



The Design Process of Children's Playgrounds Connecting Indoor and Outdoor Spaces: Case of Bornova Children's World, Izmir^A

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Abstract: The spatial planning and design process are based on the user profiles and their needs. In this context, it is important to know the characteristics of the user groups consisting of children, young people, the elderly and individuals with special needs in terms of healthy and successful design. Therefore, in the design for child users, indoor and outdoor spaces serving the physical, cognitive, and socio-sensory development and based on the principles of colorfulness, mobility and naturalness should be designed. The Children's World project designed in this context was realized in Bornova district of İzmir province in Turkey. The aim of this study is to design indoor and outdoor playgrounds that reflect the world of children. The children's playgrounds aim to serve the developmental stages of the child and to be based on the landscape design principles in playgrounds. The landscape design process was implemented step by step for healthy children's playgrounds. The physical, cognitive, and socio-sensory developmental stages of the children and the colorfulness, mobility and naturalness design criteria of the children's playgrounds with the flooring materials with playful and colorful patterns, the movable cube game modules and seating units and the plant material that changes color in all seasons were handled within the framework of a holistic design and accordingly, portable and colorful indoor and outdoor playgrounds consisting of exhibition-information-experience areas, workshops and courtyards were created. As a

^A Bu makalede ele alınan Bornova Çocuk Dünyası Projesi 2016 yılında Bornova Belediyesi tarafından 5. Mansiyon ödülü almaya hak kazanmıştır. Yapılan bu çalışma etik kurul izni gerektirmemektedir.

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result, in this study which includes original, qualified, functional, innovative and contemporary design solutions, settlement decisions, plan decisions, facade and material decisions, sustainability decisions, and open space decisions were taken. The findings and methodology of this study may serve as an example of the landscape design process for other similar projects to be designed in different regions that take into account the developmental periods and principles of children.

Keywords: Indoor and outdoor children's playgrounds, child development, playground design criteria, Bornova Children's World Project, Izmir.

Açık ve Kapalı Mekanları Birleştiren Çocuk Oyun Alanlarının Tasarım Süreci: Bornova, Çocuk Dünyası Örneği, İzmir

Öz: Mekansal planlama ve tasarım süreci kapsamında ele alınan her bir mekan, kullanıcı profiline ve kullanıcıların gereksinimlerini göre belirlenmektedir. Bu bağlamda çocuklar, gençler, yaşlılar ve özel gereksinimli bireylerden oluşan kullanıcı gruplarının özelliklerinin bilinmesi tasarımın sağlıklı ve başarılı olması açısından önemlidir. Bireylerin kişiliklerinin oluşmasında etkili olan çocukluk dönemi, insan hayatının en önemli evresini oluşturmaktadır. Dolayısı ile çocuk kullanıcılarına yönelik yapılan tasarımlarda çocukların fiziksel, bilişsel, sosyo-duyusal gelişimlerine hizmet eden ve renklilik, hareketlilik ile doğallık ilkelerine dayanan kapalı ve açık mekanlarının tasarlanması gerekmektedir. Bu kapsamda tasarlanan çocuk dünyası projesi, İzmir ilinin, Bornova ilçesinde gerçekleşmiştir. İzmir'e eğitim ve eğlence konusunda alternatif bir cazibe noktası oluşturulması beklenen bu çalışmanın amacı çocukların dünyasını yansıtan kapalı ve açık çocuk oyun mekanlarının tasarlanmasıdır. Bu amaca ulaşmak için tasarlanan çocuk oyun mekanlarının çocuk gelişim dönemlerine hizmet etmesi ve çocuk oyun mekanlarındaki tasarım ilkelerini temel alması hedeflenmiştir. Çocuklara yönelik oyun alanları yapılması istenen bu projede yöntem olarak tasarım süreci adım adım uygulanmıştır. Çocukların fiziksel, bilişsel, sosyo-duyusal gelişim dönemleri ile çocuk oyun mekanlarının renklilik, hareketlilik ve doğallık tasarım kriterleri hareketli ve renkli oyun modülleri, renkli ve oyun desenli yer döşemeleri, hareketli oturma birimleri, her mevsim renk değiştiren bitkisel materyal ile bütüncül bir tasarım çerçevesinde ele alınmış ve buna uygun sergi-bilgi-deneyim alanları, atölyeler ve avludan oluşan kapalı-açık, renkli ve hareketli çocuk oyun mekanları oluşturulmuştur. Proje görünüş, kesit, perspektif ve detay çizimler ile desteklenmiştir. Sonuç olarak özgün, nitelikli, işlevsel, yenilikçi ve çağdaş tasarım çözümlerini içeren bu çalışmada yerleşim kararları, plan kararları, cephe ve malzeme kararları, sürdürülebilirlik kararları ve açık mekan kararları alınmıştır. Bu çalışmanın bulguları ve yöntemi diğer benzeri projelerinin tasarım sürecine ve çocukların gelişim dönemlerini ve ilkelerini dikkate alarak farklı bölgelerde tasarlanacak olan çocuk oyun mekanlarına örnek oluşturabilir.

Anahtar Kelimeler: Açık ve kapalı çocuk oyun alanları, çocuk gelişimi, oyun alanları tasarım kriterleri, Bornova Çocuk Dünyası Projesi, İzmir.

Introduction

People expect their spaces to meet their needs and be designed for this purpose. Spatial planning and design stages are based on user groups. In this context, designing the spaces foreseen according to the physical, social and cognitive characteristics of the group users consisting of children, young people, the elderly and individuals with special needs is very important in terms of both livability and preference of the spaces (İnci, 2009; Pouya et al., 2016; Pouya et al., 2017a; Düzenli et al., 2018; Erdoğan ve Özbek, 2019).

Childhood, which is the most important period of human development, is a process and a period of life that makes up the specific characteristics of people (Türel, 1995; Muhacır and Özalp, 2016). Therefore, the space designs for groups of children by designers are of prime importance. From this point of view, designers' knowledge of child developmental psychology and their knowledge of the different needs caused by different developmental stages lead their designs. Spaces designed for children accordingly should serve to meet these different needs. Increasing concretion and the resulting reduction of open green spaces due to technological developments and rapid growth of the city have limited the relationship of children with the environment (Sugiyama and Thompson, 2007; Pouya and Demirel, 2016; Pouya et al., 2017b; Düzenli et al., 2018).

Childhood is classified as early childhood (2-6 years) and school ages (6-12 years), and knowing the development of children in this age range provides designers with ideas about their needs. Children in this age range experience the mental and physical healthy development (Ege Mimarlık, 2016; BIF, 2017). Physical development of children includes motor development and psycho-motor development consisting of biological and mechanical factors (Özerkan, 2004; Düzenli et al., 2018). Children's understanding and learning of the world as an individual, their development in their problem-solving ability and their mental activities reflect their cognitive development (Senemoğlu, 2011). Cognitive development improves the sense of discovery in children. The fact that children want to feel valued in their environment is the characteristic of their socio-emotional development and therefore their spaces should serve socialization, arousal, touch, and authority with complemented by games (Düzenli et al., 2018).

The most effective way for adults to develop a healthy personality is childhood games. The quality and duration of the games that take place in childhood are very important for the formation of personal identities of individuals (Huizinga, 1995; Düzenli et al., 2018). However, in the urbanized world, children's free playgrounds have been narrowed and that fact has caused children to be trapped between the four walls without interacting with the other children. This situation negatively affects the identity development of individuals. Games played during childhood enable individuals to socialize, understand, explore and question the world, find solutions on their own, take over responsibility, share and develop their imagination and creativity (Onur and Güney, 2004; Aksoy and Çiftçi, 2008; Akandere, 2013).

Outdoor games are very important for the healthy development of children. The games performed in these spaces provide that children gain social competence, increase their self-confidence and produce creative solutions to problems (Rivkin 1995, Düzenli et al., 2018). Also, outdoor spaces allow children to know different

people, to recognize water, soil, and nature, and to develop their hobbies by discovering their favorite objects (Clements, 2004; Bilton, 2004; Altıncekic and Sarı, 2005; Yucel, 2005; Yücesoy and Ç.Çanga, 2019). Game activities in open spaces contribute positively to the physical, psychological, social and sensory development of children. Therefore, the outdoor playgrounds designed for children should be functional and safe and should have design principles that will increase environmental and spatial perception.

In spatial designs for children, spatial features should have boundary elements and equipment to meet the children's play needs. These playgrounds should be appropriate to the dimensions of children and should serve their impulse to explore the world, understand and produce solutions to problems, perceive, dream and their creativity (Altıncekic and Sarı, 2005; Yucel, 2005, Pouya et al., 2016; Düzenli et al., 2018). In addition to the spatial organization of the playgrounds, the plant organization should be healthy and sufficient. The plant materials to be used in this context should provide the opportunity for children to recognize nature, to understand the ecological processes of plants and to support their physical, psychological, social and mental development. Poisonous, fruity, and prickly plants and plants that attract insects should be avoided, and plants resistant to child intervention should be preferred. Plant material designs should be realized that will alleviate children's sunbathing and the negative effects of dust, noise and wind and attract birds and butterflies (Kılıç, 2004; Çukur, 2011).

Outdoor spaces designed for children should have the criteria of colorfulness, mobility, and naturalness to allow to play games, explore and socialize. Based on the psychological effects of colors on people, it has been found that warm colors attract children's attention more (Altıncekic and Sarı, 2005; Yucel, 2005, Özdemir and Yılmaz, 2008). Mobility representing dynamism is defined as spatial density and supports children's movement, excitement, and discovery (Geboy et al., 2001). Naturalness criterion was found to be the reason why natural spaces are preferred in environmental experience researches. In open spaces, naturalness is defined by natural elements such as plants, water, and soil. The increase in planting due to the lack of structural surfaces increases the naturalness and it has been determined that it is more preferred than the spaces with structural density (Purcel and Lamb, 1984; Kaplan and Helbert, 1987; Ulrich, 1992; Özdemir et al., 2017).

Children's playgrounds are important places that provide opportunities for children's physical, social, psychological and mental development and thus healthy individuals. Therefore, the fact that designers have sufficient knowledge about the needs of children supports the design of healthy and preferred spaces. Thus, spaces designed for children must meet all the necessary criteria. This study, which was conducted in this context, aims to design spaces for children in Bornova district center within the scope of the Children's World Project organized by Bornova Municipality in Izmir, Turkey. To achieve this goal, it is aimed to design a public outdoor space that colorizes children's lives, attracts attention for families and schools, arouses curiosity, promotes exploration and creativity with exhibitions and training programs and increases the attractiveness of the city center. Within the scope of the study, the design processes for the children's playgrounds were realized step by step and as a result, indoor and open spaces in shopping mall were designed that incorporate the principles of colorfulness, mobility, and naturalness. This design process, which was determined by Bornova Municipality and carried out by expert jury members on the world of children and took into consideration the

physical, cognitive and socio-sensory development of children, was awarded the honorable mention awards according to its design principles. Therefore, the design process and purpose of this study set a good example of designing alternative attraction spaces for all children not only in Bornova but also in Izmir and the Aegean Region of Turkey.

Material and Method

The work area of this project, which is realized by Bornova Municipality under the name of Children's World Project and owned by Bornova Municipality, covers an area of 4,859 m² and is located in Kazımdirik neighborhood in the east of Bornova district center of Izmir province. There are archaeological sites, residential areas, student village and shopping center around the project area (Figure 1). This project area is located to the south of the Bornova Forum shopping center (BBF), which is used extensively by the inhabitants of Izmir and the inhabitants of the surrounding cities and is at the focal point of the residential areas. The evaluation of the data of the city reveals that both the ease of access to the land and its location add a very central location to the study area.

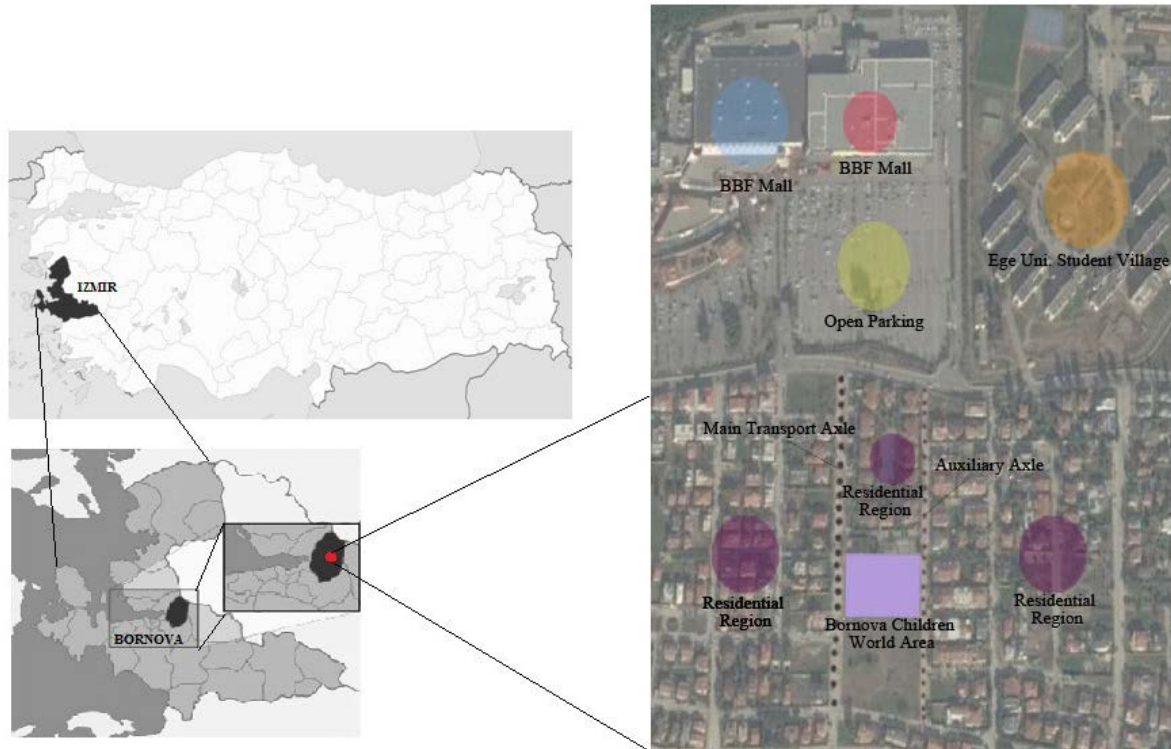


Figure 1. Project area, Bornova, Izmir, Turkey

The design process and design principles for children's playgrounds were applied step by step as a method in this competition where children's playgrounds had been requested in shopping mall. Accordingly, the design process of the competition project was actualized in four steps respectively including the presentation of the subject of the competition (1), determination of the current situation and the completion of the environmental analysis (2), creation of the necessity program (3) and drawing of the project for the indoor and outdoor playgrounds (4). The project was supported by the view, cross-section, perspective and detail drawings.

In the context of the exhibition of the competition subject for the study area (1), a literature review was conducted regarding the spaces and equipment for child development and playgrounds and sample projects were examined. Data were collected about the natural, cultural and historical landscape values of the study area and the data collected were evaluated and an environmental analysis reflecting the problems and opportunities in the area (2) was performed. Taking into account the problems and opportunities synthesized within the scope of environmental analysis, the needs program for the competition area (3) was listed. Finally, based on the specification of the competition project and the needs program, the final design product for the competition area was introduced. Accordingly, the project of indoor and outdoor spaces for children (4) has been completed by considering the principles of colorfulness, mobility, and naturalness. The final product was detailed with two-dimensional and three-dimensional representations. As a result, the specification of the project was taken into consideration by the designers and the settlement decisions, plan decisions, facade and material decisions, sustainability decisions and landscape design decisions were taken within the scope of this project.

Result

Within the scope of the Bornova Children's World Project, the design process was carried out step by step following the specification and purpose of the project and each design process step was explained sequentially by the design and planning decisions taken by the designers.

Presenting the Subject of the Project

The subject of the "Bornova Children's World Project" announced by the Bornova Municipality is the expectation to design an exploration environment that allows the child to learn the 'world' spatially. The competition is expected to serve children between the ages of 2-12 which are the first childhood and school years. In this context, indoor and outdoor spaces were designed to support their physical, cognitive and socio-sensory development. In this case, two important issues directed the concept of the competition by the designers to establish the relationship between spaces and child development. Two important issues to meet urban needs were the guiding elements in this design. As a result, supporting the development process of children with indoor and outdoor playgrounds and equipment (1) and realization of sustainable design with a conservation strategy (2) were the two important issues of the project that redounded to the design.

Determination of the Current Situation and Environmental Analysis

The project area is located to the east of Bornova district center, the south of the Bornova Forum shopping center and in the middle of the residential areas. The project area is in interaction with its environment and there are an archaeological excavation area and a student village serving Ege University students around the area. Therefore, it has been determined that the area is connected with the historical texture and has the potential for intensive use due to the residential areas, shopping center, and student village. The soil structure of the project area, which is surrounded by a residential area, is suitable for planting. The east and west of the project area are limited by roads. Thus, a planting design that prevents dust, noise and wind should be made in the planting work. To determine the current status of the project area of 4,859 m², a field study was carried out, photographs were taken and the requests of the users were asked. The area receives sunlight, has a slight slope that is below 5% and the prevailing wind direction is southeast and west. More than 50% of the average annual rainfall 700 mm is in winter, 40-45% in autumn and spring, and less than 5% in the summer. The analysis of these data enabled the determination of the needs program.

Determination of the Needs Program

As a result of current situation determination and environmental analysis, within the scope of Bornova Children's World Project, entrance section (500 m²), shared areas (750 m²), exhibition, information and experience areas (2000 m²), management (400 m²), service and technical spaces (400 m²), shelter (250 m²), parking garage with a capacity of 50 cars (1500 m²) and outdoor space usages were considered within the scope of landscape and architectural needs program (Table 1).

Table 1. Needs program and contents of Bornova Children's World Project

Bornova Children's World Architectural Project Needs Program	
Entrance	Information, ticketing, gift shop, cafeteria, security, cloakroom
Shared Areas	Reading room (40-50 people), multi-purpose hall (250-300 people), celebration room for special occasions, 4 workshops (15 people), circulation and service areas
Exhibition-Information-Experience Rooms	Permanent and temporary spaces that support the physical, cognitive and socio-sensory development of children
Management	Executive and secretary rooms, 8 offices, open office, seminar room, a service niche
Service-Technical Spaces	Warehouse, repair and maintenance workshop, technical spaces, staff locker, and break rooms
Shelter	Organized according to the zoning law number 3194
Parking Garage	With a capacity of 50 cars
Outdoor Space Usage	Children's playgrounds, simulator rooms, circulation and service areas

Presenting the Final Design Product

The relationship between the determined spaces according to the needs program and child development was established by indoor and outdoor space design of shopping mall supported by participatory programs and exhibitions for children, schools and their families who support creativity, learning, and discovering. By this means, an alternative center of attraction has been created in the Bornova city center. In this context, indoor and outdoor spaces of shopping mall were designed which serve the mental and physical healthy development of the child, which reflects the inner world of the child and thus provides the opportunity for the child to perceive the world. It is aimed for children to obtain information, learn, get to know their environment, socialize, gain experience, and have fun by playing in these spaces (Figure 2). The spaces and equipment that provide information, experience, and entertainment through games are created with a sustainable design model that prioritizes conservation strategy. For this purpose, settlement decisions, plan decisions, facade and material decisions, sustainability decisions and open space decisions that include original, qualified, functional, innovative and contemporary design solutions were taken.



Figure 2. Details of the Design Solution

Settlement Decisions: It is known that childhood is the most intense period in which emotions of exploring and perceiving the environment, creativity, gaining an identity, gaining trust, owning and socializing are experienced. For this reason, the most emphasized issue regarding the settlement decisions is the designing of indoor and outdoor spaces of shopping mall that enable the child to explore, perceive and question his/her environment, to make himself/herself feel secure, to produce solutions on its own, to gain responsibility, to make the child share, to expand imagination and to be on a child scale. In order to achieve this, a courtyard called “Children’s World” was designed on the east of the Bornova Children’s World structure located on the walls of

the land, which includes the principle of mobility that is one of the basic design principles of children's playgrounds, and permanent and temporary exhibition-experience areas. In the design, considering indoor and outdoor usage possibilities and multiple usage strategies, indoor area usage (gross construction area) was designed as 6200 m² and courtyard area representing outdoor area was designed as 670 m².

Through the entrances that have been resolved in the North-South direction of the land, it is aimed to establish a relationship between the car parks included in zoning and under design process and the users (Figure 3). While determining the location of the building, the "Olive Trees", which occupy an important place in many mythologies throughout the history of humanity and are present in the field, were protected and used as a part of the design and thus the principles of colorfulness and naturalness, which are among the design principles of children's playgrounds, were provided.



Figure 3. Settlement Decisions

Plan Decisions: The spatial relationship that the exhibition, knowledge and experience areas and other functions will establish has been an important issue that has been carefully considered in the plan decisions. This relationship was established by connecting the permanent exhibition, information and experience areas on the ground floor with double entry and exit areas to the entrance halls and connecting the temporary exhibition, information and experience areas on the 1st floor to the corridor halls. With the solution provided by this

principle of mobility established in these children's playgrounds, it was ensured that the permanent and temporary exhibition spaces established relations with other spaces in a controlled manner and thus an independent "Children's World" was intended to be designed. Even if there is not a city street and exhibition function designed on the ground floor, the multi-purpose hall, sales units, cafeteria, birthday-celebration functions that are solved around this street aimed the building to be able to live in all periods (Figure 4).

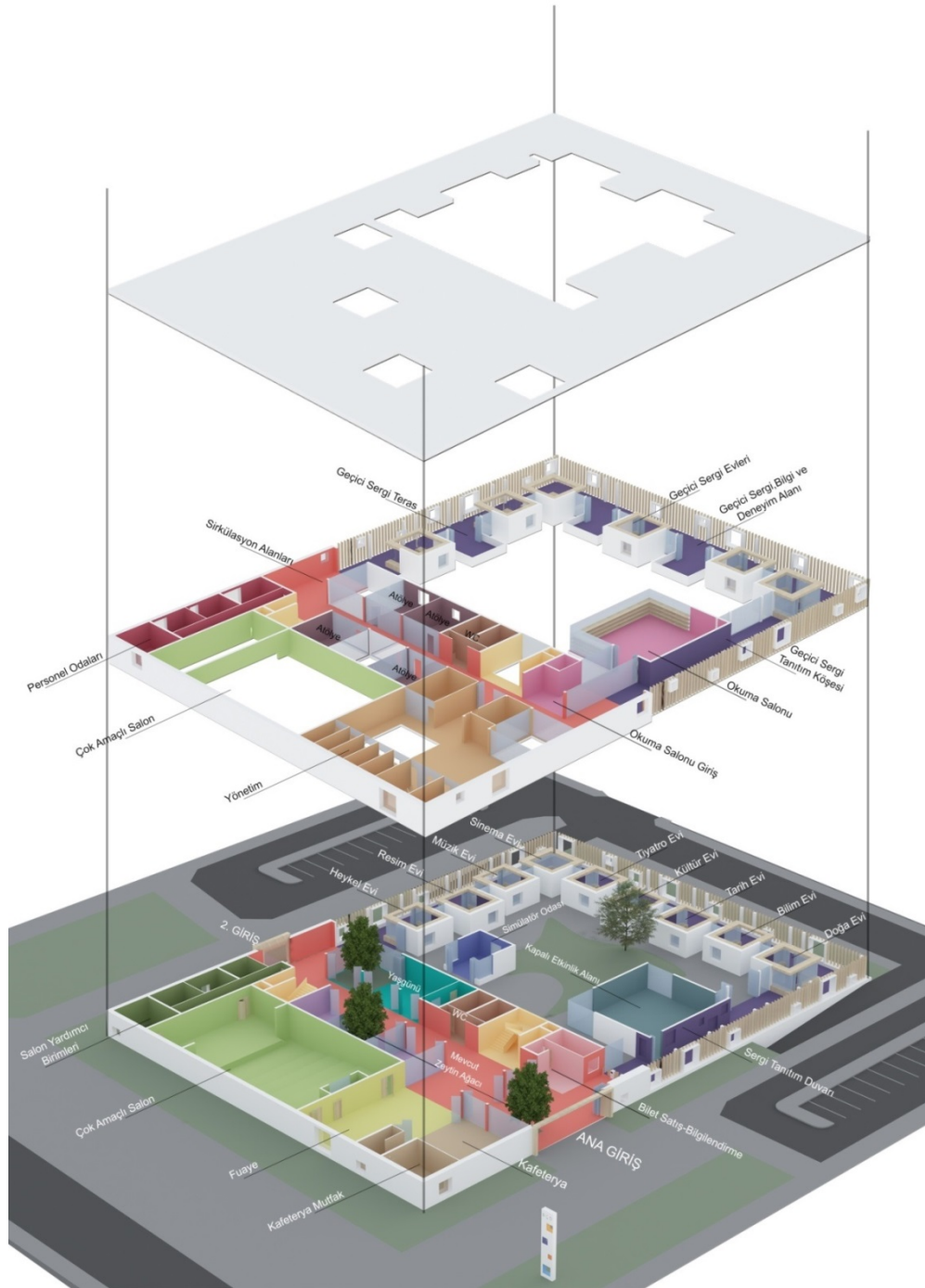


Figure 4. The Plan of Children World

Facade and Material Decisions: The most important issue to be considered when making decisions for facade design is that the spaces behind the facade are compatible with the identity of the space. The permanent and temporary exhibition, information and experience areas (Children's World), which add mobility and colorfulness to children's playgrounds, are designed as a wood-intensive facade to give a natural impression, while the facade of the unit where the other functions are located is formed by emptying concrete, which is a lean but heavy material. While choosing the material, by choosing the concrete, wood and glass materials that the child knows and meets the most, it was aimed that the child did not feel unfamiliar in the space. An interesting building perception was tried to be created with the colors constructed on the facades. Thus, the use of wooden materials, changes in material types and the use of different colors in the materials provided the application of the principles of naturalness, mobility, and colorfulness in the design of children's playgrounds.

Sustainability Decisions: The concept of sustainability, which maintains the balance of use and preservation, means the continuity of the properties and resource values of the spaces and corresponds with long-term investments. In the design, great importance was attached to the energy-efficient design solution in which passive systems were used and in this context, natural lighting and natural ventilation were provided and attention was paid to constructing the building orientation following the climate data (Figure 5). While the natural light requirement of the deep spaces was met with the spaces formed on the roof and the extending of the olive trees, the spaces were made to establish a direct relationship with the open air. Natural light needs to be taken to the permanent and temporary exhibition, information and experience spaces (Children's World) in a controlled manner. Therefore, to pass the natural light to these spaces, sunshades with wooden materials were designed on the facades of the indoor spaces. Thus, with the energy-efficient design, energy expenditures have been aimed to be minimized in the long run.

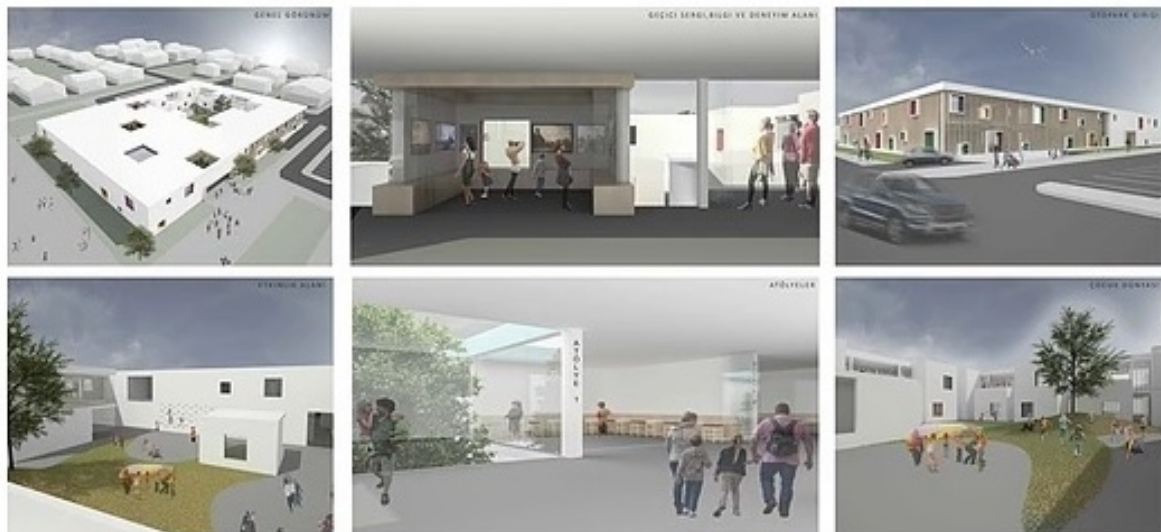


Figure 5. Sustainability Decisions

Outdoor Space Decisions: With the structural use of the Children's World project, which was planned to be built in the Bornova district of the province of Izmir, the plant design was intended to be functional and particularly compatible with indoor and outdoor spaces. The low-rise situation in the project area, the perception of different elevation in the transportation/use of these areas and the relevant consistency in the environment relations, along with the outdoor space decisions, customized the projected design and the richness in use and day-night uses were supported.

Light green spaces were designed in the courtyard area considering the mass-space relationship of the landscape structure. The green zones surrounding the structure are surrounded by *Buxus Sempervirens 'Rotundifolia'* (golden leaf common box) which is a circular and short shrub and the entry points are highlighted with *Buxus Sempervirens 'Pyramidalis'* (pyramid-shaped boxwood). The fact that they are short and continuous puts forward the landscape and architectural structure. In addition to preserving the existing olive trees (*Olea europaea*), Bonsai olive trees were added as a suggestion and the continuation of the color and textural effect of the olive trees supported the mobility and naturalness of the children's playgrounds. In the selection of plant species, the use of plants carrying poisonous leaves, flowers, and fruits was avoided. In the plant design decisions, non-evergreen trees that have the function of shading, wind prevention, noise reduction, and dust retention from paths, evergreen pyramidal bushes that create emphasis and focus, as well as colorful flowers and shrubs that attract birds and butterflies were recommended to be used and all the design criteria, which consist of colorfulness, mobility, and naturalness in children's playgrounds, were applied.

The inner garden, which was designed following the typology of the courtyard building located in the proposed project, was proposed as a child gathering space. To make this courtyard attractive, Bonsai olive tree was intended to be used as a solitary plant. At the same time, the plants can continue to live due to their form and space, they enriched the use of the inside of the building and thus mobility and naturalness have been brought to the study area. In addition to the visual richness of the courtyard, this courtyard has been transformed into a breathing zone of the structural fabric, meeting the need for air and light. In regions with structural areas, slope and elevation relationship were appropriately addressed for all users and access to the spaces was solved by walkways, ramps, and stairs.

Within the scope of the project, the colorfulness, mobility and naturalness criteria of children's playgrounds were evaluated with the indoor and outdoor design to supply the mental and physical healthy development of the child user groups. This project attracted attention in terms of designing indoor space with calm outdoor playgrounds as linked to the principle of mobility. In this context, the courtyard structure in the indoor space was evaluated in a holistic design with indoor spaces has gained importance in terms of providing an accessible, safe and free environment for users of families and children. For this purpose, the waterproof and slip resistant flooring materials with playful and colorful patterns were preferred to supply colorfulness and mobility, the movable cube game modules and seating units were preferred to encourage the mobility and child imagination, the plant material that changes color in all seasons were used to supply colorfulness and naturalness criteria increasing awareness of plant growth and seasonal change. The calm and simple design criteria with natural structure and plant materials of the indoor and outdoor spaces, were lively and colorful, enriching the design.

The needs program was determined following the requirements of indoor and outdoor playgrounds. The indoor and outdoor playgrounds were found to support the physical, cognitive and socio-sensory development of children.

Discussion and Conclusion

This study, which is evaluated within the scope of Children's World Project organized by Bornova Municipality, aims to design indoor and outdoor playgrounds that reflect the world of children in Bornova center. Within the scope of this project, which won an honorable mention, an alternative public space, which colorized the lives of children, attracted children's interest with their families, aroused curiosity, increased discovery and creativity, supported with exhibitions and educational programs, and increased the attractiveness of the city center, was aimed to be designed. These designed spaces were expected to create a remarkable focus for child users. In this context, in this study, which provides an alternative education and entertainment place in the city, two important issues have been the guiding elements. Supporting children's development processes with indoor and outdoor playgrounds and equipment, and the realization of sustainable design with a conservation strategy are two important issues that are reflected in the design of the project.

Childhood between 2 and 14 years of age is the most important period of human development (İnci, 2009; Düzenli et al., 2018). Physical, cognitive and socio-sensory characteristics of children are shaped in this period (Türel, 1995; Muhacır and Özalp, 2016; Pouya et al., 2016; Pouya et al., 2017b). In this context, children need to spend this period in healthy environments, which meet their needs of discovering, questioning, perceiving, learning, gaining an identity, socializing, and having fun, for their physical and mental health. Therefore, spaces designed for child users should support their mental and physical healthy development (Erdoğan ve Özbek, 2019). The realization of the appropriate designs enables the spaces to be preferred and therefore their sustainable use. From this point of view, designers who design indoor and outdoor playgrounds for child users should have knowledge on the developmental psychology of children and have information about the requirements of these developmental periods or should work interdisciplinary with pedagogues. Especially due to the rapid urbanization and technological developments at the present time, the decrease in the use of outdoor playgrounds or being stuck between the building masses captures the individuals in their childhood between four walls or computer or tablet screens (Sugiyama and Thompson, 2007; Pouya and Demirel, 2016; Pouya et al., 2017a; Düzenli et al., 2018). For this reason, the principles of colorfulness, mobility, and naturalness that enrich the design of children's playgrounds and increasing the length of time that children stay in playgrounds, whether indoor or outdoor, will support children's physical, mental and socio-cultural development positively.

Children playgrounds designed in light green spaces allow child users to recognize their environment and individuals of their age groups, explore nature, water, and soil, socialize and improve their hobbies (Clements, 2004; Altıncekiç and Sarı, 2005; Yucel, 2005; Bilton, 2010). Light green spaces should be designed following the developmental stages of children. For this purpose, the fact that these spaces contain design principles that

will increase environmental and spatial perception, functional structure, reliability, and accessibility increase the sustainable use of the space. Therefore, in order for child users to gain identity and self-confidence, to discover themselves and their environment and to socialize, indoor and outdoor children's playgrounds built should contain the criterion of colorfulness which uses the psychological effects of colors, mobility criterion that determines the dynamics of the place and naturalness criteria that use natural landscape elements (Altıncekic and Sarı, 2005; Yucel, 2005; Özdemir and Yılmaz, 2008; Düzenli et al., 2018). Within the scope of this project, the physical, cognitive, socio-sensory developmental stages of children and the color, mobility and naturalness design criteria of children's playgrounds were handled within the framework of an integrated design, accordingly, indoor and outdoor playgrounds were designed consisting of exhibition-information-experience spaces, workshops, and courtyards and the award is won. Within the context of the study, the design process was realized step by step. The findings and methodology of this study may be an example for children's playgrounds to be designed in different regions, taking into account the design processes of other similar playground projects in shopping mall and the developmental periods of children and the relevant principles.

This design work, which was discussed within the scope of "Bornova Children's World" architectural and landscape project, won the honorable mention. Within the scope of the project, children's playgrounds that support the the mental and physical healthy development of children were designed according to the criteria of colorfulness, mobility, and naturalness. Within the context of this study, the first three awards of the competition were addressed according to the physical, cognitive and socio-sensory development of the child user groups and the colorfulness, mobility and naturalness criteria of children's playgrounds and they were compared with the indoor and outdoor design understanding of this project which received the honorable mention. Accordingly, the project which was awarded the first prize attracted attention in terms of designing indoor playgrounds with calm spaces as opposed to the principle of mobility. The fact that the courtyard structure in the indoor space is handled in a holistic design with indoor spaces has gained importance in terms of providing an accessible, safe and free environment for users of families and children. The courtyard, which represents the interior as opposed to the calm and simple stance of the indoor space, is lively and colorful, enriching the design. The needs program was determined following the requirements of indoor and outdoor playgrounds. The indoor and outdoor playgrounds were found to support the the mental and physical healthy development of children. However, the slope between the entrance and the exhibition area, the problem about the bearing, the usage of the building facades facing the courtyard and the courtyard design preventing the natural air circulation, the lack of access of natural light and air to the exhibition area on the basement floor, insufficient fire escape points there and lack of wet areas were criticized. The playground area has been transformed into a breathing zone of the structural fabric, meeting the need for air and light as well as the visual richness of the courtyard. The structural areas, slope and elevation relationship were appropriately addressed for both children and their families and access to the spaces was solved by walkways, ramps, and stairs. Also, the relationship between the exhibition areas and the floor code and the proposed partitioning were found to be quite weak. It was found that the accessibility of indoor exhibition-information-experience areas to the interior space, illumination, and ventilation were insufficient. Thus, an

emphasized important point is that this situation will cause limitation of use and may cause psychological problems on child users due to its darkness and poor accessibility (Ege Mimarlık, 2016; BIF, 2017).

The project, which was awarded the second prize, was able to stand out from a massive mass effect with its structure design consisting of indoor and outdoor spaces of shopping mall. The most striking feature of the project is the spatialization of a track, which connects different elevations with surfaces with different slopes including children exploring, knowing and learning their environment, based on the principle of mobility. It is noteworthy that playgrounds in indoor and outdoor spaces offer different options and reveal continuity throughout the project area. The consistency of spatial continuity with different circulation networks in indoor and outdoor spaces has led to the formation of a spatial structure that reflects the criteria of mobility and colorfulness. The use of accessibility between the exhibition-information-experience areas and the indoor space has provided the child users the opportunity to move freely in a free environment. The indoor and outdoor playgrounds were determined to support the the mental and physical healthy development of children. Significant shortcomings were identified in emergency exits and limited access by some individuals with special needs was criticized (Ege Mimarlık, 2016; BIF, 2017).

The project, which received the third prize, used the mobility design principle primarily in indoor and outdoor design of shopping mall. In this context, the spatial arrangements designed as radial and elliptical have been the most striking features of the project. The connection of the structural mass covering the indoor spaces with the inner courtyard directly from the entrance section increased the visual relationship and spatial continuity. Children's playgrounds in indoor and outdoor spaces were found to support the children world dream. However, outdoor use was found to be insufficient. The poor access to the administrative section of the project and the location and ordinary design of the temporary exhibition area were criticized (Ege Mimarlık, 2016; BIF, 2017).

In the project, on which this project is based and which was awarded the honorable mention, the indoor and outdoor spaces reflecting children's world were designed with the principles of colorfulness, mobility, and naturalness. The facts that permanent exhibition and information-experience areas are in harmony with the structural mass that includes indoor spaces and the settlement decision is taken following the topography and also the landscape equipment and plant design concept used in outdoor usage decisions have added colorfulness, mobility, and naturalness to the design process of the project. It has been deemed appropriate to ensure the continuous connection of the indoor spaces to the outdoor space consisting of the courtyard and to establish a direct relationship with the natural lighting and natural ventilation in the indoor spaces. The facade materials used in different colors and materials provided color and mobility to indoor and outdoor playgrounds and wooden facade cladding used in addition to glass and concrete brought naturalness to these spaces. Plant materials were designed to provide limited children's sunbathing and to protect the negative effects of dust, noise and wind and attract birds and butterflies. The plant materials were provided the opportunity for children to recognize nature, to understand the ecological processes of plants and to support their physical, psychological, social and mental development. To emphasized the naturalness of the open children playground the plant materials were used in this project. Light green spaces were designed in the courtyard area considering the

mass-space relationship of the landscape structure with local plants of Izmir were used for easy adaptation and use of familiar plants. Therefore the deciduous and unbranched from bottom supplied shade for children were used in outdoor garden with border brushes to ensure and to create human-scale space both for families and children. In addition, interesting plants and colorful flowers were used to connect indoor and outdoor spaces. The indoor and outdoor playgrounds built were determined to support the physical, cognitive and socio-sensory development of children. However, although the location of the study area was designed following the topography, the lack of access to indoor and outdoor spaces by individuals with special needs and the lack of skill areas that enable children to develop their imagination were criticized (Ege Mimarlık, 2016; BIF, 2017)..

Acknowledgment

No ethics commission permission is required in this manuscript. All authors participated in the conception of the topic. All authors read and approved the final manuscript after critically revising it for important content. The authors declare that there is no conflict of interest regarding the publication of this article.

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