Apart from that, it is enough for users as a number.
- Within the scope of the sports field; they are large enough to meet the user's needs. It provides opportunities for various activities by appealing to various user groups.
- Within the scope of the floor covering; the grass carpet used is green in appearance and feels like it is in nature. But in hot weather, plastic creates a smell. Rubber used on the floor of playgroups is the right floor covering material. Reduces physical damage to users in case of falling.
- Within the scope of green areas; the green tissue in the garden is in a state of disrepair. The reason for this lack of maintenance may be a lack of personnel. Green areas without maintenance can negatively affect users psychologically. A bad image can create negative thoughts in users. Green space is very important for users. The existing green areas within the area should be restored by maintenance. However, other fragrant, colorful, remarkable plants should also be added for various user groups.
- Within the scope of activity areas; It is provided that users do a wide variety of activities in the school garden in a way that is intertwined with nature. In terms of size and area, it is sufficient depending on the user's circulation.
- Within the scope of the children's playground; it is correct due to the flooring and the fact that it appeals to various age groups. The fact that wooden material has been used reveals positive results both visually and in terms of use.
- Within the scope of the animal shelter; the existence of such a place in the schoolyard is very important for children. It is a place that allows them to get to know both animal love and animals, to do activities, and to develop themselves.
- Within the scope of stairs/ ramps; the existing stairs and ramps are addressed to all users. Due to the elevation of the land structure, stairs and ramps were often used in the schoolyard.

CONCLUSIONS AND RECOMMENDATIONS

The school garden is located in an area away from the noise of the city center due to its current location. There are three different entrance and exit points of the school garden. The two points that students prefer intensively at the entrances and exits are under security control. Science-Mat-Academy college; It consists of school buildings, sports fields, and an ecology area. Within the current area, the plant density is concentrated in the area used as an ecology area. In addition, there are all kinds of green plants in the front garden outside the school wall. Two different sports fields and a playground are located close to the school building.

The parking area outside the schoolyard is insufficient due to the density experienced at the entrances and exits of the school. With the new regulations, security measures will be increased and a more functional circulation network will be created. In addition, the entrances are not directional for the building entrance and the social areas that exist in the garden. Decoupling signs to the schoolyard and safe passages that increase circulation between areas will increase the integrity and accessibility within the schoolyard.

The presence of the school garden at different elevations negatively affects the integrity and effective use of the entire garden. The elevation differences were achieved by analyzing the stairs. However, the ramp has not been added for disadvantaged users. This causes negative consequences in terms of the functional use of this area. When re-evaluated from the perspective of universal design for everyone, it is proposed to add a disabled ramp (Figure 3) at a slope suitable for the use of disabled users on the sides of the existing stairs.

The existing sports and playgrounds separate students from different age groups according to their age group, and safer areas have been created. The presence of existing sports and playgrounds close to the building may cause noise problems. To prevent the current problem, it is necessary to position the basketball court located in the front yard at a different point. In this way, the existing area formed in the front garden can be supported with seating units by determining resting points. In this way, various recreation and socialization areas will be created for students who spend the vast majority of their day in the classroom and their interaction with other students will be increased. At the same time, the density of plants in the front garden will be supported and the clean air space will be supported. The existing walls of the school garden are high enough not to cause safety problems, at the same time, the interaction of the school garden with the external environment has been ensured at a sufficient level. The walls remaining in the school garden are supported with various paintings and the cold and stationary concrete image is avoided. The most sheltered and green area of the school garden has been created as a valuable area that has been evaluated for carrying out ecological studies. In this way, it has been ensured that students are intertwined with nature, and receive experimental and practical education. To increase the existing value of the existing ecology area, it will be useful to renew the plants that exist in the area and the maintenance of the ground.

The existing seating elements in the school garden are made with wood material and a soft and natural image is obtained. However, the existing existing seating units do not show a balanced and adequate distribution within the school garden. Insufficient seating units disrupt the recreation and socialization areas. In addition to seating units, garbage cans in the schoolyard should be increased and supplemented with recycling bins at certain points. It should be aimed that students are environmentally friendly and more conscious users who aim at continuity. In addition, a fountain will be placed in areas close to playgrounds and recreation points and the hygiene point will be supported. In this way, students will spend more time in the garden and their psychological, physical, and mental health will be supported.

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