

Designing School Gardens for All

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Received: 19 September 2017

Accepted: 25 November 2017

Abstract

School gardens are places where children spend most of their time besides their home. You need to bear in mind that there are two important points in design of a school garden. First one is that design of a school garden should be simple. The second one is that it should fulfil users' needs. Functions of school gardens are to guide children for playing, fun and learning; to encourage creativity; to improve ability, and to gain team spirit. In a traditional design idea, design is a product which is only created by designer. Whereas users are an active participator of all design process in the modern design idea. Therefore, design is a collective product of designers and users. Ensuring active participation of users into design process makes them to adopt and protect school garden after it is implemented. In this article, a design of a school garden which is located in Yenipazar district of Aydın province, Turkey, designed by collaboration with teachers and students is discussed. All phases of school garden design process are presented in detailed design, perspective drawings, and animated film.

Keywords: School Garden, Design Process, Nursery School, Primary School, Aydın

INTRODUCTION

Childhood is a special period devoted to learning, enjoying and discovering. Many children make their discoveries hidden in nature during this period. Jean Piaget stated that the period when the sense of discovery is formed is childhood. Other research results also support this view. This behaviour is not explained in a way that is limited to food, water and survival [1].

Researchers emphasised that there is a strong mental, physical and emotional relationship with nature during childhood. The intelligence of a child develops when triggered by the changing of the environment, and the freedom of nature reduces stress. It is stated that the experiences encountered in the rich nature during childhood affect and shape the pattern of behaviours throughout life [1].

Children gain different experiences via games. Therefore, the game is deemed as equal to learning. The game has a supportive role in problem solving and creativity. The game allows children to be independent, learn socially and do physical exercise. Children need exercising to activate their locomotive movement such as running, jumping and bouncing [2].

Children are not free in modern western cities. Children are restricted by the traffic and the fear of violence; and they are constantly checked by their parents both within and outside their home [3]. Neighbourhoods are isolated due to vehicles, and schools are solely focused on education. In this period, the need for safe places emerged where children can play, learn, laugh, think, move, develop their imagination and make friends at a walking distance outside their homes [1] and [4].

The need to create private natural areas for children first emerged in Europe during the period of the Industrial revolution [5]. The appearance of public children's playgrounds in Western cities dates back to approximately one hundred years ago [3], while the history of game dates back to earlier times [4].

Children's Playgrounds

Children's playgrounds make up an indispensable part of modern city landscape providing children with safe places to play games, learn, develop their creativity and communicate with one another [6] (Figure 1). Sliding, swinging, jumping, skating and climbing of children on children's playgrounds ensure their motor control development. Social skills [7] and creativity of children develop on children's playgrounds [1]. The friendship of children also develops on playgrounds [2]. Well-designed children's playgrounds give children the freedom to discover the life and become healthy and unique individuals [1]. Numerous studies supported the theory that the mental and social development of the children playing on children's playgrounds with different natural elements occurs with creative games [1] and [6]. Studies have shown that children's playgrounds are the most important places apart from the home and school with these features [7].



Figure 1. Children's playgrounds are important fields of activity [8].

Children's playgrounds are built with the mutual works of architects, designers, landscape architects, city planners, artists and toy producers for the health of children [3] and [7].

Children's playgrounds are examined under six groups: adventure gardens, edible gardens, memory gardens, music gardens, story-book gardens and water gardens [1].

Children's playground design requires the interaction between natural sciences and social sciences [3].

The process of children's playground designing consists of the stages of collecting inventories about the research area, field analysis, determination of user needs, development of program elements, function scheme, bubble diagram, preparation of application (structural and plant) landscape projects and detailed projects.

School Gardens

Previously in public parks, children's playgrounds have started to exist in school gardens in time, as well. School gardens are at the top of the lists of the places where children population is the most intense. School gardens are places where the physical, mental, behavioural and social needs of students are fulfilled (Figure 2). In school gardens, students learn and get the habit of observing and discovering the nature, seasons and life cycles [2]. Teachers can teach ecology, mathematics and meteorology in school gardens. It should be noted that smiling children learn in the garden (www.csgn.org). Children develop physically, mentally, morally and emotionally as a result of their interaction with nature in school gardens [1].

At the beginning of the 1970s, some innovative schools began to replace asphalt school gardens with environmentally-rich games and learning opportunities [1]. School gardens that are turned into environment-friendly gardens with plants and pools from asphalt reduce aggression and increase imagination and creative social interaction [9]. Another study has shown that natural school gardens develop the learning ability of children [10]. In another study, it was observed that children play more near bushes and other vegetation in school gardens with children's playground equipment and plant material [9] and [11]. Nowadays, the popular opinion is that the learning of children is enriched in natural environments.



Figure 2. An example of the modern school garden [12].

Design of School Gardens

Importance should be attached to leading students to adventurous behaviours and presenting different activities when designing school gardens. School gardens, botanical gardens, magazines, garden shows, websites and the creativity of students should be used when making the design. School gardens should be designed around a specific theme. The themes can be a butterfly garden, cut flower garden, edible garden, historical garden, and natural plant garden. Students are considered as a part of the design team as the active participants in the design process. School gardens should be designed in line with student opinions, and the future of the garden should be looked at from the point-of-view of students [13].

The size and present state of the area, soil, sunlight, water sources, drainage, accessibility, security, and future uses should be taken into consideration in the designing of school gardens. Functions expected from school gardens when designing them should be enjoyable, functional and plain. School gardens should support wild-life by attracting birds and butterflies. It should especially contain many types of fruits and vegetables as edible types [13].

The study area is the garden of Donduran Primary School in Donduran neighbourhood, Yenipazar district of Aydın province in the Aegean Region of Turkey. The study area is 42 km away from Aydın city centre. Donduran neighbourhood is 3 km east of Yenipazar district. Donduran neighbourhood primary school has three different types of schools in its garden: pre-school, primary school and secondary school. The design process of Donduran Primary School garden is explained in the study.

MATERIALS and METHODS

Research materials consist of CADD software (AutoCAD, SketchUp, Lumion), maps and plans of the field and surroundings (development plan, elevated layout plan, etc.), written and visual data on Yenipazar and the field, survey form, and the photographs taken around and inside the field. The research method consists of taking the photographs related to the research field, interviews held for determining the user needs of the students and teachers of the school, collection of written and visual data in relation to the field and surroundings, and the designing stages.

RESULTS and DISCUSSION

The design process of Donduran Neighbourhood primary school garden consists of five stages.

- Definition of the subject or problem,
- Collection of the literature regarding the study area and surroundings,
- Collection of the data for determining the present situation (environmental analysis)
- Creation of program elements,
- Analysis (creation of the function scheme and bubble diagram),
- Evaluation (creation of the preliminary project, structural and plant application landscaping projects and detailed projects),

Definition of the subject or problem

Each design process is an act of problem-solving. The development of suggestions aimed at fulfilling student and teacher needs in the garden of Donduran neighbourhood primary school makes up the subject of the design. At this stage, the needs and wishes of the landscape architecture user are determined by interviewing him/her.

Collection of the literature related to the study area and surroundings

Any visual or written data on Yenipazar district and Donduran were collected. These data consist of demographic, climatic, geographical, socio-cultural data. The development plan consists of topographic maps, transportation system, soil and vegetation maps, population, precipitation and wind data.

Collection of the data on determining the present situation (environmental analysis)

Determination of the prevailing wind direction, solar movement, desired and undesired images, building types and floor types around Donduran primary school. Revealing the vehicle and pedestrian transportation in the surroundings. Determination of the positions of the present buildings and plants, and plant species in the school garden.

Determination of program elements

Activities and places aimed at fulfilling user needs were formed. Ceremony area, outdoor class, edible garden, children's playgrounds (3-6 ages and 6-12 ages), sports fields (basketball and volleyball field, athleticism field), resting areas make up the elements of Donduran neighbourhood primary school program.

Analysis (creation of the function scheme and bubble diagram)

The function scheme that shows the mutual strengths and weaknesses between program elements (Figure 3) and the bubble diagram that shows the approximate positions and spatial size depending on the functional accord between program elements (Figure 4) were created at this stage.

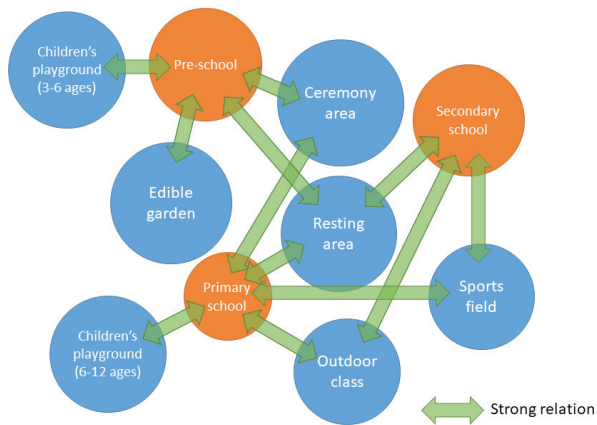


Figure 3. Donduran neighbourhood primary school garden design Function scheme.

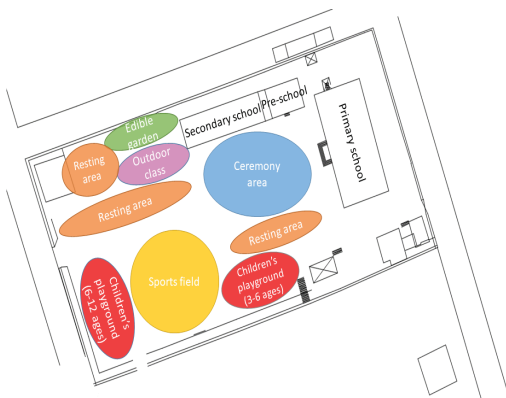


Figure 4. Donduran neighbourhood primary school garden design Bubble diagram.

Evaluation (creation of the preliminary project, structural and plant landscape projects and perspectives)

This is the first project. It can change as a result of the interviews with the users. At this stage, the user checks whether his/her requirements and wishes are fulfilled in the project, and tells the landscape architect the changes that should be made. Re-determined needs and wishes of the users reflect on the landscaping projects with the structural and plant application. The size of the places and types and amount of the materials used are specified in the structural application landscape project. The plant species used are shown with their number in the plant application project (Figure 5). Natural structural and plant materials were used in the garden of Donduran primary school. The cube granite used is a natural product, and it is solid. Therefore, it can be used without wearing down much for a long time. Natural plants of the area such as sweetgum, plane tree, laurel, juniper, sage, lavender and thyme were used as they are climatically adaptive, and they do not require much care.

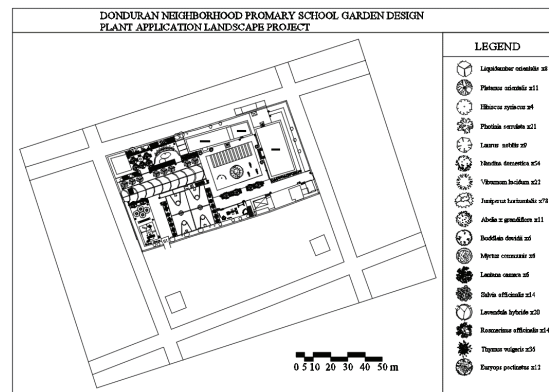


Figure 5. Donduran neighbourhood primary school garden design Plant application landscape projects.

AutoCAD was used for two-dimensional studies, SketchUP was used for three-dimensional studies, and Lumion software was used for visualization studies (Figure 6-7).



Figure 6. Donduran neighbourhood primary school garden design plan render view.



Figure 7. Donduran neighbourhood primary school garden design perspective render view.

CONCLUSION

Donduran primary school garden was designed in such a way that will help the fulfilment of the needs and realize the aims of the curriculum. The school garden was designed in such a way that it has activity areas that will fulfil the needs of different age groups as pre-school, primary school and secondary school are in the same garden. The design of the school garden does not have an adorned and complex design.

Child psychologists Jean Piaget and Erik Erikson emphasised child development and stated that age discriminations are important in today's children's playgrounds [2]. Children's playgrounds should be separated so as not to cause competition and disputes between children of different age groups.

Guides are comprehensive parameters and technical information used in the design of children's playgrounds [14]. Children's playground standards present at the international and national scale should be taken into consideration in the designing of school gardens.

One should think big in the design of a school garden, but a manageable school garden plan should be the initial stage. A three or five-year plan should be taken into consideration. An element should be applied each year [13].

City planners and managers should take into consideration the health and happiness of children in their planning decisions [1].

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