AN EVALUATION OF NON-CLASSROOM SPACES OF PRIVATE ELEMENTARY SCHOOLS IN İZMİR: INVESTIGATING FACTORS AFFECTING INTERACTIONS AMONG STUDENTS

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ABSTRACT

AN EVALUATION OF NON-CLASSROOM SPACES OF PRIVATE ELEMENTARY SCHOOLS IN İZMİR: INVESTIGATING FACTORS AFFECTING INTERACTIONS AMONG STUDENTS

This study investigates the role of non-classroom spaces of elementary school buildings where informal interactions among students take place in the example of private elementary schools in İzmir, Turkey. The non-classroom spaces that students prefer during their free times are important in the way they facilitate peer interactions which may contribute to informal learning processes. The elementary school students' space and activity preferences were investigated in their free times by focusing on non-classroom spaces of school buildings. Multiple case study method is used. The cases were selected among private elementary schools in İzmir based on their educational programs and based on their characteristics of indoor and outdoor non-classroom spaces. Post-occupancy evaluation (POE) techniques were used to collect data. The research indicated that regardless of differences among schools, students want to interact with their friends during breaks. Students prefer to spend their free time at places that facilitate these interactions. This study provides a brief list of activities and places that students prefer during their free time. There is evidence suggesting that places where students prefer to spend time differ from one school to another in terms of indoors and outdoors. The research indicates that students involve in similar activities with different frequencies in schools studied and in case when students are given a choice between indoor and outdoor spaces with different degree of variety they are conscious of the difference and they tend to pick spaces which offer higher variety.

ÖZET

İZMİR'DEKİ ÖZEL İLKÖĞRETİM OKULLARINDA SINIF DIŞI MEKANLARIN DEĞERLENDİRİLMESİ: ÖĞRENCİLER ARASI ETKİLEŞİME ETKİ EDEN FAKTÖRLERİN ARAŞTIRILMASI

Bu çalışma İzmir'deki özel ilköğretim okullarındaki, öğrenciler arasında etkileşimlerin gerçekleştiği sınıf dışı mekanları incelemektedir. Öğrencilerin serbest zamanlarında tercih ettikleri sınıf dışı mekanlarda, öğrencilerin öğrenme süreçlerine katkıda bulunabilecek etkileşimler gerçekleşebilmektedir. Öğrencilerin serbest zamanlarındaki mekan ve aktivite tercihleri, okullardaki sınıf dışı mekanlara odaklanılarak araştırılmıştır. Çoklu alan çalışması metodu uygulanmıştır. Çalışılan örnekler, eğitim programlarıyla birlikte iç ve dış mekanları dikkate alınarak, İzmir'deki özel ilköğretim okulları arasından seçilmiştir. Alan çalışmalarında kullanım aşamasında değerlendirme teknikleri kullanılmıştır. Araştırma sonucunda, okullardaki farklılıklara rağmen, öğrencilerin serbest zamanlarını birbirleriyle geçirmek istedikleri belirlenmiştir. Öğrenciler serbest zamanlarını, okul içinde bu etkileşimlere olanak sağlayan mekanlarda geçirmeyi tercih ettikleri görülmüştür. Bu çalışma, ilköğretim öğrencilerin serbest zamanlarında tercih ettikleri aktivitelerin ve mekanların bir listesini sunmaktadır. Araştırma, öğrencilerin serbest zamanlarında tercih ettikleri yerlerin iç ve dış mekan bağlamında okuldan okula değiştiğini göstermiştir. Araştırma sonuçlarına göre öğrenciler her örnekte farklı sıklıklarda olmasına rağmen benzer aktiviteleri tercih etmekte ve öğrencilere farklı iç ve dış mekan seçenekleri verildiğinde, öğrencilerin bu mekanlar arasındaki farkın bilincinde olarak, daha fazla çeşitlilik sunabilen mekanı seçme eğiliminde oldukları gözlenmiştir.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

1.1. Definition of Terms

Elementary School: Defines educational facilities operating from first grade through eighth grade. In this study, the term 'elementary school' is preferred instead of the term 'primary school' which usually describes schools including only the first three or five grades and also a kindergarten.

Private Elementary School: Describes elementary schools which are fully accredited by the Ministry of National Education of Republic of Turkey and which are run and supported by private individuals or a corporation rather than by central government.

Learning: In this study, learning is viewed as "an enduring change in a person's behavior due to experience" (Le Blanc & Bearison, 2004).

Informal Learning: Describes unplanned learning experiences in anytime and anyplace. Heath (1991) defines "informal learning" as a mode of learning "...that takes place without the specific designation of teacher and student and outside the framework of a curriculum" (p.102).

Interaction: In this study, the term 'interaction' describes "reciprocal" events as they are defined by Wagner (1994). Wagner defines reciprocal events as requiring:

> **…at least two objects and two actions. Interactions occur when these objects and events mutually influence one another. An instructional interaction is an event that takes place between a learner and the learner's environment. Its purpose is to respond to the learner in a way intended to change his or her behavior toward an educational goal (p.8).**

Non-Classroom Spaces: Includes indoor and outdoor spaces of school buildings other than classrooms, laboratories and other spaces where programmed learning activities occur. For example entrance halls, cafeterias, corridors, gardens, and playgrounds are

places which are considered as non-classroom spaces. In non-classroom spaces social interactions between students and teachers occur through un-programmed activities.

Social spaces: The term "social place" is used in the same way as defined by Lackney (1996): "…places within the school building [which] provide opportunities for meaningful social exchange and interaction" (p.137).

1.2. Problem Statement

Interactions among students taking place outside of classrooms are considered as a secondary issue in the educational research literature. Boulton-Lewis et al. (2000) stress that most research in educational studies has focused only on formal learning situations and argue that formal learning processes which take place in classroom settings cannot be considered as the only medium of learning at schools. Gorard (1999) voices a similar concern by stating that "there has been little empirical research into learning which does not take the form of institutionalized, accredited participation in formal education" (p.437).

Since the early schoolhouse, the classroom is accepted to be the main place where academic learning takes place. As Butin (2000) summarizes the general interest of researchers on the subject has been particularly on classroom settings. In the modern history of school education, the design of classrooms had been reexamined over and over again in the light of emerging approaches. Butin (2000) mentions that "the educational reformers have tinkered with classroom design throughout the history of public education". The attention on classrooms overshadowed the important role of non-classroom spaces where informal interactions occur. In contrast, there have been fewer attempts at conceiving the whole school building as a learning place. The spaces of school facilities other than classrooms, laboratories and other places where programmed learning activities occur are viewed as secondary spaces having no designated function related to learning. In the example of public schooling in Turkey, insufficient attention on these non-classroom spaces can be observed in most public elementary schools which are, with few exceptions, the same with their repetitive plan of self-contained classrooms organized along a corridor.

This study's focus is on interactions among students and spaces inside or outside elementary school buildings and it aims to investigate the use of non-classroom spaces and their attributes in elementary schools in the way they encourage or discourage student interaction. The study tries to answer the following question:

Do the designs of indoor and outdoor spaces of existing elementary schools facilitate interactions among students?

This study is based on the vision that learning processes should extend beyond predominantly formal situations. Formal learning, in this study, defines a process of learning following a planned curriculum in the traditional setting of a classroom with planned interactions between a teacher and a group of students. It also describes and emphasizes an educational system in which students are passively engaged with tasks structured by a teacher. This study claims that informal interactions among students and between student and teacher outside of regular class hours and outside of classroom boundaries are important for learning and for child development. In contrast to the static and formal learning environments of traditional education which is exemplified in the factory model of education (Çağlar, 1999; Leland & Kasten, 2002; Serafini, 2002), there is a growing body of literature that stresses the role of collaborative and interactive models in learning (Caparos, Cetera, Ogden, & Rossett, 2002; Le Blanc & Bearison, 2004; Wathen & Resnick, 1997) and informal interactions among students (Vygotsky, 1978; Wilkinson & Fung, 2002).

In contrast to research which focuses on formal learning experiences, recent educational approaches emphasize the effect of social and extra-curricular activities on learning and development processes of the children. The major change in educational approaches is a shift of focus from "teaching" to "learning" (Petraglia, 1998), in other words from teacher to student. This shift can also be characterized as a change from conventional methods, which presuppose an absolute and objective body of knowledge to be transferred to learners, to new methods, e.g., "constructivism," which assumes each individual as unique in the way they learn and in what they learn. Contemporary approaches support the shift from classroom-based and teacher-centered teaching models to "patterns that include a great deal of student-student interaction" (Good & Brophy, 1994).

'Learning' is perceived and described in different ways in educational literature (Eraut, 1997; Le Blanc & Bearison, 2004). In this study, the term "learning" denotes "rather the ability to construct knowledge in meaningful ways for a particular purpose or for a solution to a problem" (Sanoff, 2000). The term "informal learning" is used to describe unplanned learning experiences in anytime and anyplace which could be mediated through informal interactions. Heath (1991) defines "informal learning" as a mode of learning "...that takes place without the specific designation of teacher and student and outside the framework of a curriculum"(p.102). Adams (1993) defines "informal learning" emphasizing the social aspect of the term as follows:

> **Informal learning is more likely to happen in social situations outside of lesson time, when pupils are hanging around, forming social groups, organising each other, eating, talking, observing, wondering what to do, where to go, investigating something that takes their interest, planning, interacting with people and place (p.120-121).**

Markus (1993) details the key elements of the institutionalized, centralized and hierarchical school of the early industrial society, which is the precursor of traditional learning methods that confines learning to classroom settings. According to Markus these elements, i.e., surveillance, discipline, silence, productive work, and hierarchy, were the main pillars of the education in the early industrial society. He calls the new school of the industrial revolution as the "factory model" of education in which instructions given by teachers shape the entire character of the student and this activity of instruction takes place solely in the strict setting of the classroom. Sanoff (1994) argues that "the factory metaphor supports the argument that principals should be viewed as managers, teachers as workers and students as products to be shaped and manipulated". Today, we can still observe the "factory model" that is embedded in our schools (Lackney, 2001), even though new methods of teaching and learning have been developed and practiced apart from learning from teachers and reading books.

Formal education is under the pressure of developing information technologies as well. Aittola (1999) stresses the growing interest in informal learning environments as a result of new information technologies and claims that "…formal education has lost its monopoly over learning and acquisition of new knowledge" (p.3). Aittola's (1999) criticisms on contemporary formal education approaches emphasizes the need for a change for a more flexible system that "regards learning as an elementary part of everyday life, social interaction and action competencies" (p.3).

What are school facilities' responses to the above mentioned transformations in the field of education? As it is the case for research in education, research in school environments requires a focus on interactions among students and non-classroom spaces where informal encounters occur.

Different from the traditional methods, the contemporary learning and teaching strategies support the innovative use of time, relationships and activities. Consequently, the definition of learning environment has recently expended to describe 'anywhere, anyplace, anytime' (Anstrand & Kirkbride, 2002). Anstrand and Kirkbride define the learning environment as a setting which consists of "relationships, activities and time" and thus "the learning environment can no longer be described by a set of classroom square footage minimums and maximums" (Anstrand & Kirkbride, 2002). The learning environment should not be the hierarchical and static settings of classrooms, where the didactic methods are predominantly in use. The entire school facility, including circulation spaces, halls, atriums, multi-purpose areas, outdoor and indoor spaces must be designed to meet individual learning styles and to serve as a learning environment which is supportive of interactions among students.

Sanoff (1994) emphasizes the need for "responsive schools," where students and teachers would be engaged in different learning activities in and out of the classroom. Sanoff's proposal of responsive schools is an answer to changes in educational theories. Tanner (2000) underlines the importance of the quality of school environment in learning also. He states that "students' interactions with physical settings often become their primary medium for learning" (p.313). However, he adds that the standards in the way schools are planned, designed and built are still not satisfactory and regardless of technological changes and curriculum innovations "the public school architectural design is tied firmly to past and outdated practices" (p.309).

The tendency of change in educational practices, roughly from class-lecturing to interactive and collaborative models, requires a shift in the way how we design and research the school environment. The educational research literature offers much on the innovative models of teaching and learning but not much on the design of learning environments other than classroom settings. The trajectory of classroom design throughout the century has been examined in detail; however, research in learning environments has not sufficiently investigated the whole school environment as a learning place. In a recent study, Pasalar (2003) focuses on schools as a spatial organization, as a social organization, and as a set of interactive interfaces for social and

5

educational activities, by analyzing four case studies with different spatial layouts. Major consideration of Pasalar's research is on spatial organization of middle schools and its effects on students' behavior and interactions. She suggests that more attention should be paid to spatial relations of school buildings in respect to the students' educational and social experience while identifying spatial factors, such as higher accessibility, shorter walking distances, highly visible public spaces, that generate higher rates of interactions among students.

This study aims to evaluate non-classroom spaces of elementary school buildings where interactions among students take place, in the example of Turkish elementary education system. There seems to be insufficient opportunities for informal interactions. The lack of such interactions is also an obstacle for improved social climate that will lead to a more student friendly environment and to increased student attendance. The weakness of school connectedness[1], affects the active performances of both teachers and students and the academic outcomes.

One of the primary goals of this research is to determine the place and activity preferences of elementary school students in their free times by focusing on non-classroom spaces of school buildings. The non-classroom spaces that students prefer during their free times are important in the way they facilitate peer relationships and interactions. Therefore, activities and places can be considered as two important factors affecting the acquaintanceship among students and the awareness of others which may support incidental encounters and informal interactions. The study assumes that strong and rich interactions among students from different grades is essential to support informal learning situations among students, however, it does not try to investigate the relationship between the two.

Research into the role of non-classroom spaces in elementary school facilities is vital in the example of educational design in Turkey especially after the drastic change that Turkish elementary education system went through in the 1990s. In Turkey, the Compulsory Eight-year Education Act was declared on August 16, 1997 with the objective of combining primary and secondary schools. This comprehensive rearrangement in the structure of elementary education created significant spatial problems in school environments, which are often only formulated in terms of quantity of classrooms without much consideration about non-classroom spaces. Urgent need for

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[1] According to Bosch (2003), when "students feel cared for and feel like a part of their school" they feel more connected to their schools (p.41).

adequate number of classrooms was usually dealt with constructing annexes on playgrounds or converting social or common spaces to classrooms (Alıcıgüzel, 1999). The governmental program which is planned to meet the requirements is based upon the necessary number of classrooms without taking the social and common (non-classroom) spaces into consideration. In her study which researches the planning problems at elementary schools in particular districts in İzmir, Alıcıgüzel (1999) describes the condition of elementary schools right after the regulations as follows:

> **In primary schools, new annexes' and classrooms' construction was started very quickly to meet the urgent requirements. Nevertheless, construction of the annexes has decreased the standards of plot and open area. Besides, at some primary schools, labs and activity rooms have been converted to classrooms. Therefore primary schools have turned out to be inadequate spaces in terms of plot, open area and activity rooms. (p.2)**

Şen and Tokay (1998) also criticize the three procedures (which are additional floors to existing structures, additional annexes to existing buildings and new school buildings) to obtain the necessary number of classrooms as inadequate. These additional structures often occupied the common spaces in existing buildings which were already insufficient. Şen and Tokay (1998) conclude by emphasizing the need for focusing on spatial quality of learning environments, the activities take place in there and the role of spatial organizations in supporting the educational goals.

This study focuses on and investigates the non-classroom spaces of private elementary schools in İzmir. In Chapter 2, the literature review on contemporary educational approaches that underlines relationships and interactions among peers as important is summarized. The constructivist approach is mentioned with an emphasis on Vygotsky's theory of 'Zone of Proximal Development'. Chapter 2 also includes a review of architectural literature that focuses on educational spaces. In Chapter 3, the methodology of the research and the data collection tools are explained and the three case study schools of this research are described. Chapter 4 presents the results of the field studies in three schools together with the photographs taken during visits. Chapter 4 also provides a discussion on research questions presented in Chapter 1 and on both indoor and outdoor non-classroom environments of three case studies. Chapter 5 summarizes the research and concludes the study with further research recommendations.

1.3. Research Questions

The specific research question of this study is:

Do the designs of indoor and outdoor spaces of existing elementary schools facilitate interactions among students?

The specific sub-problems addressed in this study include following questions:

1. Do students want to interact with each other in their free time? Does it change from one school to another?
2. Do the schools studied provide spaces for children to interact with each other?
3. Where do students prefer to spend their free time in the studied private elementary schools?
4. What are the activities that take place in spaces of studied private elementary schools where students prefer to spend their free time?
5. Does the spatial organization of the school building affect students' interaction?
6. Do the spaces preferred by students in their free time change from one school to another?
7. Do the activities that take place in spaces where students prefer to spend their free time change from one school to another?

CHAPTER 2

LITERATURE REVIEW

Chapter 2 introduces the main arguments from the educational research and school design research literature. The concepts brought up in Chapter 1 will be detailed in the context of the discussions in educational research about traditional and new methods of learning and new developments in school design. The review of the research in the area highlights the value of peer interactions among students in learning, i.e., informal learning as it is defined in this study, and why informal interactions and relationships should be a primary consideration in school design.

The results and research from school design literature support the assumption that social interactions are one of the major sources of development in learning. Following constructivist views of learning, it is clear that education should entail more opportunities for interactions between student and teacher or student and student. The zone of proximal development model of Vygotsky and constructivist approach to learning emphasizes the social aspects of learning. Notwithstanding the developments in learning theories, there is yet significant amount of research left to be done to understand how school design influences learning. The crucial issue in school design is the need for learning environments that support and maximize peer interactions. The traditional settings of schools with its focus on classroom seem to be insufficient for these purposes.

2.1. Studies in Educational Research

2.1.1. Traditional Methods and Theories of Education

The term 'traditional method' in this study refers to a model of education that has its roots in the schools of industrial revolution. Markus (1993) defines the school of industrial revolution as the place where the "modern ways of forming character were invented" (p. 39). Markus (1993) mentions the link between means of production and

education of that age and lists the key elements of the industrial revolution school. According to Markus (1993), the inverted theatre model, discipline and hierarchy characterize the new schools of the industrialization which were described as "a response to the growth of the urban proletariat" (p.41).

The review of educational literature reveals that the school of industrial revolution had a massive impact on contemporary schools with its "factory model" of education. The key features that Markus (1993) lists (perfect visibility of surveillance, discipline, silence and hierarchy) had became typical elements of traditional methods of education. The factory model of traditional education can still be observed in schools today although the new methods of teaching and learning were developed and practiced by educators throughout the twentieth century (Lackney, 2001; Serafini, 2002).

The teacher or the instructor plays the dominant role in traditional methods of education. The students sitting in rows of desks in the strict and hierarchical setting of the classroom pay attention to the instructor without any active participation. The model of teacher oriented instruction shapes the entire character of the student and this activity of instruction takes place solely in the bounded setting of the classroom. In educational literature this model of teaching is generally called as the "factory model" in which the classroom is seen as an assembly line, the teachers as workers and the students as products to be shaped (Sanoff, 1994). Similarly, Serafini (2002) denotes that in the educational model of the 1900s ,"the child was thought of as a piece of raw material to be shaped by the educational factory into a quality product" (p.68).

Leland and Kasten (2002) examines the historical and theoretical foundations of the factory model of education in the United States. According to them (2002), one of the primary goals of the public education at the turn of the last century was "to prepare young people for factory jobs that required them to perform some relatively simple task over and over again" (p.7). In this model, the instructor (production worker) has full control over the children for the sake of standardization in production. The children are presented with a uniform curriculum and "were expected to achieve the same understanding" (p.8). Leland and Kasten (2002) states that the approaches and the methods of the factory model of education is insufficient in educating the people of the twenty-first century who are expected "to be able to use knowledge flexibly in different contexts" (p.14).

The traditional method that proposes standardization of curriculum, large group instruction, and teacher-centered lectures with a blackboard in front of the classroom has persisted throughout the twentieth century.

The developments in Turkey have not been different from the rest of the world. Özden (2002) states that the essential of the current programs carrying out in schools in Turkey were shaped in 1920s and 1930s. According to him, the aim of this traditional approach is having students receive the fragments of information provided by an instructor or a teacher. Erdoğan (2005) also stresses the influences of traditional approaches on contemporary curricula in Turkey. He states that the contemporary schools are still operated as the factories of the past decades were.

In the beginning of the twentieth century, the criticisms of John Dewey against traditional methods and his proposal for progressive educational methods influenced educators. Dewey's proposal of progressivism "replaced the idea of the student as a passive sponge soaking up knowledge to one of creative participation and learning by doing" (McMillin, 1994). Dewey (1938) accused traditional education for being imposed on students from the outside and from above. Contrary to progressive education, traditional system relies for its methods of instruction and discipline on things handed down from the past and the aim of the school is to transmit them to new generations. The static posture of the school prevents active participation of learners. Self-development of the individual, free activity, and learning by doing (learning through experience) are the vital concepts of the progressive educational theories and are undervalued by the traditional methods.

The traditional system of education and the progressive methods interpret the concept of 'experience' differently. Experience gained in the traditional classroom may affect the child's enthusiasm to learn. In Dewey's words (1938) fixed actions and static roles of instructors and learners often cause "mis-educative" experiences, an obstacle to further personal experience for learning. The proposal of Dewey and the progressivist view is to provide students a lifetime appreciation and a better environment for natural development (Dewey, 1938). Here, the major argument emphasizes the quality of student's experience in education that supports the whole development of the interactive learners. Learning lies under the responds, reactions, and experiences of the child to knowledge.

Recently, however, there have been new trajectories of education both in the world and in Turkey. The change in the educational approaches can be summarized

with the shift from 'teaching' to 'learning' and from 'teacher' to 'student'. The new methods of education emphasize the influence of active participation of the learner individually or with a peer group collaborating together. The contemporary educational literature uses the terms 'participation' and 'experience' in explaining the new methods of teaching and learning (Le Blanc & Bearison, 2004).

In the scope of this study, it is crucial to state the differences between traditional education methods and new approaches such as constructivism which provides the theoretical background of this study with its emphasis on student-centered learning. It is necessary to understand the differences between the participative and active nature of new educational methods and the passive structure of the traditional system to evaluate the relations, the actions and the social structure within the schools of today.

2.1.2. Constructivism and Peer Relationships

Constructivist approach to learning offers methods and tools of education that are different from traditional methods of teaching and learning and it supports a more interactive learning environment. Petraglia (1998) defines constructivism as a paradigm according to which learners construct knowledge based on cultural assumptions and prior experiences rather than through efficient and rational calculation of the information. Ziegler and Yan (2001) also emphasize the learner-centered aspect of constructivist practices in contrast with traditional methods.

Constructivist approach to education has similarities with John Dewey's progressivist view. In Petraglia's (1998) words, "constructivists drawing inspiration from Vygotsky and Dewey have always argued that learners must be active participants in the learning process for they are the only ones who experience the activities that provide the grist for construction" (p.135). The constructivist view defines learning as a constructive process in which the learner builds an internal representation of knowledge, a personal interpretation of experience (Duffy & Jonassen, 1992). Again, 'experience' is in the center of discussion. Cunningham (1992) describes constructivism as follows:

> **Constructivism holds that learning is a process of building up structures of experience. Learners do not transfer knowledge from the external world into their memories; rather they create interpretations of the world based upon their past experiences and their interactions in the world... (p. 36)**

The theories of Vygotsky including the conscious breakdown of traditional barriers among types of learning became the main concern of educators (Petraglia, 1998). Vygotsky's emphasis was on the specifics of the social environment where human learning occurs. According to him, the interaction between the child and individuals in his/her environment provide the major source of child development (Vygotsky, 1978).

According to Vygotsky, every step in child's development appears initially at the social level. Vygotsky sets his model of zone of proximal development (ZPD) on the basis that knowledge is socially constructed (Le Blanc & Bearison, 2004). This model proposes the existence of a cognitive zone in which children can work with the assistance of an adult or with more competent peers to perform tasks that they can go on to perform independently (Le Blanc & Bearison, 2004; Petraglia, 1998; Vygotsky, 1978). Vygotsky (1978) presents the zone of proximal development as the essential feature of learning:

> **We propose that an essential feature of learning is that it creates the zone of proximal development; that is, learning awakens a variety of internal development processes that are able to operate only when a child is interacting with people in his environment and in cooperation with his peers (p.90).**

Vygotsky separates the zone of proximal development level from the child's actual development level which he defines as the level of development of a child's mental functions that has been established as a result of already completed developmental cycles. The zone of proximal development refers to "distance between the actual development level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (Vygotsky, 1978). Briefly, Vygotsky proposes that the child can solve problems or complete tasks independently that has been standardized for his/her actual developmental level while by the zone of proximal development level the child is able to deal with further problems or tasks.

By the zone of proximal development the child solves advanced problems with the assistance of experienced partner. This partner may be the related teacher or sometimes may be an upper grade student in a cooperative group activity. This approach to learning calls for substantial amount of social interaction in a learning environment.

There is a growing body of research in educational literature that emphasizes the value of peer relationships and social interactions in learning environments. Wilkinson and Fung (2002) review the aspect of grouping of students in classrooms and its effects on learning. The advantages of cooperative groups in classrooms are two fold. It allows teachers to "use peer resources to support learning" (p.425) and "reduce demand on teachers' time" (p.426). The analysis of Wilkinson and Fung (2002) show that forming groups for instruction has a meaningful advantage as compared to teacher-led whole class instruction. Parr and Townsend (2002) elaborates on peer relationships that take place both in "configured environments" and in informal "ambient" environments. They present a two-layered model which associates the peer learning environments (formal and informal settings) with the learning mechanisms and processes. They argue that the influence of both "ambient" and "tutorially configured" environments is exerted directly on learning. Parr and Townsend (2002) state "…that social influences are significant and that peer interactions in pairs and small groups are an important factor in learning" (p.403). Williams and Sheridan (2006) claim that interaction among students and collaboration are 'fundamental to their learning' (p.87). They claim that "collaboration in educational settings is an important factor in intellectual achievement, but also in interaction and negotiation, which stimulate equality-oriented social relations between peers" (p.91).

The review of the educational literature supports the assumption of this study by emphasizing the social nature of learning and the need to enhance interactions and relationships among students throughout the school environment both in the classrooms and outside the classrooms.

2.2. Studies in School Design

2.2.1. Educational Design

School design could potentially have advantageous or disadvantageous impact on learning or could support particular approaches of education through space planning. This section will introduce the current debate in school design in relation to the new developments in educational theories. It will especially discuss the evaluation and

performance of learning environments, i.e., elementary schools, from a constructivist point of view which emphasizes peer interaction in the learning process.

Contemporary theories on learning processes such as constructivism mentioned above, emphasizes the view that places the student in the center of interest. The main concern of some educators today is to reveal the learning processes and the cognitive development of the child rather than methods based on knowledge transmission. The interactions that children have with their physical and social environments are accepted as the main source of cognitive development by theorists such as Piaget and Vygotsky. Both theorists stressed the roles of society, culture and institutions in child development (Matusov & Hayes, 2000).

There are studies in literature that mention the value of design characteristics of learning environments (Bradley, 1996; Earthman & Lemasters, 1998; Shrader-Harvey & Droge, 2002; Tanner, 2000; Yarbrough, 2001). These studies investigate the effects of educational facilities on student achievement and conclude by stressing the vital role of environment on student learning. For example, Yarbrough (2001) challenges the view that considers educational facilities only as containers in which learning occurs. Yarbrough (2001) suggests that we should conceive the educational facilities as tools that influence learning.

The breakdown from traditional approaches in learning affects the definition of 'learning environments' as well. The boundaries of the traditional classroom setting, designed according to traditional views of education, are inadequate for a learning approach which emphasizes the role of peer interaction in learning. Contrary to views that limit learning within the walls of the classroom, the learning environment in this study is described as "anywhere, anyplace, anytime" (Anstrand & Kirkbride, 2002). Anstrand and Kirkbride (2002) define learning environments in terms of "relationships, activities, and time". Here, "relationships" refers to the vital interaction between teacher and student, student and student rather than the formal relationship between teacher and student. The main assumption is that the entire school facility must serve as a learning environment that supports informal interactions among students.

2.2.2. Facility Affects Learning

It is primary for designers and researchers to understand how school facilities affect students and other building occupants. According to Maxwell (1999), "a good deal of attention has been given to the question of whether a student's learning and academic performance is affected by the condition of the school facilities and other physical environmental attributes". Referring to physical provisions, Sanoff (1994) states that, "both the quality of student life and the quality of education are directly affected by the quality of the school environment".

In general, classroom is perceived as the major component of the school facility therefore research on educational methods and educational facilities focus mainly on the operations in the classroom and the features of classrooms. There is also a growing body of literature which correlates learning with physical setting of the classroom. Sanoff (1994) summarizes the body of evidence about how the classroom environment affects many attitudes and behaviors of students that may eventually result in improved achievement. According to Butin (2000), design of the classroom clearly states how education is perceived in a learning environment. He reports the key issues and principles of classroom design referring to the different contemporary views. Butin (2000) stresses the vital role of flexibility and adaptability of classrooms to accommodate various activities in contrast to the row of desks of the traditional methods.

Hastings and Wood (2002) provide suggestions and resources to plan and evaluate effective ways of using classrooms to support learning. One of their arguments is that the organization of classroom should reflect the methods and strategies such as large or small group collaboration or individual study. Hastings and Wood present the results of their study on different seating arrangements in classrooms to illustrate how physical context provides opportunities for collaborative learning. They also mention that group seating "encourages collaboration and supports the interactions and discussions through which learning happens" (Hastings & Wood, 2002). Chan's (1996) characterization of the inherent nature of the traditional classroom setting runs along with the argument of this study:

> **The traditional classroom setting was based on lecturing and question-answer types of activities in the classroom. Student interactions, often considered by traditionalists as disruptions to classroom order, were not encouraged. Even the furniture layout of the old**

classroom setting was designed in such a way that the students were made to face the instructor so that the student could pay him/her best attention. However, in modern instructional approach, besides classroom lecturing, student feedbacks and interactions are very much favored (p.9).

According to Lackney (1996), "the majority of literature emphasizes the prime importance of the classroom setting" (p.19), however educators advocate that learning can happen anywhere. In a number of studies Earthman et al. (Earthman, 1995; Earthman & Lemasters, 1998) focused on the relationship between student achievement, behavior and school facilities. Their review of the literature supports the hypothesis that a positive relationship exists between achievement of students and condition of the schoolhouse. Earthman and Lemasters (1998) report that studies suggest that students' academic scores were higher when the school facilities' variables (building age, lighting, heat, windows, etc.) were rated above standards.

Yarbrough (2001) tries to determine the influence of school design on academic achievement in elementary schools. A list of variables describing design features such as architectural layout, group spaces, color, scale of building, day lighting, and location of school site were used for evaluation. As a result Yarbrough concludes that design does influence student learning. She found that students perform better academically in newer schools. According to her results, the following spatial features influence student learning: movement, architectural design, daylight and views, color scheme and location, instructional neighborhoods, outside learning areas, and instructional laboratories (Yarbrough, 2001).

Schneider (2002) summarizes the growing body of research on the physical attributes of educational facilities that affect teaching and learning. He concludes that the substandard attributes of school facilities (indoor air quality, ventilation and thermal comfort, lighting, acoustics, building age and quality, school size and class size…) affects students' and academic staff' performance negatively. Schneider also states the need for more research for more definitive findings (Schneider, 2002).

Tanner's (2000) study correlates students' academic achievements (scores on the Iowa Test of Basic Skills) with characteristics of school buildings. He states that students attending schools with "clearly defined pathways", "positive outdoor spaces", "computers for teachers", and "positive overall impression" features were rated above average score higher on the ITBS.

The growing body of interdisciplinary research on school facilities that shows links between physical conditions and designs of learning environments and academic

achievement of students. Most studies on learning environments focus on classroom environments where students spend most of their time, there are, however, fewer studies in this area (Tanner, 2000; Yarbrough, 2001) investigating entire school facilities' effect on student learning. This research argues that spatial organization of school, including indoor and outdoor non-classroom spaces, are no less important than classroom spaces and the entire school facility should be viewed as an active agent contributing student learning and development.

CHAPTER 3

RESEARCH DESIGN

3.1. Methodology

3.1.1. Method

The methodology used in this study is multiple case study method. According to Yin (1989), "a case study is an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident" (p.13). Multiple case study method is especially useful when it is necessary to generalize beyond the local contexts of individual cases (Lackney, 1996; Yin, 1989).

3.1.2. The Case Study Selection

Three private elementary schools were selected to investigate the research questions in the research design phase after a preliminary inquiry of possible private elementary schools in İzmir.

The selection of private schools for this research is based on two diagnoses on public elementary schools. The public elementary schools in Turkey operate in (1) *standardized building types* (similar buildings with typical plan layouts) with (2) *standardized curriculums*. In the example of Turkey, private schools have the opportunity to provide diverse learning environments supporting the active learning strategies while public schools are still struggling with inadequate number of classrooms. The curriculum offered in private schools is mostly reinforced with extra-curricular activities that cannot be practiced in public schools due to spatial problems. The teachers in private elementary schools have flexibility to influence and update the curriculums. Private schools, therefore, constitute more appropriate cases for this study.

The selected private elementary schools are Deniz Elementary School, Fatih Elementary School and Işıkkent Elementary School[2]. The cases were selected among private elementary schools in İzmir based on their educational programs and based on their characteristics of indoor and outdoor non-classroom spaces: Deniz ES for its emphasis on the use of outdoor spaces, Fatih ES for its emphasis on the use of indoor spaces and Işıkkent ES for its emphasis on both indoor and outdoor spaces. The differences in the spatial characteristics provide an opportunity to compare the use of indoor and outdoor non-classroom spaces. All the three schools have a student-centered active learning educational program with an objective of going beyond the premise of traditional education.

Furthermore, the schools differ according to their surroundings as well. Fatih ES is a ten-story urban school located in a densely settled residential district while the other two schools are located in relatively semi-urban areas. The campus settlement of Deniz ES, consists of one or two-storey buildings, is located away from the city center of İzmir. The campus distinguishes itself with its landscape features such as tangerine trees and olive grove. Işıkkent ES has the youngest campus among three case studies. Its contribution to this study can reveal today's approaches to elementary school design in Turkey. Also, all three schools studied in this thesis are significant schools among private elementary schools in İzmir.

A pilot case study was conducted in a public elementary school prior to the study, which helped in fine-tuning the research question and data collection methods.

3.1.3. Pilot Case Study

The pilot study was conducted in April, 2005 at the Şerife Eczacıbaşı ES which is a public school located in Konak, the city center of İzmir. Initially, to the study sample was going to include only students from the second phase of elementary education (grades five, six, seven and eight), which is the second four-year period of the compulsory eight year elementary education. After the pilot case study the students from eight grades were excluded from the scope of the study due to the countrywide entrance exams to high schools which students have to pass at the end of eighth year.

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[2] Hereafter, the phrase 'Elementary School' will be abbreviated as 'ES'.

The questionnaire was conducted only with students from grade five, six and seven in the selected case studies.

At the research design phase only informal interviews with school principals was planned to be conducted. After conducting the pilot case study, it was decided to include the observations and opinions of teaching staff as well. It is observed that the teaching staff, particularly the experienced ones, has direct observations and more definite expressions on students' favorite spaces in schools and activities that take place there when compared to principals.

The activity observation and space assessment sheets were reviewed after the pilot case study. The activity observation forms were reshaped to a table which made it easier to record the students in case studies while the items in space assessment forms to be checked were listed in six groups which are (1) accessibility, (2) perceptibility, (3) Patterns of use, (4) circulation, (5) physical features and (6) furniture.

3.1.4. Instruments of the Study

The tools that are used to collect data for this study depends mostly on Post-occupancy evaluation (POE) technique theorized by Friedman, Zimring and Zube (1978). POE is generally used to systematically evaluate a facility after it has been occupied by its occupants (Friedman et al., 1978). Sanoff (2000) describes POE as "a short-term process that seeks to identify major successes and failures" in buildings. According to Sanoff (2000), a POE study can be conducted at any type or size of school facility. He also adds that "the type of POE utilized for a particular situation is a function of the amount of time available, the resources, and the depth of knowledge necessary" (p.6).

In this study, the data collection process includes five main parts conducted with different techniques to confirm and contrast the results: (1) The space assessment and activity observation forms which were recorded by the researcher at designated places and times, (2) questionnaires with students, (3) interviews with both students and teachers and (4) walk-throughs with teachers who were also acting as school facility managers. In addition to these tools of data collection, the researcher simultaneously took (5) photographs and conducted spatial analysis of the school buildings to develop a rich description of the case studies.

3.1.5. Procedure

The questionnaire (see Appendix A, Appendix A', Appendix A") was conducted under the supervision of the researcher and responsible teacher of that classroom (Figure 1). The questionnaire has thirty-two questions including two open-ended questions which ask for descriptions for the participants' favorite places in school premises. The questionnaire was designed to investigate issues such as preference of space usage during breaks, acquaintance/socialization among students, student activities during breaks, occupants' space evaluation, and student requests to determine the relationship between the students and the indoor and outdoor spaces of the facility. The questionnaire was conducted with 173 students during the visits to three schools.

In the discussion section, the percentages of answers of students in three schools will be discussed in terms of the significant differences among case studies. Furthermore a probe statistical analysis is conducted on the answers to the student questionnaire. Chi-Square test, a non-parametric statistical analysis test, is used in investigating the students' answers to the questionnaire in three case studies. Here, the questions will be tested separately regarding to the relative differences of the expected and the observed sample. It is asserted that there is a meaningful difference between the expected and the observed sample for the questions having Chi-square test results with p-values smaller than $p < 0.05$.

Figure 1. The questionnaire was conducted under the supervision of the researcher and responsible teacher of that classroom. Photo taken while students from sixth grade at Deniz ES were taken the questionnaire[3].

During the visits to each school, at least three professors participated to recorded interviews which took five to seven minutes each. Other than these recorded interviews, at least three professors at each school were interviewed informally during these visits. There are three common questions which were asked to each participating professors:

"Where do the students spend their breaks in your school, and with whom?"

"What do the students do during breaks?" (Participant professors' observations were asked)

The unstructured oral interviews with students were recorded during mid-day breaks of each school. It took approximately three to four minutes for each student to

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[3] All the photographs and architectural drawings are obtained by the researcher unless it is cited.

answer the interviewer's questions. Twenty-two students from three schools attending various grades were interviewed. There are three common questions which were asked to each participating student:

"Where do you spend your time during breaks, and with whom?"

"Could you tell us what do you do in breaks?"

"Is there anything else you want in your school?"

The purpose for preparing the space assessment forms (see Appendix B) and activity observation forms (see Appendix C) was to record the physical conditions of the designated spaces within the school and make a list of the variety of activities that take place there during breaks.

The space assessment forms, which consist of four main parts, were recorded mostly in class hours in which the non-classroom spaces of the school facilities are seldom used. Educational facilities assessment forms developed by Sanoff (2000) and Lackney (1999) were used to prepare the space assessment forms and a checklist is developed regarding the assessment items. The following items were separately recorded in the space assessment form: (1) accessibility, (2) perceptibility, (3) Patterns of use, (4) circulation, (5) physical features, (6) furniture and the field notes.

During visits to schools, the stationary observations were conducted at the outdoor spaces of each case study while the non-stationary activity observations were recorded wandering through the indoor spaces of school facilities during breaks. Lackney (1996) mentions the difficulty in conducting unobtrusive observations in schools "due to the nature of the school with dozens of eyes on the researcher" (p.104). During this study, the students were interested in the process and frequently asked questions about the research particularly during the non-stationary observations. This intervention of students were not an obstacle to the observation process, but considered as an opportunity for conversations with the students (occupants) of that school to gain more definite field notes.

Activity observation processes in schools were conducted in three different days for each case study, one of which was required to be a rainy day. On the first day of the visits to each facility, walk-throughs were arranged with the principal or vice principal of that school. These walk-throughs can be considered as an introduction of the facility

to the researcher. Also these tours provided direct data with the occupants' expressions and descriptions on his or her environment.

The diverse research tools mentioned above are used to address the problem from different perspectives. Since the nature of the problem is very complex, data collected through different methods is verified through triangulation.

3.1.6. Limitations and Assumptions of the Study

This study is limited to three private elementary schools located in İzmir. The variables which Lackney (1996) mentioned in his study (socio-economic factors, organizational structure…), were assumed equal in the three case studies because students who attend private schools in Turkey usually are members of families with high income. The organizational structures and educational priorities of private schools do vary not much and the factors related to these issues can be considered homogeneous as well since the private schools are audited by the Ministry of National Education of Republic of Turkey. Also, the curriculum and teaching resources of selected private elementary schools are assumed to be similar to each other.

The limitations of this study are:
a. Three private elementary schools in İzmir which have been operating at least for eight years were included in this study.
b. The sample population of students who participated to the student questionnaire was the 5th, 6th and 7th grade students of the selected case studies.

The assumptions of this study are:
a. Socio-economic factors and organizational structures of selected elementary schools are assumed to be similar.
b. Curriculum and teaching resources of selected elementary schools are assumed to be similar.

3.2. Case Study Profiles

3.2.1. Deniz Elementary School

Figure 2. General view of Deniz ES Campus (*Deniz Koleji web site*, 2005).

Building Description:

Construction date	: 1992-1997
Building area	: 6600 sq m
Total site area	: 35,000 sq m
Floor plan layout	: Self-contained classrooms
Building area per student	: 14 sq m (for elementary school section)
Garden area per student	: 90 sq m

Program Description:

Organization	: Kindergarten through 12th grade
Student Population	: 300
Student Teacher Ratio	: 8 : 1
Educational Program	: Active Learning

Deniz ES is a private school located 25 kilometers away from the city center of İzmir (Figure 2). The neighborhood in which the campus is settled can be regarded as a rural area. The oldest building, now used for administration, was built in 1992. The buildings for cafeteria, elementary school and high school were built during a period of four years from 1992 to 1996. Finally, the covered gymnasium was built in 1997. The campus site (Figure 3) is bounded by a creek to west, a highway to east and private properties to north and south. These private properties around the campus are mostly either agricultural land or low-density residence areas with well-cared gardens. There is, therefore, no significant relationship between the campus life and its close vicinity.
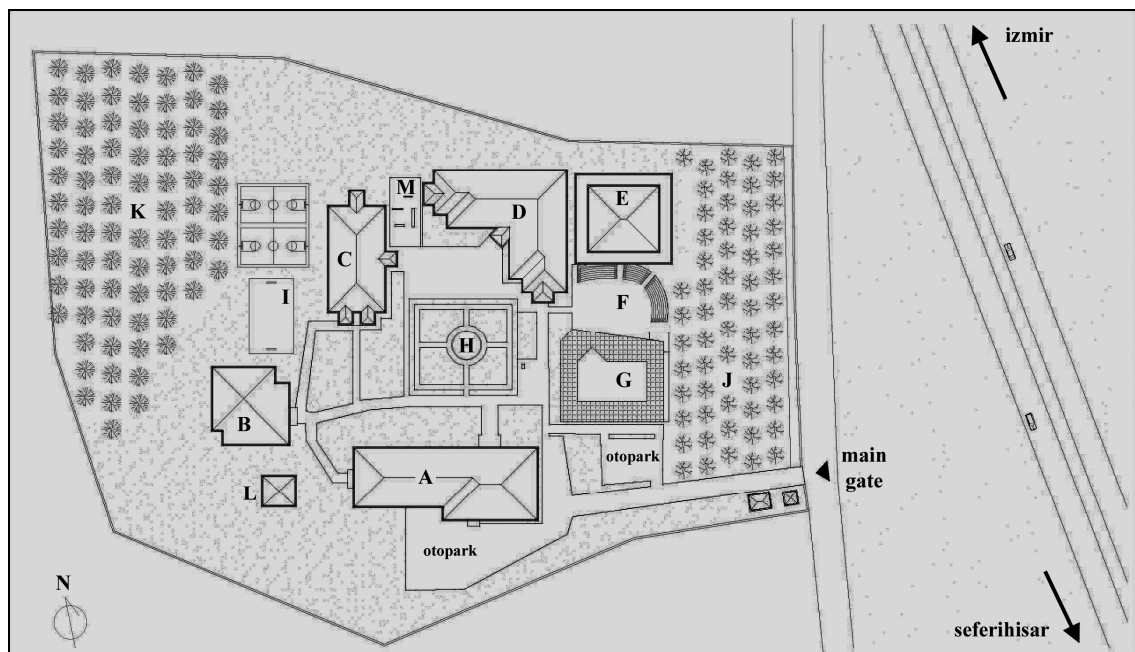
Figure 3. Deniz ES Site Plan. A-Administrative building, B-Cafeteria, C-Elementary school building, D-High school building, E-Gymnasium, F-Amphitheater, G-Swimming pool, H-Pond, I-Outdoor sports courts, J- Olive trees, K-Tangerine trees, L-Technical building, M- Playground.

The campus, surrounded by a brick wall of two meters high, provides a safe environment for 300 students. The buildings are organized around a garden including a pond and a swimming pool. There is also an amphitheater next to the gymnasium where the ceremonies take place. With its animals wandering around freely and various kinds of green elements, the garden (Figure 4) can be considered as the primary characteristic of Deniz ES.

Figure 4. Panoramic view of the garden of Deniz ES.

Building A, which contains the administration services, is the oldest construction on the campus (Figure 5). Classrooms for sixth, seventh and eighth grades, art room, computer room, science laboratory, video room are also in this building. There are two entrances for students, one from the garden side and one from the cafeteria side, and a separate entrance from south for administrative offices. The entrance hall facing the garden is a two-story high space used as a multi-purpose hall and exhibition space for student works. Other than the gallery space of the entrance hall, the plan scheme is a typical plan with a double-loaded corridor.
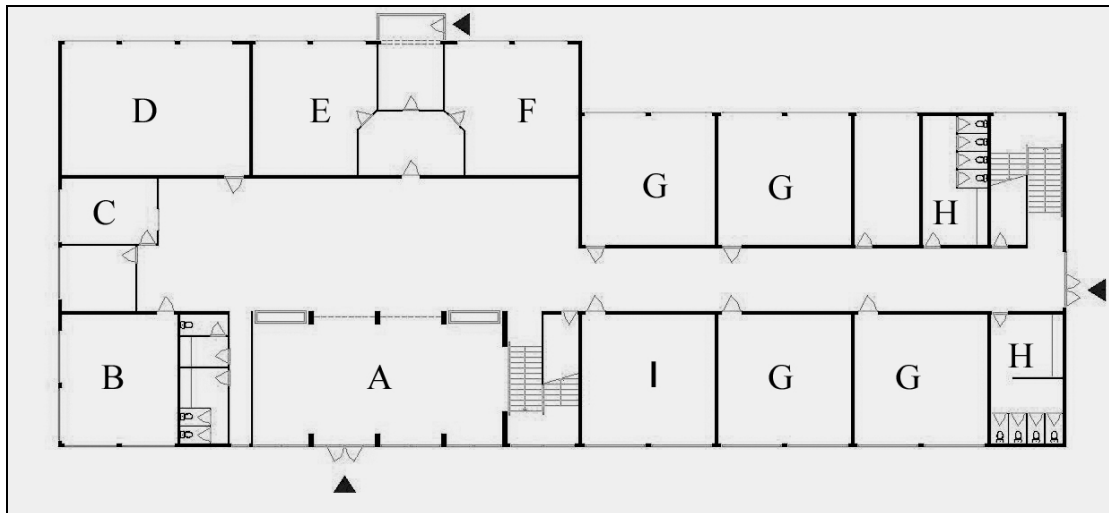
Figure 5. Ground floor plan of administration building (Building A) of Deniz ES. A-Entrance hall, B-Teachers' lounge, C-Administrative offices, D-Science Lab., E-Meeting room, F-Principal's office, G-Classrooms, H-WC, I-Computer Lab.

The one-story cafeteria (Building B) is constructed with the administration building in 1992. The dining hall, the kitchen and fast-food facility are in this building. The dining hall is also used as a multi-purpose hall where students practice their

theatrical presentations and dance performances. During break hours, students of higher grades hang around the shop inside Building B.

The kindergarten and the grades from 1 through 5, share the same building (Building C), located north of cafeteria. Infirmary, art room, kindergarten and classroom for first grade are on the first floor (Figure 6). Classrooms for second, third, fourth, fifth and sixth grade are on the upper floor. Again, there is a corridor loaded with classrooms on both sides, but on mid-point of the ground floor the corridor is extended to both sides of the building. This cross shaped space is used for exhibitions of student works, and there is a seating place for students, facing to the outdoor basketball courts (Figure 7).
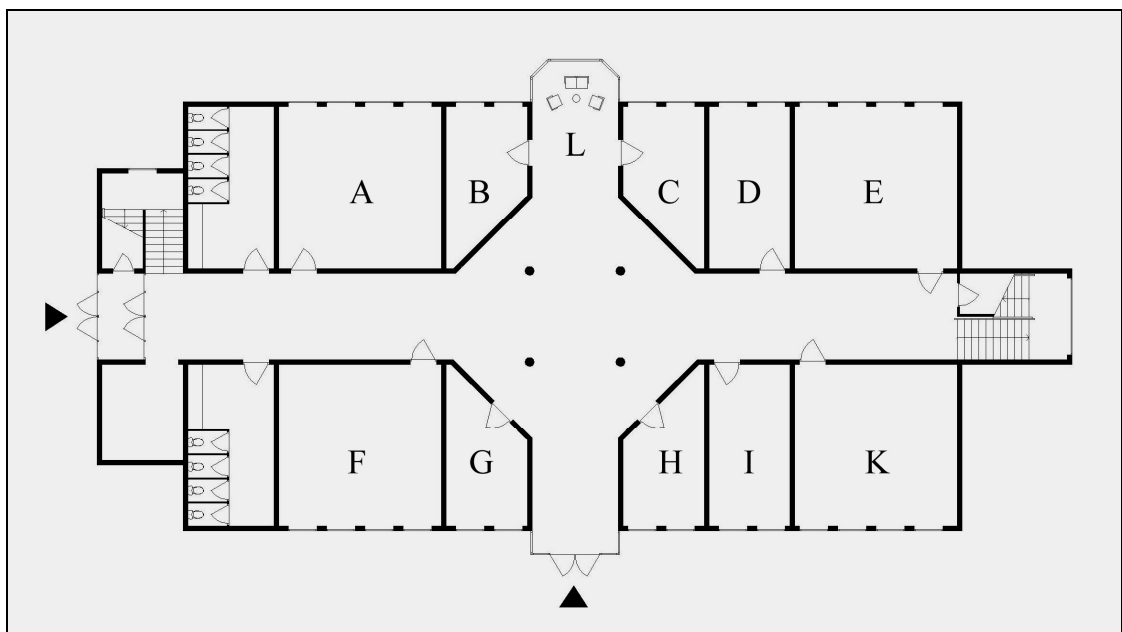
Figure 6. Ground floor plan of elementary school building (Building C) of Deniz ES. A-Teachers' lounge, B-Infirmary, C-Head of department, D-Meeting room, E-Art room, F-Kindergarten, G-Vice principal's room, H-Office of guidance counselor, I-Depot, K-Classroom, L- Seats.
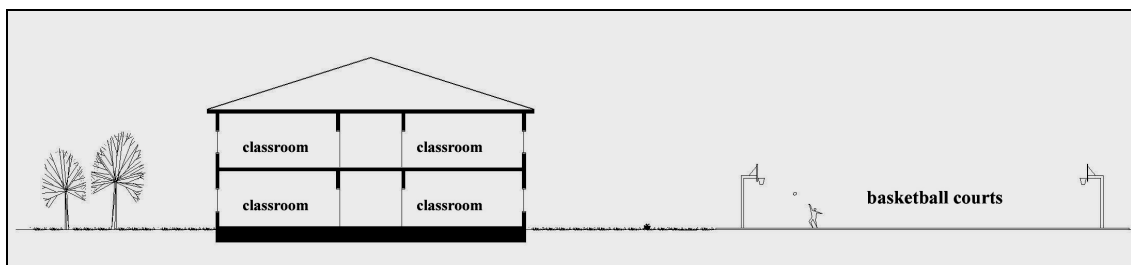
Figure 7. Section of the elementary school building (Building C) of Deniz ES.

The building for high school grades (Building D) is not being used at the moment. The current high school students use the classrooms in the administration building. It is expected that the high school department of Deniz ES will have sufficient number of enrollment in the future as it had before the 2001 economical crisis in Turkey. The school is below its capacity since 2000.

The gymnasium was constructed in 1997. Seldom rains or suffocating weather make the students prefer this covered sports area. There is an amphitheater annex to the southern face of the building. This place is also used for ceremonies and outdoor activities. The amphitheatre is one of the favorite places of the students. Students come here to play games such as hide and seek or play football on the flat surface of the ceremony area.

The educators in Deniz ES strive to practice an educational model that focuses on social, intellectual and emotional development of students as it is in Fatih ES and Işıkkent ES. The students are expected to participate in formal and informal activities that take place inside classrooms or in the garden of the school. The principal mentions that the active learning approach is taken into consideration in shaping the educational model of the school.

3.2.2. Fatih Elementary School

Figure 8. Panoramic view of school garden of Fatih ES.

Building Description:

Construction date   **:** 1984 - 2006

Building area	**:** 25,500 sq m (+5,200 sq m extension under construction)
Total site area	**:** 10,350 sq m
Floor plan layout	**:** Self-contained classrooms
Building area per student	**:** 13 sq m per student (for elementary school section)
Garden area per student	**:** 6 sq m per student

Program Description:

Organization	**:** Kindergarten, Elementary School, Anatolian High School, Science High School, Vocational High School, Sports School.
Student Population	**:** 710 (elementary school).
Student Teacher Ratio	**:** 9 : 1
Educational Program	**:** Active Learning (*Fatih Koleji web site*, 2005).

Fatih ES is the most populated school among the three case studies. The campus, located west of İzmir city center, houses over thousand students. Contrary to the sparsely settled environments of Işıkkent ES and Deniz ES, Fatih ES is located in a densely populated urban neighborhood. Vice Principal of the school states that most of the students of Fatih ES are from Güzelbahçe and Göztepe region where the campus is located. The school is founded in 1967 and started education in a two-storey building. In 1990s the construction works gained speed and the campus reached its current status. The administration is in an effort to acquire the last few private housing blocks remaining on the campus site. Vice Principal emphasizes that although the school does not need any extra space for classrooms or any other units, the extension part to the elementary school building which is under construction, will be in use by the beginning of the academic year 2006-2007.

The school site has two entrances (Figure 9). The children mostly use the gate to the west in the mornings. Also the school buses drop the children in front of the western gate. The other access is through Building C which is mostly used by administrators and visitors. Since there are private houses adjacent to Building C, there is no direct indoor connection from Building C to Building A and Building B. The students who use the eastern access, first pass through Building C, then reach their buildings walking through the school garden.

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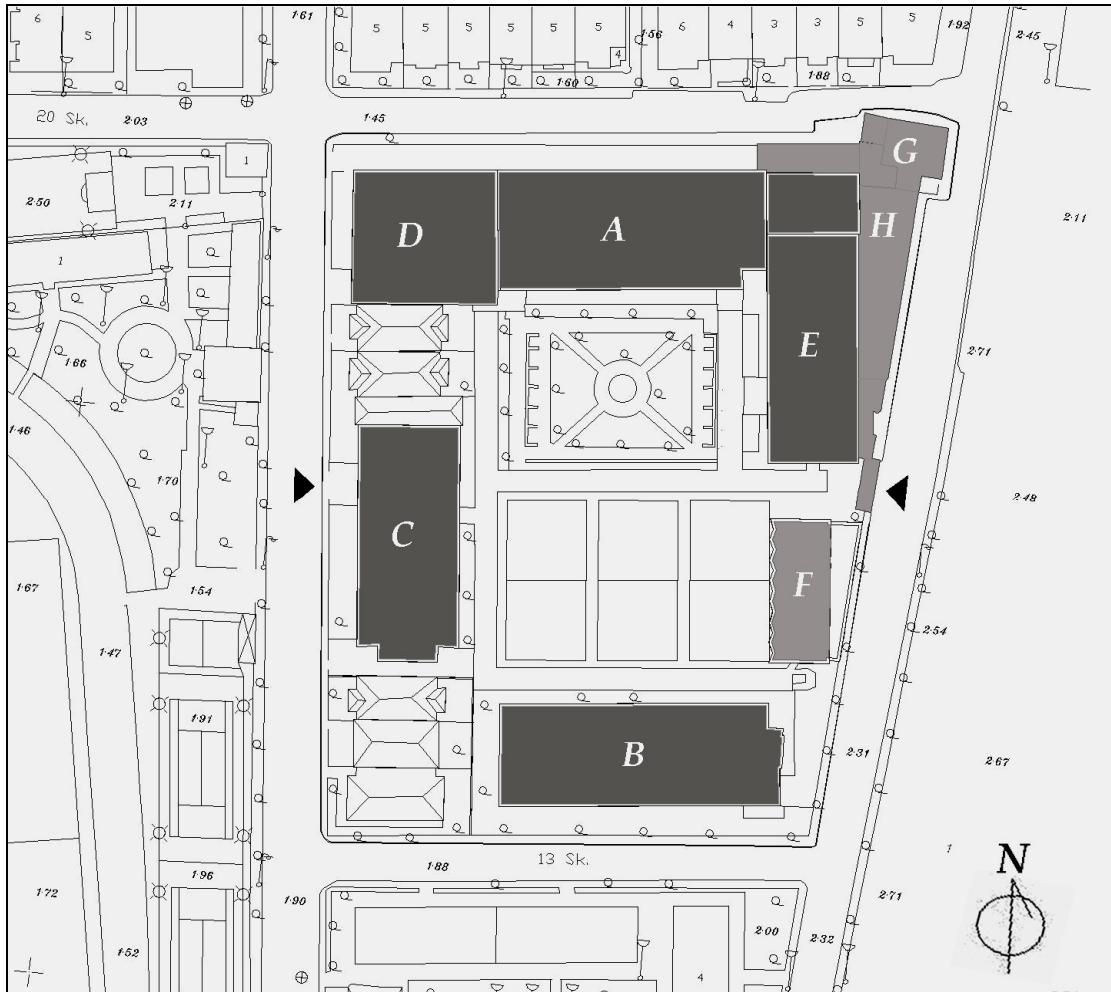
Figure 9. Fatih ES site plan, A-Elementary school building, B-High school building, C-Administration, D-Extension unit, E-Dormitory and cultural center, F-Seats, G-Employees' residences, H-Ateliers.

A garden surrounded with structures is a typical feature in all the three case studies including Fatih ES. Different from other cases, however, Fatih ES has an arcade around the garden which divides the garden into two parts and which connects the individual buildings to each other at the level of the second floor. The arcade is connected to second floors of Buildings A, C, and E, however, the connection to Building C is now closed and the door of the second floor level to the arcade is converted into a window. The arcade has four stairs that connect the garden level to the "elevated street" (Figure 10). During the visits it is observed that students prefer to sit on these stairs and talk in their free times.

Figure 10. The arcade (elevated street) is connected to second floors of Building A and Building E of Fatih ES.

The two parts of the garden have different characteristics. The southern part, which is surrounded by the arcade on three sides and Building A, looks like a small park with a pool in the middle and high bushes. Around the pool there are benches where students can stay alone or spend time with few friends. This sole green area of the school contains a variety of flowers and trees. The green elements (trees, bushes, flowers) on this side are very well cared and provide shadowed places for children together with the arcade. The northern part of the school garden is used for ceremonies and sports activities and paved with asphalt. There is a covered seating area facing the asphalt-covered basketball courts.

Fatih ES has four main buildings around its central garden. Building C, the oldest structure of the campus, provides the eastern entrance to the site. There are private houses next to Building C on both sides. Building C houses the administration offices, high school classrooms and the kindergarten. The tight area between the building and the street is used as a play garden for kindergarten and children play there under the supervision of their teachers.

Building B is a seven storey building located on the south of the campus site. Similar to floor plans of Building A, typical floor plan of Building B has a double-loaded corridor with classrooms on both sides. This building houses the classrooms and laboratories of high school section of the facility.

Building C next to Building A is named as the dormitory building by the administration. But this building also contains a cultural center, exhibition spaces on ground floor, an auditorium (with 300 seats), two-story height indoor play area for elementary school children, and a dining hall for employees of Fatih ES. This building has connections with Building A on all levels except the ground floor level.

The classrooms of elementary school, i.e., first through eighth grade, are in Building A (Figure 11). Ten-story height building (Figure 12) also contains a swimming pool on the basement floor, an indoor basketball court on the ground floor (two-storey height), dining hall serving for entire school on the third floor, rooms for student clubs and gymnasium on the eighth floor, a smaller indoor basketball court and another small cafeteria on the ninth floor (two-storey height), and a cafeteria on the tenth floor with a view of İzmir Bay. The typical floor plan for classrooms has a double-loaded corridor with staircases and elevators on both ends.
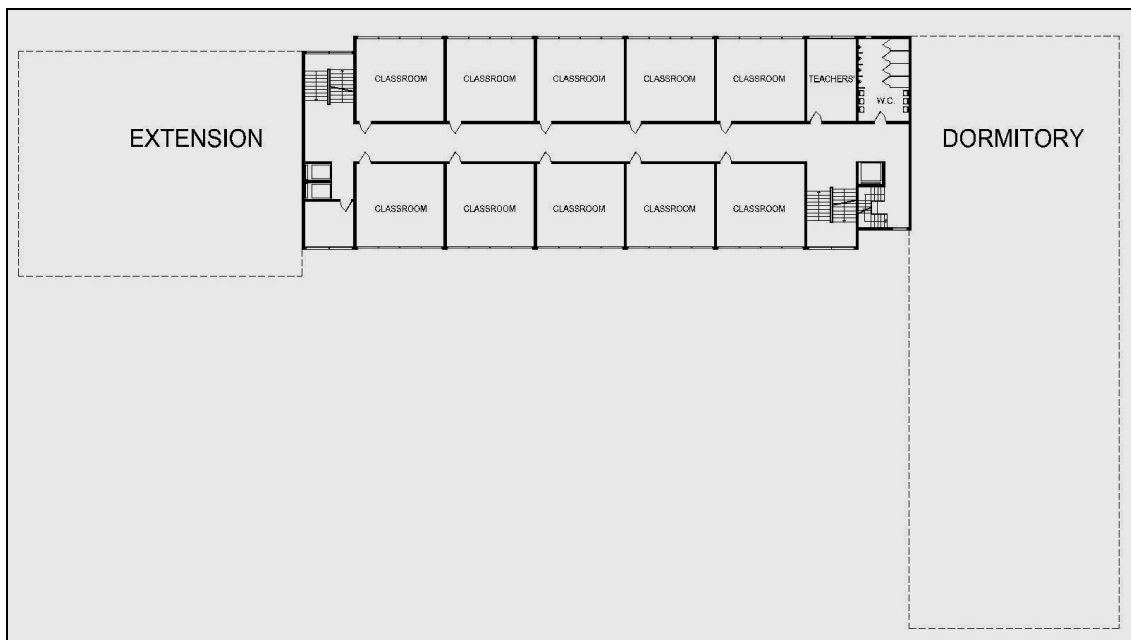
Figure 11. Classroom floors plan of Building A of Fatih ES.
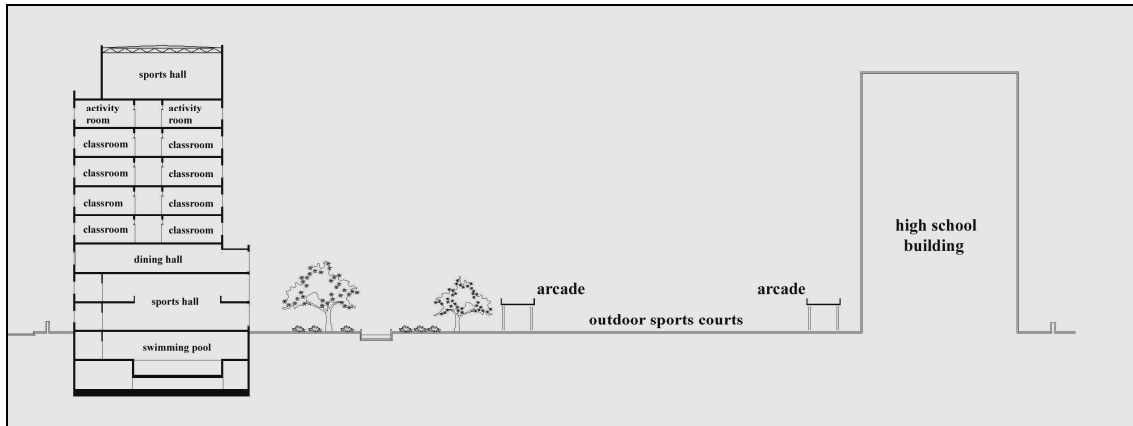
Figure 12. Site section of Fatih ES.

There is no significant difference between the classroom floors of Building A. Typical classrooms on floors four, five, six and eight, house all grades from first through eighth. The first three grades of the elementary school are on the seventh floor which is connected to the dormitory building at the level of indoor play area (Figure 13). Since the children of the first three grades are not allowed to go out to the school garden, they spend almost all their time on floor seven. Vice Principal states that the classroom teachers of the first three grades look for opportunities to take their classes to school garden after their lunch or when the weather is convenient and she adds:

> **We have a considerable number of high school students, so the children of different ages, for example the ages seven and fourteen, may get involve in unexpected situations. We have to think the security of our very young students here, so we forbid them to go out to garden without the supervision of a teacher.[4]**

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[4] In this study, all of the quotations from the recorded interviews with teaching staff or with students are translated to English by the researcher.
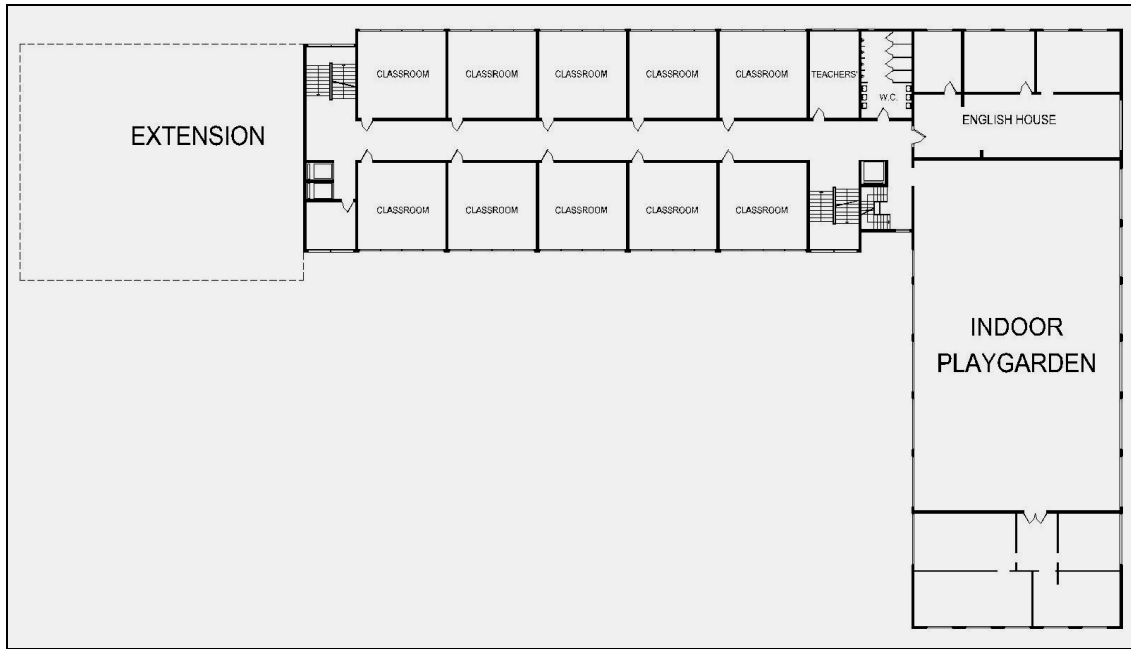
Figure 13. Seventh floor plan of Building A of Fatih ES.

The teachers interviewed during visits to Fatih ES state that their educational policy depend on the principles of active learning approach. They mentioned that cooperative learning and team-work strategies are preferred in and out of classroom studies. According to their statements, main aim is to provide learning environments where students could further their own abilities and develop intellectual and social skills.

3.2.3. Işıkkent Elementary School

Figure 14. Aerial view of the Işıkkent ES campus (Karabey, 2004).

Building Description:

Construction date   : 1996 - 2000

Building area   : 22,000 sq m

Total site area   : 30,000 sq m

Floor plan layout   : Self-contained classrooms

Building area per student : 20 sq m per student (Karabey, 2004)

Garden area per student   : 20 sq m per student (Karabey, 2004)

Program Description:

Organization   : Kindergarten, Elementary School, High School

Student Population   : 300 (Designed for 1200)

Student Teacher Ratio   : 5 : 1

Educational Program   : Active Learning, Multiple Intelligences Theory

(*Işıkkent Koleji web site*, 2005).

Işıkkent ES campus is the newest of the three case studies. The wing for high school classrooms is still under construction. The school serves for Kindergarten through eighth grade and by the start of the academic year 2005-2006 the high school program will be initiated. The construction of the school had started before the regulations on elementary school re-organization, known as Eight-year Education Act. The school administration had to deal with related problems and finally, they decided to locate the classrooms for grades 6, 7 and 8 apart from the first five grades. The students of upper grades now use the classrooms on the ground level of dormitory building (Figure 15).
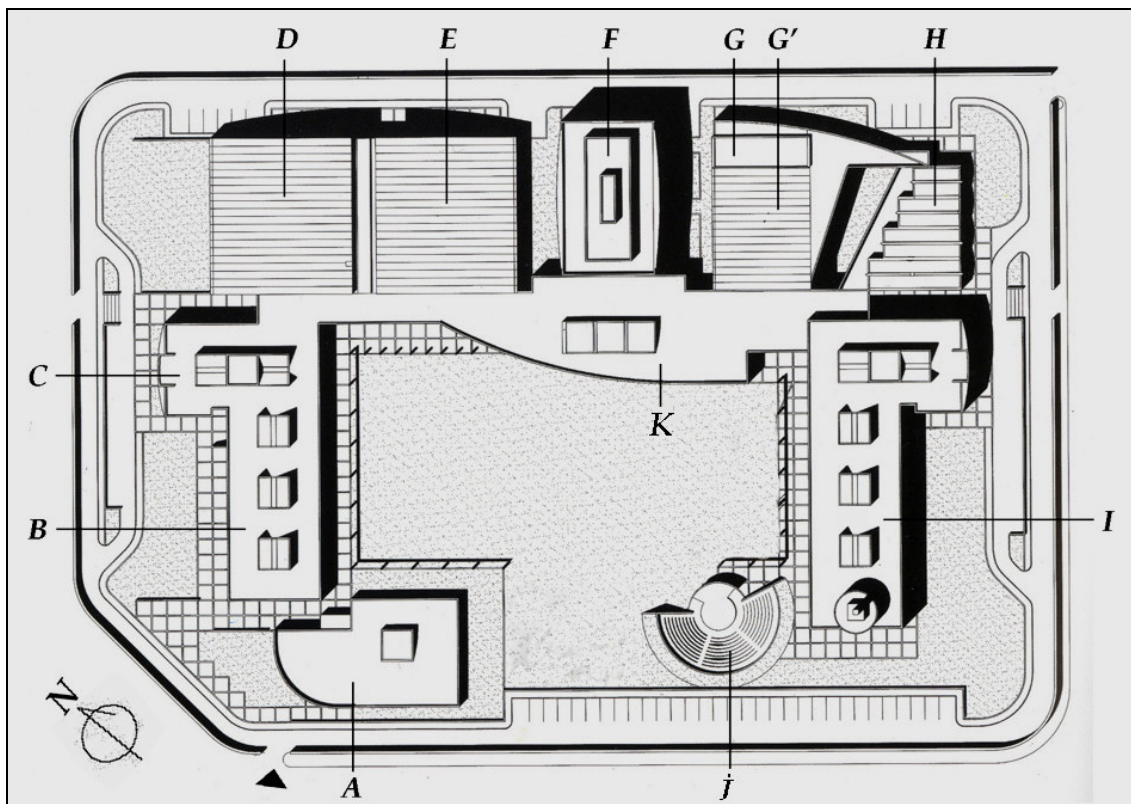
Figure 15. Site plan of Işıkkent ES. A-Kindergarten, B-Elementary school, C-Administration, D-Swimming Pool, E-Sports Hall, F-Dormitory, G-Dining Hall, G'-Auditorium, H-Arts Center, I-High School, J-Amphitheater, K-Multimedia Center (Karabey, 2004).

The standard architectural program for elementary schools was expanded with a sports hall, a swimming pool, a multimedia center, an auditorium of 800 seats, an art center including ceramic, sculpture and CAD-CAM workshops. All these spaces for social activities of students are located along an "alley" (Figure 16). The swimming pool, indoor basketball court, dormitory, dining hall, auditorium, art center, multimedia

center, multi purpose hall, student clubrooms are attached on both sides of a 125 meter long corridor. Haydar Karabey, the architect of the school, defines this concept as follows:

Making the student stroll around a main axis, stepping over same places time after time and transforming the space from a corridor into a multipurpose learning center (Karabey, 2004). [5]

Figure 16. The alley of Işıkkent ES.

The alley and the buildings for elementary and high school surround a garden entirely covered with grass. Haydar Karabey (2004), the architect of the school, defines the garden as a "space where students keep communication with each other and reproduce the environment" (p.77-78).

Each building has its access to the garden which encourages students to spend their breaks in the outdoors. Well maintained grass surface of the school garden is not divided for any particular function but there are garden toys of timber and portable posts for football. The administration decided to keep the garden as an unfragmented whole as the architect envisioned. In recorded interviews the Principal of Işıkkent ES, stated that "leaving the garden a vast place where students can play comfortably makes us feel better".

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[5] From (Karabey, 2004). Translated by researcher.

The wing for elementary school (Figure 17) is a two-storey building that houses the grades 1 through 6. The plan of the building is a typical layout with a double-loaded corridor as it is in the other two case studies, but the life inside the corridor is quite different. In this example, the corridor evolves to a hall widened to the width of a classroom. The measure of this module is 7.20 meters. The space is illuminated by sunlight that flows inside through the skylight and the atrium (Figure 18). In addition to games and exhibition of student works, sometimes formal lessons take place in this place. The corridor has special spots that student can use individually or within a group. The significant features of the alley include interactive display stations such as the post office built by students nearby the door to garden that serves as a communication agent for students and chess desks.
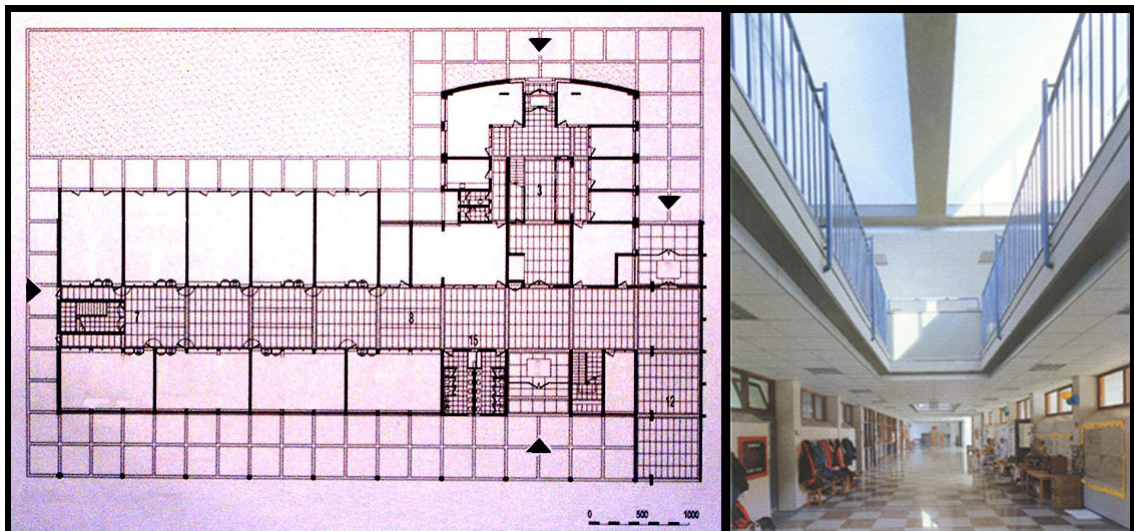
Figure 17. Ground floor plan of the part that contains elementary school classrooms and interior view (Karabey, 2004).
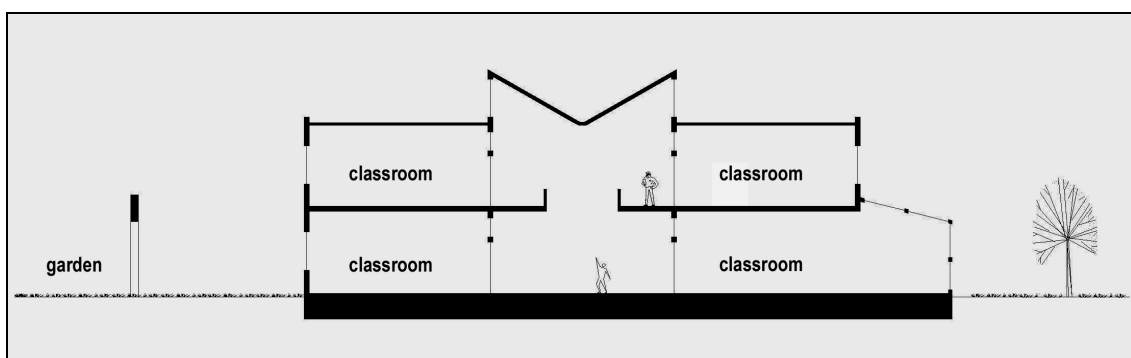
Figure 18. Section of the wing that houses elementary school classrooms of Işıkkent ES.

The classrooms facing north have doors to a small garden between the building and the wall surrounding the site (Figure 19). The teachers have the opportunity to take their classes to this special garden when the weather is convenient.

Figure 19. The connection of elementary grades' classrooms to a small garden to the north in Işıkkent ES.

The teaching staff and the principal of the school state that they are in an effort to practice the new approaches and methods of education in their school. The students are encouraged by their teachers to participate in activities in and outside of classrooms. The principal mentioned that the theories of multiple intelligences and brain-based learning are taken into consideration while shaping the educational model of Işıkkent ES.

CHAPTER 4

STUDY RESULTS

This chapter will summarize the results from the questionnaires, activity observations, space assessments and interviews together with photographs illustrating the related school sites, particularly the non-classroom spaces.

4.1. Interviews with Students

During the visits to Deniz ES, eight students from various grades accepted to participate in the interviews. These interviews were recorded during midday break hour when students have their lunch at the cafeteria. All interviews except one were recorded in the garden of the school.

Classrooms and garden were two spaces frequently mentioned in the interviews with students at Deniz ES. Students mostly stated the activities of 'staying in the classroom', 'playing football or basketball outside', 'wandering inside the school garden with a friend' during the interviews. Interviewed students often mentioned that they either play games at the playground and the amphitheater, or spend time at the benches in the garden (Figure 20).

Figure 20. Benches under trees in the garden of Deniz ES.

Particular to Deniz ES, there were specific definitions about places where students spend time during breaks (benches under trees, place under the olive trees, benches by the pond). None of the students mentioned any indoor spaces of the school other than classrooms.

Seven students from various grades accepted to participate in the interviews at Fatih ES. Although this study is limited to grades five, six and seven, three boys from third grade were included to the interviews. The purpose was to investigate the responds of lower grade students to the prohibition that keeps them inside the school building throughout a school day.

The students from grade three were interviewed at the indoor playground (Figure 21) on the seventh floor. They all stated that they spend their breaks playing football with their friends, sometimes with both girls and boys. Also the students mentioned the prohibition and added that they wanted places such as football field and basketball court reserved just for them.

Figure 21. Indoor playground on floor seven of Building A of Fatih ES.

Interviews with upper grades were recorded in the garden of Fatih ES. Students frequently mentioned activities such as going to the cafeteria on the fourth floor or to the one in Building B, spending time at benches under the arcade, spending time at the corridor or at the emergency stairs, going to the covered seats in the garden.

Seven students were interviewed during the visit to Işıkkent ES. The participants for interviews were selected randomly among the students spending their breaks indoors or in the garden.

Based on the interviews conducted in Işıkkent ES students spend their breaks mostly in the garden when the weather is convenient. They stated that whether they wander in the garden or play football, they do activities with a group of boys and girls. Red couches at the end of the alley (Figure 22), classrooms, sports hall and corridors were the indoor spaces mentioned by students as the places they spend time during breaks.

44

Figure 22. Red couches at the end of the alley in Işıkkent ES.

The places preferred by students during breaks or free times are listed in the table below (Table 1).

Table 1. Places mentioned by students in interviews

	Deniz ES	Fatih ES	Işıkkent ES
Classroom	X		X
School Garden	X	X	X
Outdoor playground	X		X
Benches in the garden	X	X	
Places under trees	X		
Amphitheater	X		
Cafeteria	X	X	
Fish pool	X		
Indoor playground		X	
Swimming pool		X	
Corridor		X	X
Emergency stairs		X	
Indoors			X
Couches			X
Sports hall			X
Library			
Computer lab.			
Outdoor courts	X		
Ping-pong tables			
Chess desks			

4.2. Interviews with Teaching Staff

In this section, the interviews with professors will be summarized while highlighting their observations on students' favorite places in schools.

Four participants including the educational director and the founder principal of the school were interviewed at Deniz ES. *Teacher One*, teaching history, emphasized the role of the school garden and stated that the garden is also an opportunity for teaching staff to spend their free times (Figure 23). He stressed that students involve in separate activities according to their genders. According to his personal observations, boys mostly play football and basketball outside and girls generally walk around and sit on benches in the garden and talk to each other.

Figure 23. Students wandering in the garden of Deniz ES.

The playground between elementary school building and high school building is the place that *Teacher Two* believes students like the most. *Teacher Two* has the responsibility of students of a lower grade classroom, so she spends most of her time in and out of the elementary school building with her students. Her observations are mostly about the students of first three grades of the elementary school. She also stressed the charming features of the school garden such as separate playgrounds and the fruit trees.

Teacher Three, the educational director of the school, mentioned that the outdoor spaces are the most favorite places of students. He also talked about his observations on student behavior in these spaces. "It is the time when boys and girls explore out there relationships as boys and girls" he stated. He also mentioned that children spend most of their times on the cell phone talking or playing games. He named this attitude as "socialization by machines". Another issue he talked about was the farm-like environment of the school. He stated that the school is a nice place to be and children are very happy with it.

The last interview was with the principal of Deniz ES. Like other teachers interviewed, she mentioned the garden as the place children prefer to be during breaks even in rainy days. According to her observations, children from different grades spend time together playing games.

During the visits to Fatih ES, three teachers were interviewed. *Teacher Four*, teaching for 31 years, stated that she often takes her classroom to the garden during midday breaks when the weather is fine (the students of first three grades are not allowed to go out to the garden on their own during 10 minute breaks). So it can be said that the students of these grades (one, two and three) spend all their time in spaces of the floor on which their classrooms are. According to her observations, there is not much blending in games among students from different classrooms, they prefer to play with their classmates. *Teacher Four* mentioned the different behavior characteristics of students (vivacious nature of boys and tranquility of girls) during breaks.

Teacher Five named the indoor playground as the place where students spend their breaks. She also mentioned that the classrooms are places where students prefer to spend time the most.

Teacher Six, who was teaching elementary grades for 27 years, stated that the corridor (Figure 24), the classrooms and the indoor playground were the places where children spend their breaks. She also mentioned the vivacious nature of the children. "Spending breaks indoors is not appropriate for children but it is an obligation" she stated.

Figure 24. The corridor of a typical classroom floor in Fatih ES.

During the visit to Işıkkent ES, three teachers and/or administrators were interviewed. The first interview in Işıkkent ES, was with *Teacher Seven*, the founder principal of the school. She remarked the outdoor spaces of the school as the places students spend their breaks. She added that it was their specific decision to leave the garden wide open as the architect had envisioned without placing any separators or any elements such as benches. She also talked about the activities—playing together or painting pictures—that take place inside the building when the weather is not convenient. She mentioned about table tennis and chess as favorite indoor activities of students. *Teacher Seven* stressed the role of social spaces in school as "a place where we learn to solve our problems".

Teacher Eight, the vice principal responsible for elementary school section, stated that the favorite places of children are the red couches at the end of the corridor and the garden (Figure 25) as stated in students' interviews. According to her observations the students of grades seven and eighth can be seen spending time together during breaks. It takes time for sixth grades to blend in since they recently came from the first step (first five grades) of the elementary education.

Figure 25. Children playing on the grass surface of the garden of Işıkkent ES.

Last interview was with *the counselor* of Işıkkent ES. She mentioned the tendency of students to go out to the garden. According to her, this causes some problems in rainy days when students came back from play to their classrooms with mud on their clothes. *The counselor's* interpretation of the school garden was different. She stated that this wide garden is not sufficiently qualified for various activities. She stressed the need for specific places to sit and talk such as benches under trees.

The places mentioned by school teachers or administrators are listed in the table below (Table 2).

Table 2. Children's favorite places according to teachers.

	Deniz ES	Fatih ES	Işıkkent ES
Classroom		X	X
School Garden	X	X	X
Outdoor playground	X		X
Benches in the garden	X		
Places under trees	X		
Amphitheater	X		
Cafeteria	X		
Fish pool	X		
Indoor playground			
Swimming pool			
Corridor		X	X
Emergency stairs			
Indoors	X	X	
Couches			X
Sports hall			X
Library	X		
Computer lab.	X		
Outdoor courts	X		
Ping-pong tables			X
Chess desks			X

4.3. Questionnaires

In this section, the results of questionnaires will be summarized.

In Deniz ES, the questionnaire was conducted with 51 students, 28 of which were boys and 23 of which were girls (14 fifth graders, 14 sixth graders, 23 seventh graders).

In the open-ended questions of the questionnaire, the students were asked to describe their favorite places at the school. In Deniz ES, the outdoor spaces student mentioned such as the pool, the amphitheater or the outdoor sports courts were higher than the number of indoor spaces mentioned (Figure 26). It is found that 58.6% of the places mentioned by students were outdoor spaces. The students mentioned various places in the school garden such as olive grove, the place under the almond tree which is next to the main gate of Deniz ES (Figure 3), the pool, the benches under trees, the

outdoor sports courts as their favorite place. There is no such variety in indoor spaces that students mentioned in the questionnaire.
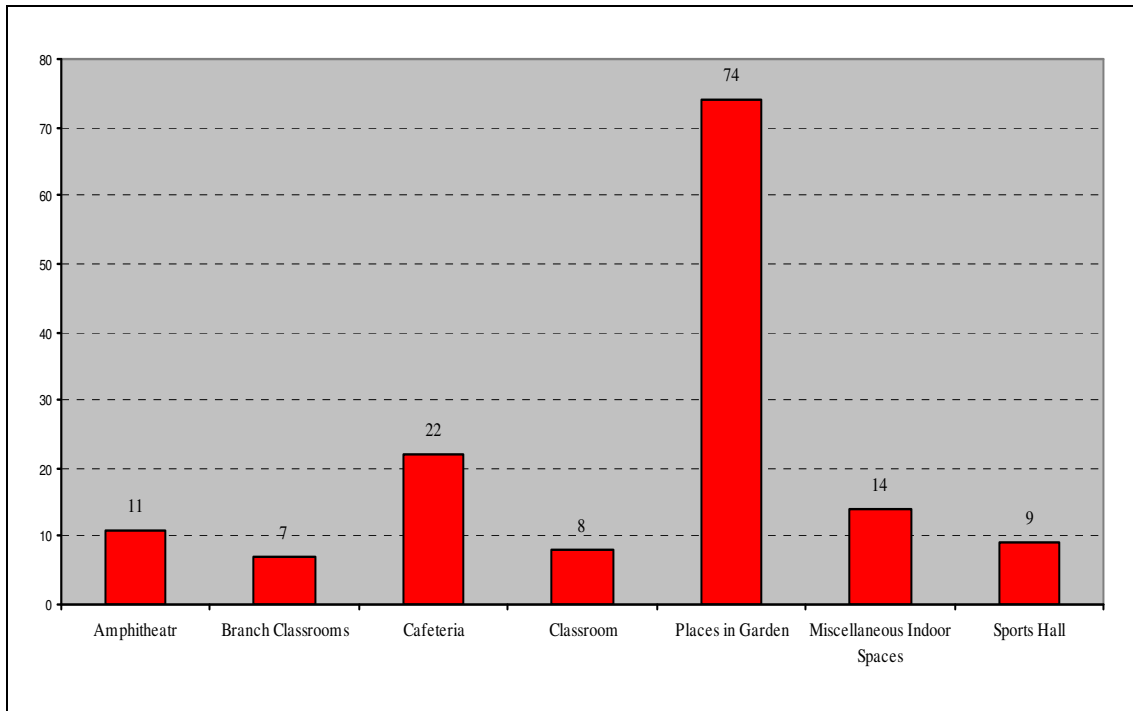
Figure 26. Places mentioned by students of Deniz ES.

The students were asked to describe their activities at their favorite places in their schools. As it is summarized below (Figure 27) 'talk', 'play games' and 'eating something' are the most common activities according to the answers of students to the open-ended question of the questionnaire.
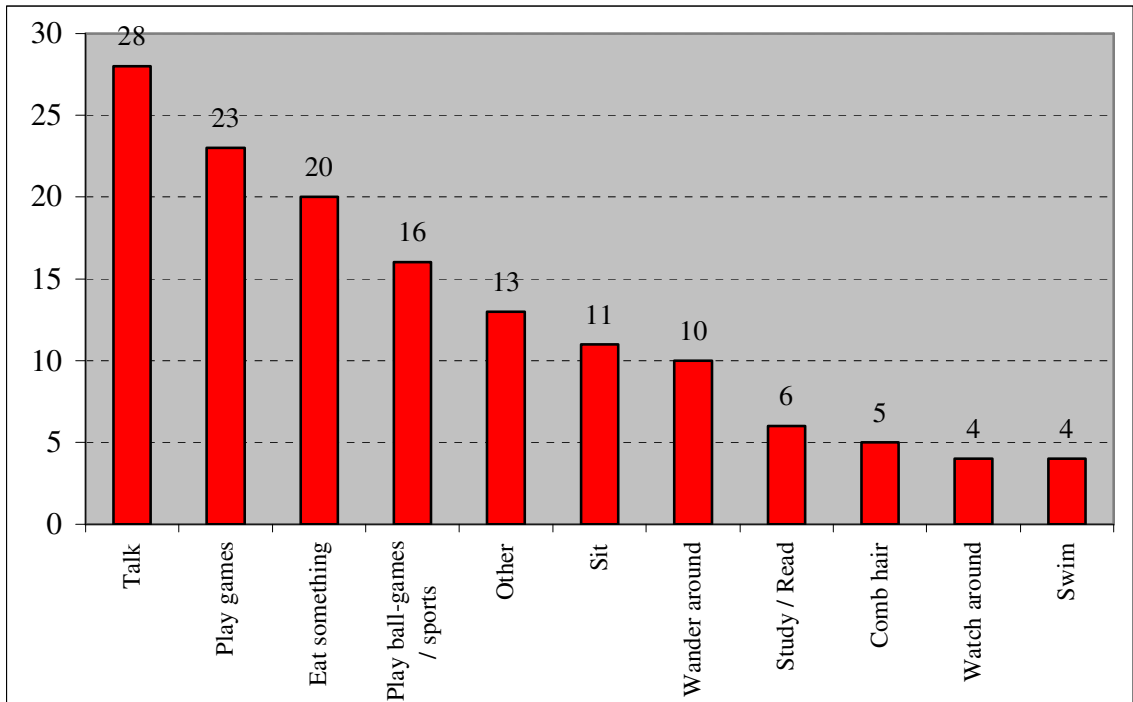
Figure 27. Activities of students at favorite places in Deniz ES.

In Fatih ES, the questionnaire was conducted with 70 students, 27 of which were boys and 42 of which were girls. One of the students left the gender question unmarked. 14 of the participants were fifth graders, 14 were sixth graders and 23 were seventh graders.

70 students in Fatih Elementary School noted down their favorite places as somewhere inside the school building (78%) for the open-ended questions (Figure 28). Places in the garden such as benches on the green part or the covered tribune were the most common places mentioned together with miscellaneous indoor spaces such as fire stairs, corridors or activity rooms.
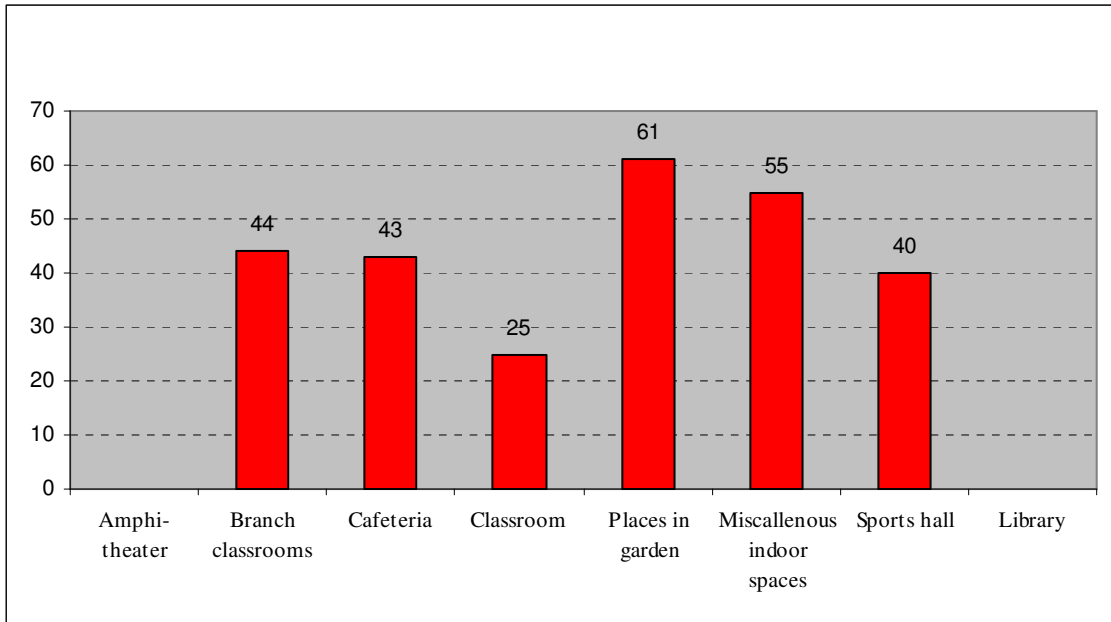
Figure 28. Places mentioned by students of Fatih ES.

'Talk' and 'play games' are the dominant activities according to the statements of students. The chart below summarizes the activities that mentioned by students in the questionnaire (Figure 29).
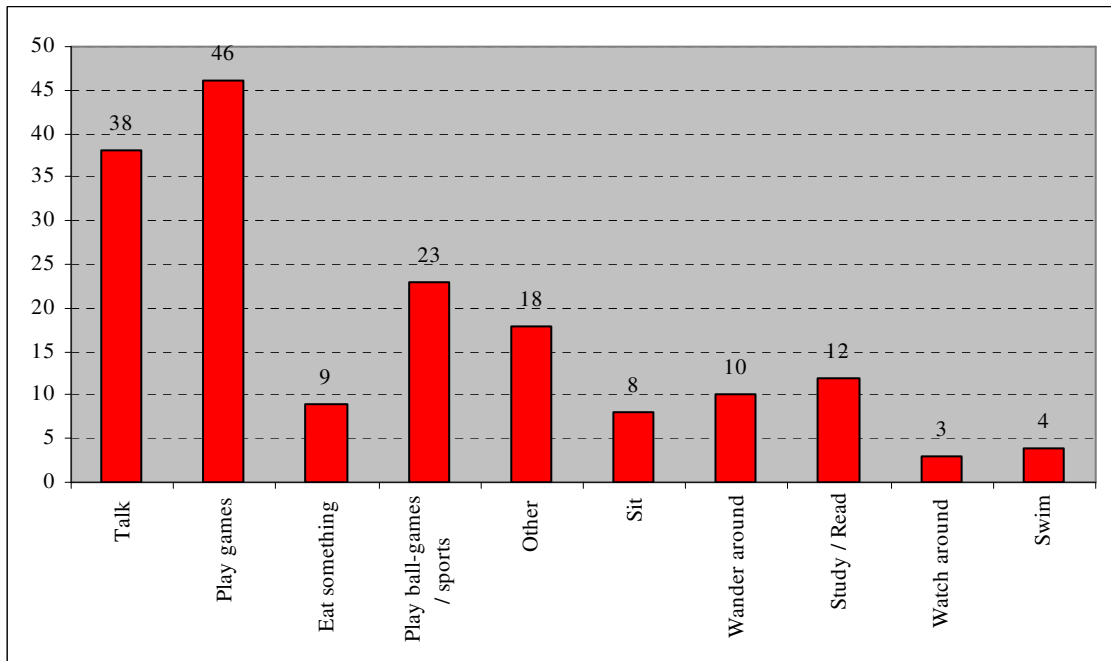
Figure 29. Activities of students at favorite places in Fatih ES.

In Işıkkent ES, the questionnaire was conducted with 52 students, 32 of which were boys and 20 of which were girls (18 fifth graders, 19 sixth graders, 15 seventh graders).

The expressions of students in the answers support the observation that there is a balance in the use of indoor and outdoor spaces at Işıkkent ES (Figure 30). 46% of the favorite places of students were outdoors while 54% were indoor spaces. Like other two schools, the school garden or the places in the garden are most common favorite place mentioned by students.
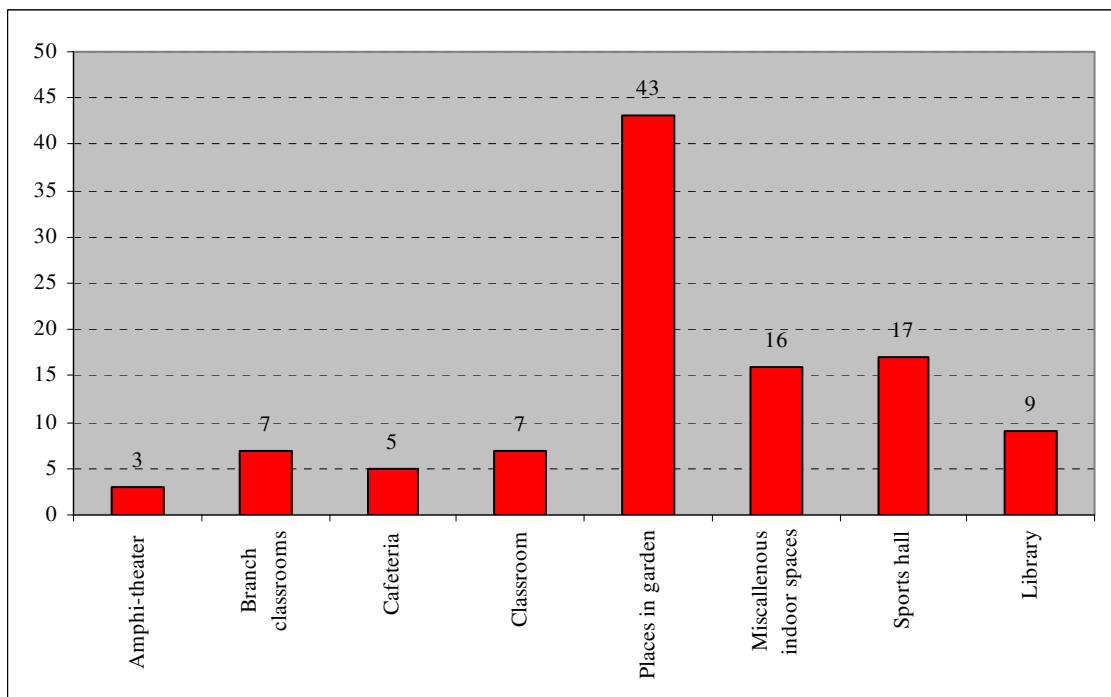
Figure 30. Places mentioned by students of Işıkkent ES.

The students mentioned playing ball games or sports and talking as their activities at their favorite places in Işıkkent ES. The chart below (Figure 31) summarizes the activities mentioned by students in open-ended questions of the questionnaire.
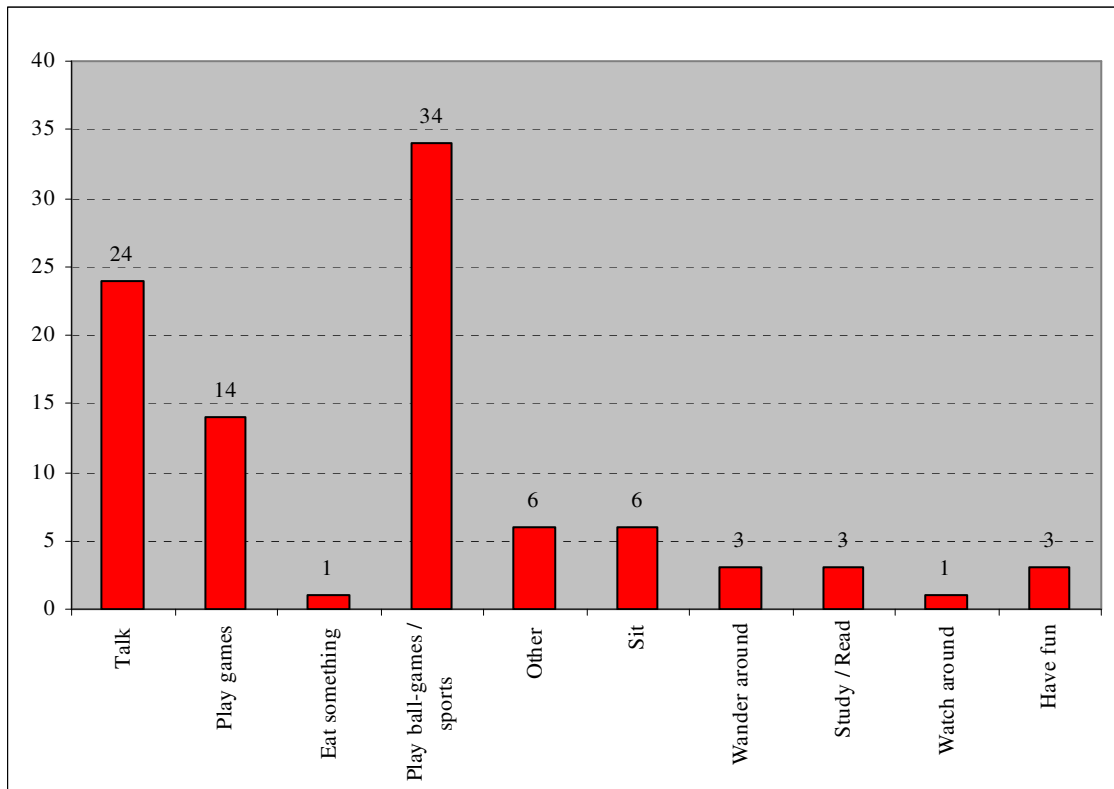
Figure 31. Activities of students at favorite places in Işıkkent ES.

4.4. Activity Observations

This section provides tables for each case study that list the places and activities taking place during breaks. These tables for each school present the sum of activity observations, both stationary and non-stationary, conducted in three different days–one of which was rainy—for each case study.

During the visits to Deniz ES, the activities of 129 students from various grades were recorded. The activity observations were conducted in the garden of the school and in non-classroom spaces of Building C that houses the elementary grades. Five students out of 129 were observed spending their breaks alone. 48 students were recorded walking in the garden talking together in a group of students. Five groups of students with a total number of 24 were observed spending their time in a group consisting of both boys and girls. A group of five students including boys and girls were recorded talking to a teacher in the garden. Three groups of boys with a total number of 25 were observed playing basketball and football at outdoor courts of Deniz ES (Table 3).

Table 3. Activity observation report for Deniz ES.

Activity	Group / Single	Student #	Boys / Girls	Grade	Planned / Unplanned	Place
Talking to a teacher	Groups	8	Mixed gr.	5, 9	Unplanned	School garden
Wandering around alone	Single	4	Boy	6	Unplanned	School garden
Wandering & talking	Groups	24	Mixed gr.	4, 5, 6, 7 ,8	Unplanned	School garden
Wandering & talking	Groups	8	Boy	5, 6, 7	Unplanned	School garden
Wandering & talking	Groups	14	Girl	4, 5	Unplanned	School garden
Wandering & talking	Group	2	Girl	4	Unplanned	Fish pool
Playing & shouting	Group	4	Girl	7	Unplanned	School garden
Eating	Groups	6	Boy	6	Planned	School garden
Playing games	Groups	12	Girl	6	Unplanned	School garden
Playing games	Group	2	Mixed gr.	6	Planned	Playground
Playing games	Groups	8	Boy	4	Planned	Amphitheater
Sitting & talking	Groups	9	Mixed gr.	5, 6, 8	Planned	Benches in garden
Playing football	Groups	10	Boy	7, 8	Planned	Outdoor courts
Playing basketball	Groups	15	Boy	6	Planned	Outdoor courts
Sitting & talking	Group	2	Boy	3	Unplanned	Couches in Bldg. C
Wandering around alone	Single	1	Girl	3	Unplanned	Corridor of Bldg. C

During the visits to Fatih ES, the activities of 110 students from various grades were recorded. The activity observations were conducted in the garden of the school and in Building A that houses the elementary grades. Only two students out of 110 were observed spending their breaks alone. 42 students were observed spending their break in the school garden. Six groups of students with a total number of 27 were observed spending their time in a group at the cafeteria on floor nine. Students from the lower grades were observed mostly spending time at the indoor playground on floor six. 28 students were observed playing games or talking in groups at indoor playground (Table 4).

Table 4. Activity observation report for Fatih ES.

Activity	Group / Single	Student #	Boy / Girl	Grade	Planned / Unplanned	Place
Sitting & talking	Groups	7	Girl	5, 7	Unplanned	Benches in garden
Sitting & talking	Groups	8	Boy	7	Unplanned	Benches in garden
Eating	Group	3	Boy	8	Unplanned	Stairs in garden
Playing basketball	Groups	8	Mixed gr.	6	Unplanned	Outdoor courts
Playing football	Groups	4	Boy	5	Unplanned	Outdoor courts
Wandering & talking	Groups	6	Girl	5, 6	Unplanned	School garden
Talking	Groups	5	Boy	8	Unplanned	School garden
Talking to a teacher	Single	1	Boy	3	Unplanned	School garden
Playing games	Groups	3	Mixed gr.	3, 4	Unplanned	Corridor
Wandering around alone	Single	1	Boy	5	Unplanned	Corridor
Wandering & talking	Group	2	Boy	3	Unplanned	Corridor
Playing games	Group	4	Girl	4	Unplanned	Corridor
Talking	Group	3	Boy	5	Unplanned	Corridor
Playing football	Groups	14	Boy	3	Unplanned	Indoor playground
Wandering & talking	Group	4	Mixed gr.	3	Unplanned	Indoor playground
Playing games	Groups	10	Boy	2, 3	Unplanned	Indoor playground
Waiting at queue	Groups	8	Mixed gr.	6, 7	Unplanned	9th floor cafeteria
Sitting & eating	Groups	9	Girl	5	Unplanned	9th floor cafeteria
Sitting & eating	Groups	7	Boy	4, 5, 6	Unplanned	9th floor cafeteria
Talking	Group	3	Boy	7	Unplanned	9th floor cafeteria

The observations in Işıkkent ES were recorded on both floors of the alley and in the central garden of the school. The activities of 113 students were observed. Two students were recorded separately talking to a teacher. Two boys were observed playing chess at the chess desk on the first floor corridor of the wing that houses elementary grades. Ten groups of students with a total number of 31 were recorded walking along the alley talking to each other. Eight boys were observed playing table tennis on the

second floor of the alley. Three boys were recorded drinking water at the taps in front of the doors to the central garden of Işıkkent ES (Table 5).

Table 5. Activity observation report for Işıkkent ES.

Activity	Group / Single	Student #	Boy / Girl	Grade	Planned / Unplanned	Place
Talking to a teacher	Single	2	Mixed gr.	4	Unplanned	Alley
Talking to a teacher	Group	2	Boy	5	Unplanned	Alley
Sitting & eating	Group	7	Boy	6	Unplanned	Couches
Wandering & talking	Groups	17	Girl	5, 6, 7	Unplanned	Alley
Wandering & talking	Groups	10	Boy	6	Unplanned	Alley
Talking	Group	4	Girl	7	Unplanned	Alley
Playing chess	Group	2	Boy	5	Planned	Chess desk
Drinking water	Group	3	Boy	6	Unplanned	Water taps
Playing ping-pong	Groups	8	Boy	4	Planned	Ping-pong tables
Playing football	Groups	19	Boy	5, 6	Unplanned	School garden
Playing games	Groups	15	Mixed gr.	3, 4	Planned	School garden
Sitting & talking	Groups	11	Mixed gr.	6, 7	Unplanned	School garden
Wandering & talking	Groups	9	Mixed gr.	4, 5	Unplanned	School garden
Sitting	Single	1	Boy	4	Unplanned	School garden
Talking to a teacher	Group	3	Boy	4	Unplanned	School garden

4.5. Space Assessment Forms

Space assessment forms were prepared to record the current status of spaces within the school facility during the on-site data collection process. Two forms were recorded for each case study.

First assessment form in Deniz ES was recorded in the central garden of the school. The two-storey buildings of the school have their entrances through this central garden. There are no accessibility problems in the building. The garden of Deniz ES cannot be perceived all at once because there are trees and big bushes blocking the view (Figure 32). For example, a boy standing in front of the cafeteria building or playing in

the outdoor playground between the elementary school building and high school building cannot see other students spending time by the swimming pool.

Figure 32. Since there are trees and bushes, the garden of Deniz ES can not be perceived all at once.

The garden of Deniz ES has various sub-spaces for individual use, group use and common use. The fish pool in the center of the garden, the benches under trees and the amphitheater in which ceremonies take place are the examples to such spaces. During the walk-throughs, the accessibility to these spaces in the garden and the circulation patterns were observed free of problems.

There are hard-surfaced grounds—mostly covered with cobblestone—and grass surfaces in the garden of Deniz ES (30% hard surfaced, 70% grass). The grass surfaces of the ground has a number of trees, flowers and green elements which are well cared, including the olive grove to the east and tangerine trees to the west. Places under the trees are the only shadowed places in the school garden which has the sunlight continuously throughout the sunny days in İzmir.

The benches, the trash baskets, the water tap are the elements recorded as school furniture in the garden of Deniz ES. There are no outdoor lighting fixtures in the garden.

The toys in the playground, four hoops for basketball, and two miniature posts for football are other elements to be mentioned in the garden. Also there are animals (rabbits and ducks) wandering around freely in the school garden.

The second phase of assessment was in the corridor of elementary school building (Figure 6) of Deniz ES. The corridor, 3.60 meters wide, is loaded with classrooms on both sides alongside on both floors, but on mid-point of the ground floor the corridor expands to both sides of the building. The stairs are located at both ends of the corridor. The second door to the garden at the hall in the middle is out of use, but there is no circulation problems observed during the visits due to the layout of building.

The corridor of the elementary school building can not be perceived totally. For example, a group of students spending time at the seats located to the west of the hall are out of sight of other students spending time in the corridor. The seats (Figure 6) mentioned above provide privacy for the group of students spending their breaks together, moreover, this place has the vista of the outdoor basketball courts and the charming environment of the school site.

Except the seats, the corridor (non-classroom spaces of the building) has no sub-spaces for common or individual use. There are no illumination accessories other than the windows at the edges of the cross-shaped corridor which let some daylight in (Figure 33). Also, there are no air-conditioning equipments operating in the non-classroom spaces of the elementary school building. The school furniture, recorded in the non-classroom spaces of elementary school building in Deniz ES, includes seats and fixed and portable boards where student works are displayed.
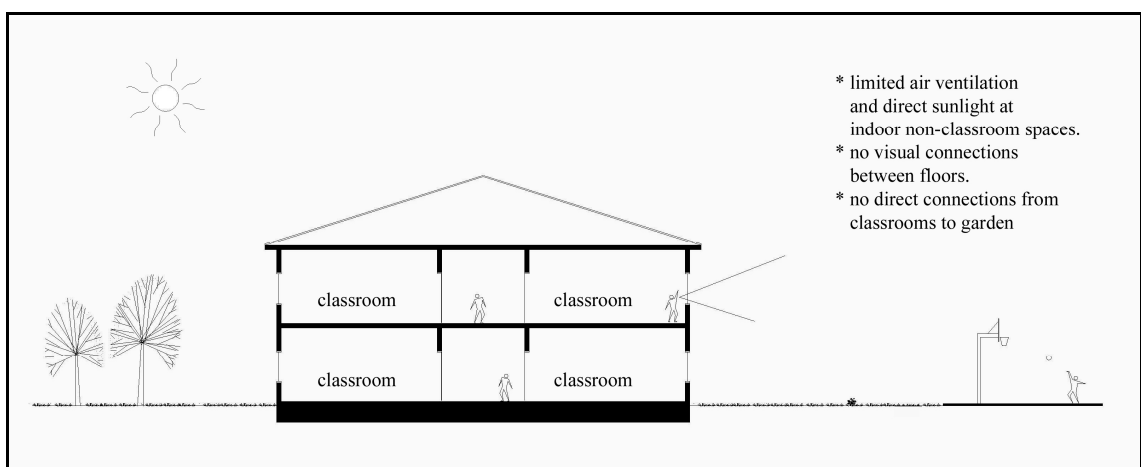
Figure 33. Section analysis for Deniz ES.

In Fatih ES, first space assessment form was recorded in the corridor of fifth floor which has the classrooms of grades six and seven. The floors that contain classrooms are typical, so there is no significant difference between the corridors of different floors in Building A. There are three staircases and three elevators as the vertical circulation elements in Building A in Fatih ES. The corridor, 3.60 meters wide, is loaded with classrooms on both sides and the stairs and elevators are located at the ends of each level. There are no special sub-spaces for different uses except the emergency stairs where students go with groups of three or four and spend time talking to each other and staring out of window

The corridor—which has no visual connection with outdoors—is illuminated with artificial light and with the daylight coming through the ribbon windows of classroom walls adjacent to the corridor (Figure 34). The corridor has no school furniture except the fixed boards where student works are displayed on.
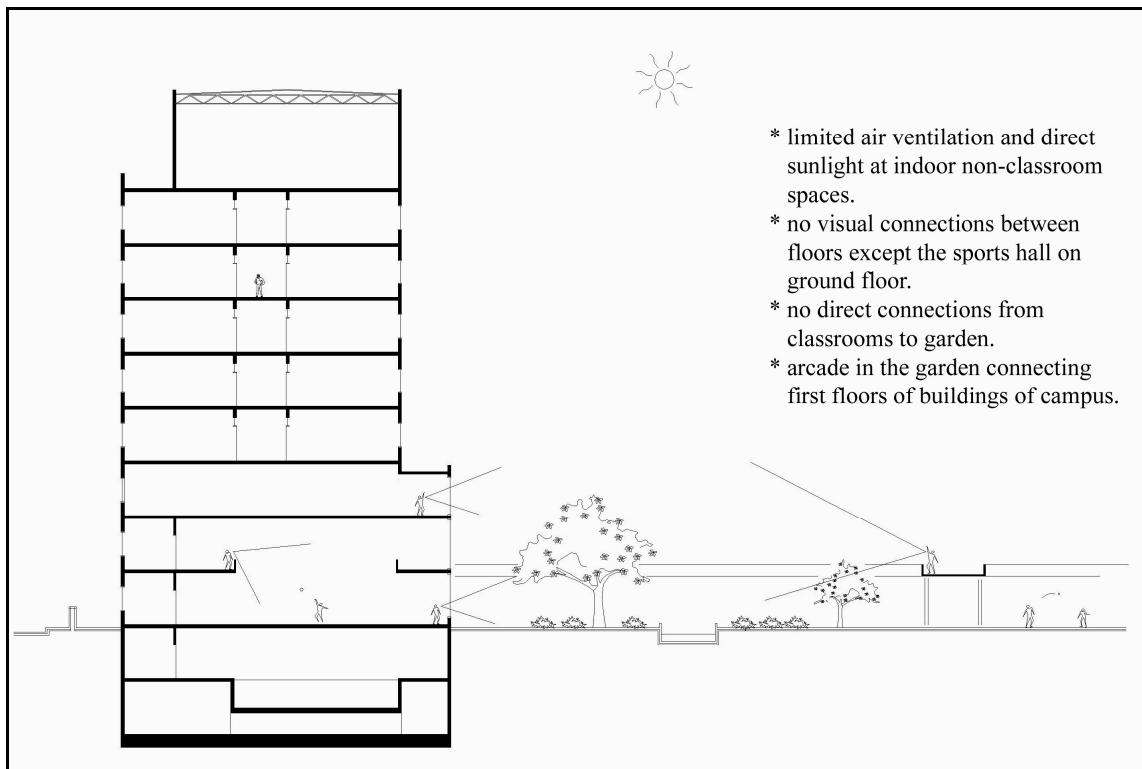
Figure 34. Section analysis for Fatih ES.

The second space assessment form in Fatih ES was recorded in the garden of the school. All the buildings of the school have entrances facing this garden where the

ceremonies take place. The garden is surrounded and divided into two parts by an arcade which is used as an elevated street. The arcade is connected to Buildings A and E and will be connected to Building D (was in construction during visits) on second floor level. This structure also provides different view points to the garden, so that a student walking on this "elevated street" has the opportunity to follow activities that take place in the school garden.

There are various sub-spaces in the garden of Fatih ES which are suitable for individual use or group use. Benches by the pool in the center of green part of the garden (Figure 35), benches under the arcade, stairs of the arcade or the covered seats facing the outdoor sports courts are places in the garden that students spend time alone or with a group of friends.

Figure 35. The arcade and the green part of the garden with the small pool in the middle.

The garden which is surrounded with buildings has two parts separated by the arcade mentioned above. There are lighting fixtures located alongside the "elevated street" and in the green part of the garden. The benches, the baskets at the hard-surfaced

part for basketball and the small shop under the arcade are other elements to be mentioned about the garden.

In Işıkkent ES, one of the space assessment forms was recorded in the alley (Figure 36). The classrooms of grades six, seven and eight are on this alley which functions as the spine of the school. There are doors to outside on both sides and two staircases to upstairs. There are no problems of accessibility neither to outdoors nor to indoor spaces. In terms of visibility, alley provides visual connection both within the building and between inside and outside.
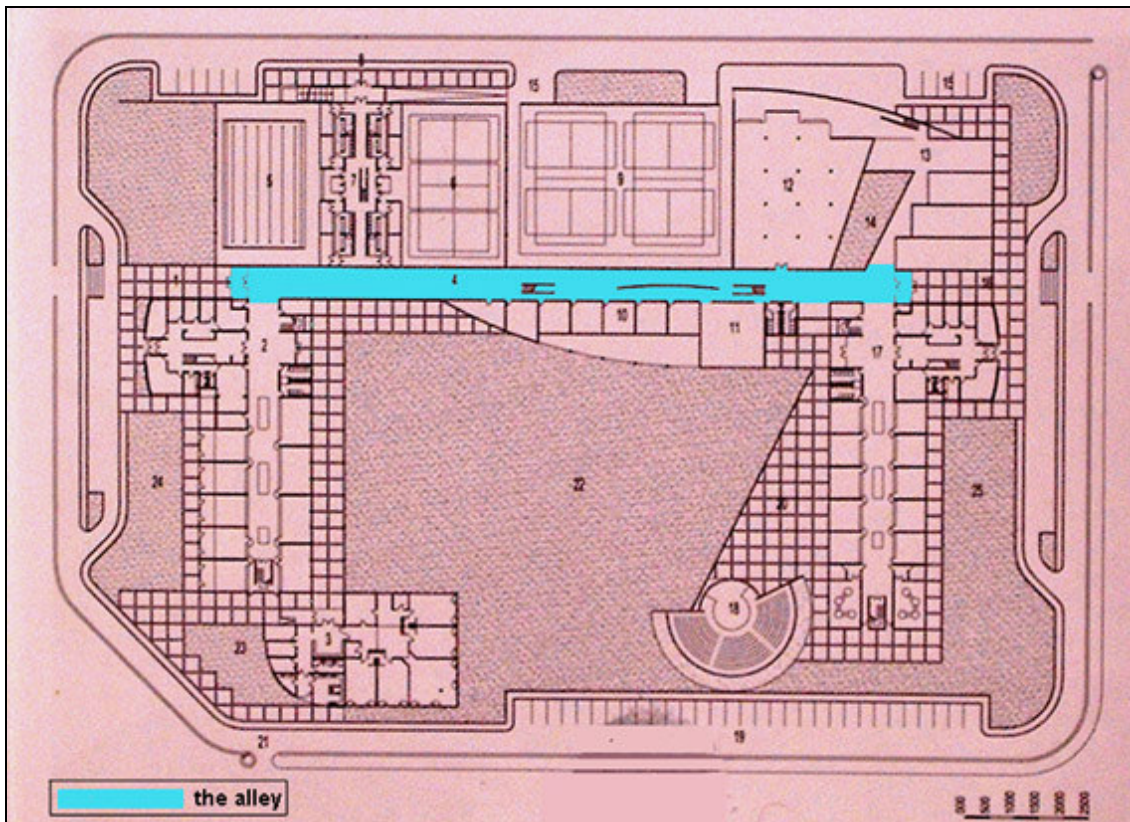
Figure 36. Ground floor plan and the alley of Işıkkent ES.

There are many places and niches alongside the alley (6.20 meters wide) such as red couches, chess desks or ping-pong tables that students can use individually or with a group. There are also different kinds of well cared plants located in the alley. The alley has visual relationship with the central garden and the small gardens between buildings on the eastern side of the school through the windows and doors that also provide daylight to the alley. Different from other case studies, the indoor spaces of Işıkkent ES has suspended ceilings and as in other schools student works are displayed on the walls.

The indoor spaces of Işıkkent ES are well-furnished. There are couches, drinking fountains, ping-pong tables, lockers for students, trash baskets, chess desks, flowerpots with well-cared plants alongside the alley. Another thing that should be emphasized is that all the furniture and accessories inside the building is designed at the scale of children.

The second space assessment form was recorded in the central garden of Işıkkent ES. The grass-surfaced garden is surrounded with buildings on three sides. All buildings have doors to the central garden, so there are no accessibility problems. The garden has rows of columns parallel to the building facades which provide a buffer zone in front of the classroom windows. The columns do not interrupt the sight and the garden can be perceived almost totally even from inside (Figure 37).

Figure 37. In the garden of Işıkkent ES, a row of columns provides a buffer zone in front of the windows of classrooms.

The central garden is suitable for group or common uses. The grass surfaced garden provides many opportunities for different programs. The activities and performances of students take place in the garden together with the concerts given by invited musicians.

The green elements of the garden are four fully grown palm trees planted parallel to the building on the eastern side and trees planted recently by the wall of the kindergarten building on the western side. Since the palm trees are very tall and the other trees are not fully grown, there are no shady places in the garden.

There are no benches in the central garden. There are few garden furniture such as log structures, toys at the playground of kindergarten building and the miniature football posts. The ducks wondering around the garden is the other thing that must be mentioned about the garden.

The wing that houses elementary school grades has in the middle a gallery space with a skylight over it different from the section with the alley. The gallery provides visual connection between floors. Moreover, the classrooms facing north have their own exit to outdoors (Figure 38). The corridor (non-classroom space) has daylight coming through the skylight which also provides natural ventilation. These qualities make indoor non-classroom spaces of Işıkkent ES significant among three case studies.
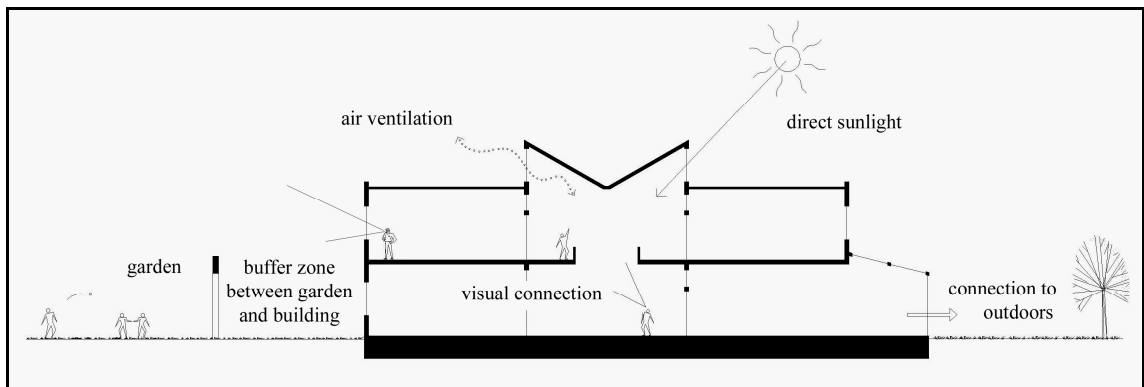
Figure 38. Section analysis for Işıkkent ES.

The table below presents a summary of space assessment records of three schools (Table 6).

Table 6. Space assessment summary of three case studies.

	Deniz ES	Fatih ES	Işıkkent ES
Site sq m	35,000	10,350	30,000
Garden sq m	28,500	4,300	20,000
Hard surfaced %	30%	72%	33%
Grass %	70%	28%	67%
Garden furniture	Benches, 4 basketball hoops, 2 portable goal posts, water tap, 2 playground toys, waste baskets, weathercock	Benches, 5 basketball hoops, waste baskets, illumination posts,	2 portable goal posts, log structures, (benches in small garden by the dinner hall, basketball hoops in the small garden by the sports hall)
Building sq m	6600	9500 (Building A)	22 000[6]
Non-classroom spaces sq m of elementary school sections[7]	Building A : 655 sq m Building C : 340 sq m	Building A : 3025 sq m	2500 sq m
Floor #	2	10	2
Plan type	Double-loaded corridor	Double-loaded corridor	Double-loaded corridor
Corridor width	360 cm	360 cm	620 cm
Indoor furniture (non-classroom spaces)	Couches, display boards, flower pots, lockers	Display boards	Couches, ping-pong tables, display boards, water taps, chess desks, waste baskets, lockers, flower pots, coat hangers
Accessibility to outdoors	Each building has 2 doors to outdoors	Building A has 2 doors to outdoors on both edges	The U shaped building has 12 doors to outdoors
Visual connection between indoors and outdoors	There are places on the double-loaded corridor that the school garden can be perceived	There are no visual connection between the double-loaded corridor and the school garden	There are places alongside 'the alley' that the garden can be perceived

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[6] The indoor area of entire facility as given in (Karabey, 2004).
[7] The non-classroom area square meters given for each school are the sum of areas of non-classroom spaces where the unplanned activities take place including halls, corridors, indoor playgrounds, cafeterias and other spaces where students reach freely without any permission during breaks. For this purpose, the sports halls or swimming pools of schools are excluded from the sum.

4.6. Walk Throughs

Walk throughs with teachers having administrative responsibilities were arranged for each school. During the process, the accompanying teacher was asked to briefly introduce the campus settlement of the school and the places which are frequently occupied by students. Below, the field notes for each case study are presented with campus layouts of Deniz ES, Fatih ES and Işıkkent ES in sequence.

4.6.1. Field Notes at Deniz ES
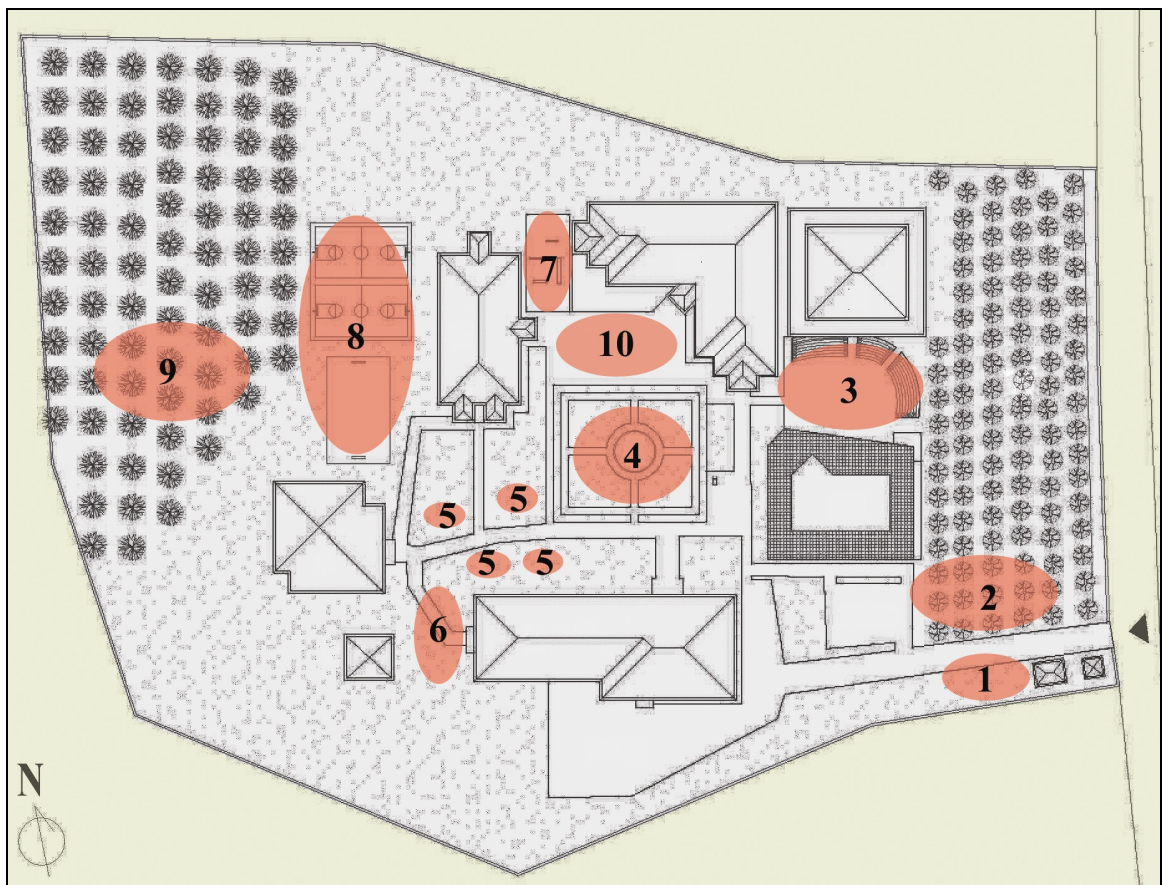
Figure 39. Field notes for Deniz ES.

1. The place under the green almond tree by the main gate of the campus is observed to be occupied by students. The guard at the main gate also states that students frequently prefer to be nearby during breaks.

2. The olive grove to the east of the campus site is observed to be one of the places students prefer to be.

3. Students from lower grades (grades 2, 3 and 4) are observed to be playing at the amphitheater next to the sports hall.

4. Students are observed to be spending time alone or talking to each other at the benches by the pond at the center of the garden.

5. It is observed that all the benches under the trees of the garden are occupied by students from various grades during breaks.

6. The place in front of the door of the administrative building that faces the cafeteria building is observed to be occupied by students spending time talking to each other during breaks.

7. The students from lower grades (grades 1, 2 and 3) are observed to be spending time at the playground between the elementary school building and high school building.

8. The outdoor sports courts are occupied by students during breaks.

9. Students are observed to be spending time among the tangerine trees to the west of the campus.

10. Students, mostly boys, are observed playing football on the hard covered ground in front of the high school building.

4.6.2. Field Notes at Fatih ES
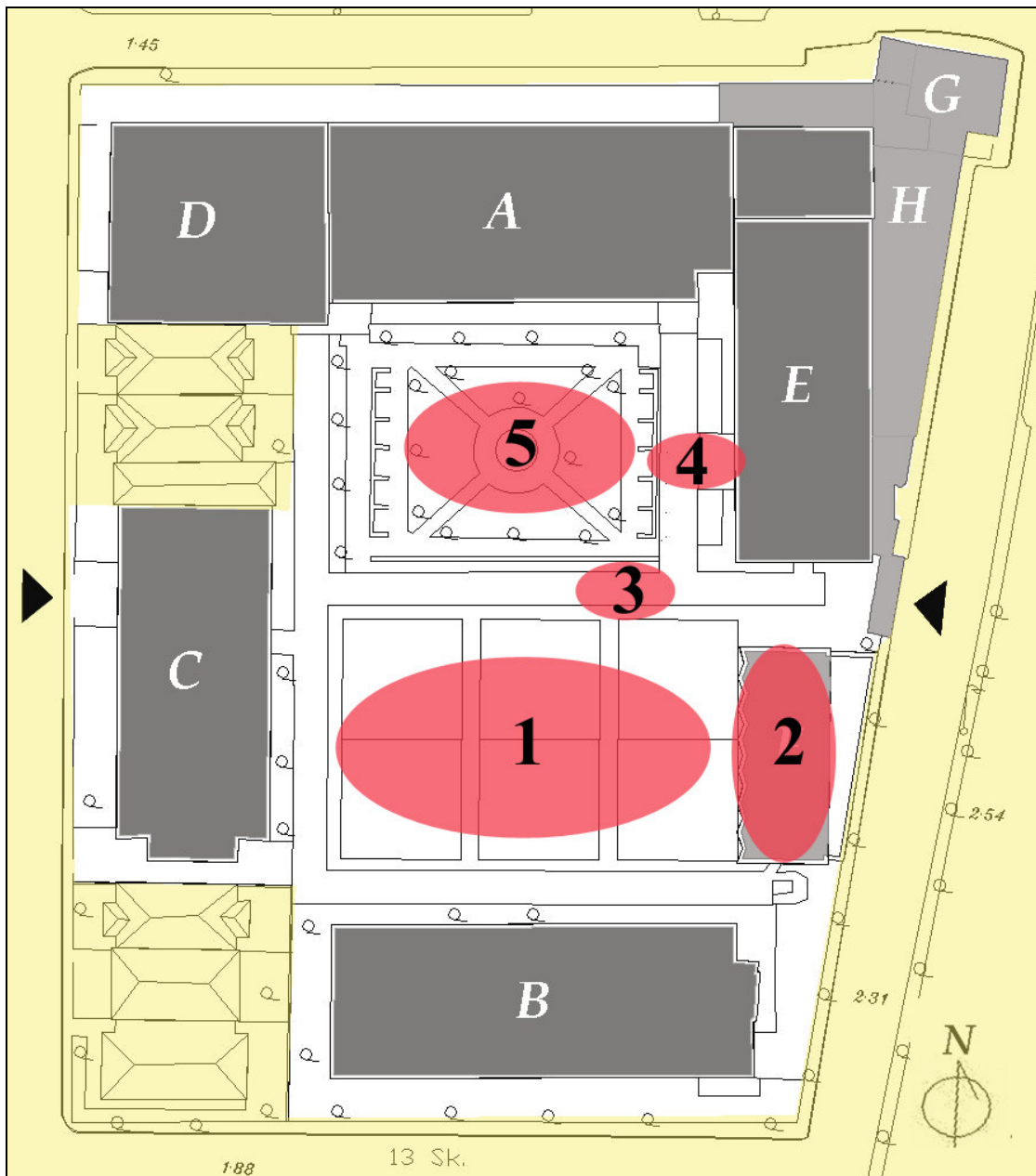
Figure 40. Field notes for Fatih ES.

1. All the outdoor courts are occupied by students during breaks.

2. The groups of boys and girls are observed spending time at the seats of the tribune during breaks.

3. Students from upper grades are observed shopping at the small shop under the arcade

4. The stairs that connect the ground floor to the elevated street are observed to be occupied by students.

5. The benches by the pond which are shadowed by the trees are observed to be one of the favorite places of girls in Fatih ES.

4.6.2. Field Notes at Işıkkent ES
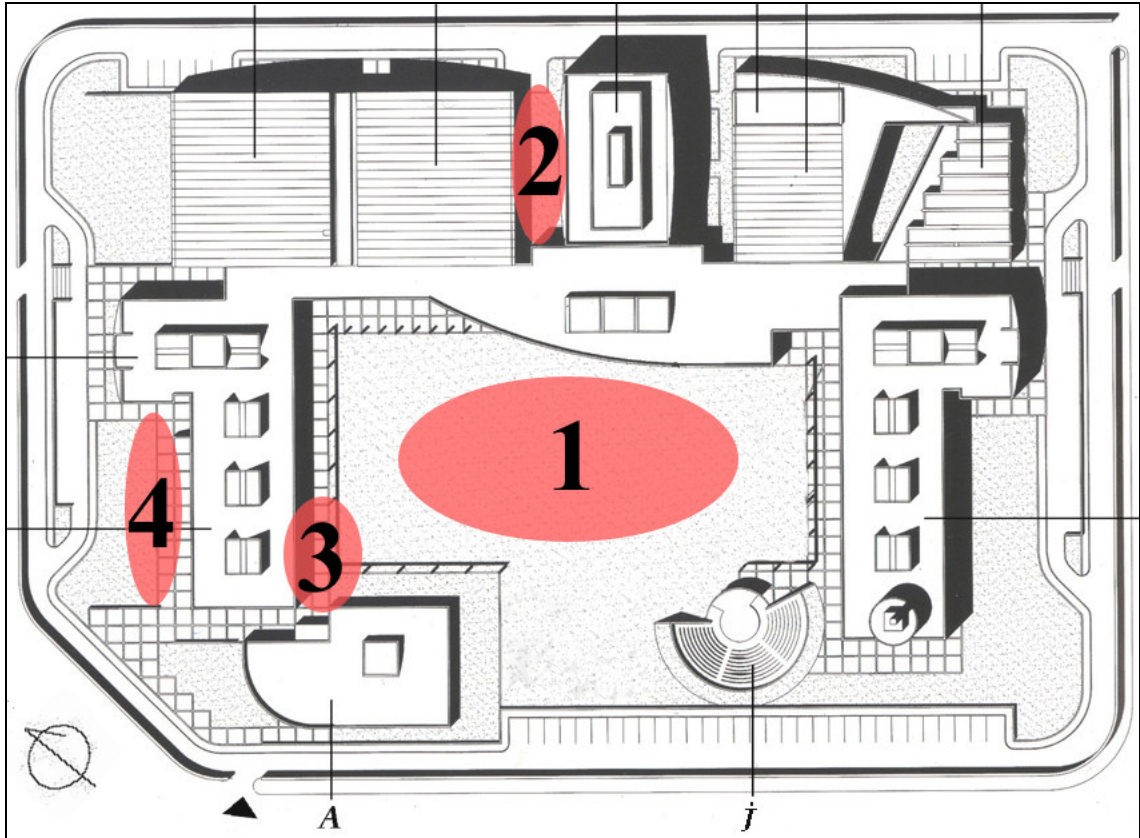
Figure 41. Field notes for Işıkkent ES.

1. Students mostly prefer to spend their time at the grass surfaced central garden of the school.

2. Students, mostly boys, play basketball at the outdoor courts between the buildings.

3. The playground is occupied by the students from lower grades during breaks.

4. The grass surfaced small garden in front of the classrooms facing north is occupied by students from lower grades.

4.7. Statistical Results

The total percentages of answers to the student questionnaire are presented in a table in Appendix'''. The questions having percentages that differ significantly from one school to other are evaluated in the discussion section. Table 7 presents the Chi-square (χ^2) test results for comparing questions of the student questionnaire versus schools. Table 8 presents the questions, which have p values smaller than $p<0.05$ (Question 2, Question 3, Question 4, Question 5, Question 7, Question 9, Question 12, Question 17, Question 18, Question 27, Question 29 and Question 30), are interpreted as providing meaningful relation.

Table 7. Chi-square test results.

	N	Chi-square	p value
Success	168	8.250	0.160
Q1	171	3.076	0.215
Q2	172	32.782	<0.001
Q3	170	61.405	<0.001
Q4	172	66.995	<0.001
Q5	173	13.016	0.001
Q6	172	1.095	0,578
Q7	171	12.266	0.002
Q8	170	0.551	0.759
Q9	173	12.276	0.002
Q10	173	0.931	0.628
Q11	172	4.299	0.117
Q12	173	11.949	0.003
Q13	173	0.785	0,675
Q14	172	4.464	0,107
Q15	171	3.310	0.191
Q16	173	4.050	0.132
Q17	170	52.911	<0.001
Q18	173	10.498	0.005
Q19	173	0.269	0.874
Q20	173	5.233	0.073
Q21	171	0.568	0.753
Q22	170	4.486	0.106
Q23	173	3.409	0.182
Q24	170	5.343	0.069
Q25	171	7.085	0.029
Q26	172	5.721	0.057
Q27	173	20.784	<0.001
Q28	171	2.270	0.321
Q29	171	11,681	0.003
Q30	171	25.905	<0.001

Table 8. The questions having p values smaller than p<0.05.

	DENIZ ES	FATIH ES	ISIKKENT ES	p values
	Percentages for 'Yes'			
Q 2 : I stay inside the classroom during breaks	9,80	44,29	5,77	<0.001
Q 3 : I go out to the garden during breaks	94,12	21,43	61,54	<0.001
Q 4 : I spend the break time inside the building	15,69	88,57	61,54	<0.001
Q5 : I read the bulletins on the wall during breaks	9,80	37,14	19,23	0.001
Q 7 : I play with boys during breaks	70,59	44,29	71,15	0.002
Q 9 : I have friends from other classes	78,43	88,57	100,00	0.002
Q 12 : I have friends from lower grades	52,94	57,14	82,69	0.003
Q 17 : There are places inside the school building that I like very much	27,45	82,86	84,62	<0.001
Q 18 : I have close friends from other classrooms whom I met at school	56,86	57,14	82,69	0.005
Q 27 : There are places inside school building that I can sit and talk	68,63	92,86	96,15	<0.001
Q 29 : We cannot play games in the school garden because it is too crowded	13,73	41,43	28,85	0.003
Q 30 : There are places inside school building that we play games together	37,25	77,14	75,00	<0.001

4.8. Discussion

Three case studies of this study were chosen among private elementary schools in İzmir which claim to offer a better education compared to public elementary schools in the same area with an emphasis on student-centered learning. The educational models that these schools try to carry out are similar to each other. The educational staff and the administrators who were interviewed frequently expressed their approaches to learning as "active learning" when asked about their educational programs. The focus of this study is on the spatial organization of these schools in supporting interactions among students given that all the three schools try to promote active and student-centered learning in education.

The locations, the physical features, and the spatial organization of the three elementary schools have different characteristics. Deniz ES provides a well-cared garden full of trees and greenery while Fatih ES has its social spaces scattered to various floors of its buildings. Işıkkent ES, different from the other two, offers a social life both indoors and outdoors with a variety of indoor and outdoor spaces serving for students.

Fatih ES is the oldest among the three and is located in a high-dense residential area in İzmir. The limitations in the built environment and the high population of the school create problems in the use of indoor and outdoor spaces. Deniz ES and Işıkkent ES are located in low-dense residential areas. Both schools do not have any significant relationships with the surrounding neighborhoods. Different from Fatih ES, all the students of Deniz ES and Işıkkent ES use school buses to commute to school. According to vice principal of Fatih ES, most students of the school live in nearby districts and these students walk to school. Walking to school can be considered as an additional agent providing informal interactions among students. Furthermore, there are differences in the way indoor and outdoor spaces are used in the three case studies.

In the following section, the research sub-questions of the study will be revisited in the light of the research results. In the next section, the indoor spaces of three schools will be discussed based on observations, questionnaires and interviews. Afterwards, a similar evaluation will be provided for outdoor spaces.

4.8.1. Discussion on Research Sub-Questions

As it is introduced in Chapter 1 the research sub-questions of this study are:

1. Do students want to interact with each other in their free time? Does it change from one school to another?
2. Do the schools studied provide spaces for children to interact with each other?
3. Where do students prefer to spend their free time in studied private elementary schools?
4. Do the spaces preferred by students in their free time change from one school to another?
5. What are the activities that take place in spaces where students prefer to spend their free time?
6. Do the activities that take place in spaces where students prefer to spend their free time change from one school to another?
7. Does the spatial organization of the school building affect students' interaction?

Sub-question 1: Do students want to interact with each other in their free time? Does it change from one school to another?

The first sub-question involves students' tendency to spend time with each other. According to the questionnaire, only nine out of 173 students from all three schools (5.20%) stated that they want to spend their breaks alone. According to chi-square test for Question 1 of the questionnaire, there is no significant relationship between students' preference to stay alone and case study schools (χ^2= 3,076, p=0,215). In other words, regardless of differences among schools, students want to interact with their friends during breaks.

Also the activity observation records show that students spend their free time in groups in all three case study schools. Only four students were recorded spending their free time alone out of 352 students from three case studies. This result supports the view that children generally have inclination toward forming social interactions. The

interesting question for this study, therefore, is to investigate how the spatial qualities of schools facilitate this strong urge in students to interact.

Sub-question 2: Do the schools studied provide spaces for children to interact with each other?

The space assessment forms were recorded together with the activity observations to address the sub-question 2 of this study. The use of indoor and outdoor spaces was analyzed to determine if they provide sub-spaces for group or common use in supporting the interactions among students. Table 9 lists the potential non-classroom spaces in three case studies which are also mentioned by students as favorite places in open-ended questions of the questionnaire and in interviews.

Table 9. Favorite places according to questionnaire and interviews.

	Deniz ES	Fatih ES	Işıkkent ES
Indoor spaces	Cafeteria Couches at corridors	Cafeteria Indoor playground Sports hall Branch classrooms	Sports hall The alley Couches at the alley Ping-pong tables Chess desks
Outdoors	Benches under trees Benches by the pond Outdoor sports courts Playground Amphitheater	Benches by the pond Outdoor sports courts	Central garden Outdoor sports courts Amphitheater

All three schools provide private spaces for students where they can spend their free time with a friend or with a limited number of friends. Table 10 presents those private spaces in three schools which are also mentioned by students in the open-ended questions of the questionnaire.

Table 10. Private spaces in schools mentioned in the open-ended questions of the questionnaire.

	Deniz ES	Fatih ES	Işıkkent ES
Indoor spaces		Emergency stairs	Red couches at the alley
Outdoors	Places under trees Benches by the pond	Benches by the pond Seats of the tribune in garden	

Sub-question 3: Where do students prefer to spend their free time in the studied private elementary schools?

This sub-question will be discussed based on (1) activity observation records, (2) interviews with both students and teachers, and (3) questionnaire.

The chart below (Figure 42) presents the results of activity observations. The places where students prefer to spend their free time are separated into two groups as indoors and outdoors and presented in percentages to understand the tendency in the use of indoor or outdoor spaces in studied schools.
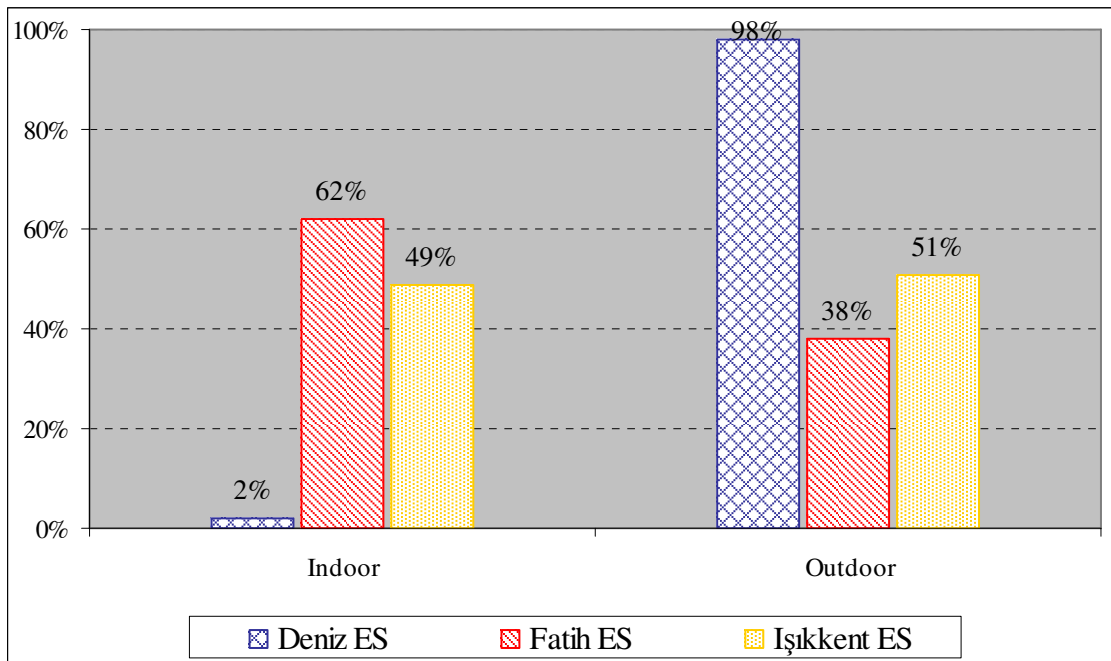
Figure 42. Percentage of places recorded in activity observation forms in three case studies.

Observation results indicate that the garden of Deniz ES, which is heavily used by students, provides various sub-spaces with high accessibility when compared to other case studies. The number of students observed indoors was higher in Fatih ES while the number of students recorded indoors and outdoors was almost equal in Işıkkent ES.

The next analysis is based on the interviews with both students and teachers. The places mentioned by the students and teachers were listed separately in tables in the results section. Table 11 presents places mentioned in all three schools. The colors (Blue for Deniz ES, red for Fatih ES and yellow for Işıkkent ES) indicate the places mentioned by both students and teachers of that school.

Table 11. The table of places mentioned in interviews with teachers and students.

	Deniz ES		Fatih ES		Işıkkent ES	
	Student	Teacher	Student	Teacher	Student	Teacher
Classroom	X			X	X	X
School garden	X	X	X	X	X	X
Outdoor playground	X	X			X	X
Benches in garden	X	X	X			
Places under trees	X	X				
Amphitheater	X	X				
Cafeteria	X	X	X			
Pond	X	X				
Indoor playground			X	X		
Swimming pool			X			
Corridor			X	X	X	X
Emergency stairs			X			
Indoors		X			X	
Red couches					X	X
Sports hall					X	X
Library		X				
Computer Lab		X				
Outdoor courts	X	X				
Ping-Pong tables						X
Chess desks						X

In Deniz ES, there are eight places–one of which is an indoor space–mentioned both by students and teachers while this number is five in Işıkkent ES and three in Fatih ES. There are indoor spaces in Deniz ES, such as computer lab and library, mentioned only by teachers but not by students. On the contrary, in Fatih ES, there are outdoor spaces mentioned by students in interviews which were not considered as favorite places of students by teachers. In the case of Işıkkent ES, the expressions of teachers on favorite places cover the places mentioned by students. The places such as ping-pong tables and chess desks which were mentioned by teachers can be paired with 'indoor places' that were mentioned in student interviews.

According to the interviews, the observations of teachers on places where students prefer to spend their free time include those places mentioned by students.

Only one place out of eight mentioned by both students and teachers was an indoor space in Deniz ES. This result supports the observations that outdoor places are dominantly in use in Deniz ES. Two out of three places mentioned by both students and teachers were indoors in Fatih ES while the number of indoor places was four out of six mentioned by both.

The chart below (Figure 43).presents the favorite places of students in three schools in a single chart that provides easy comparison among schools.
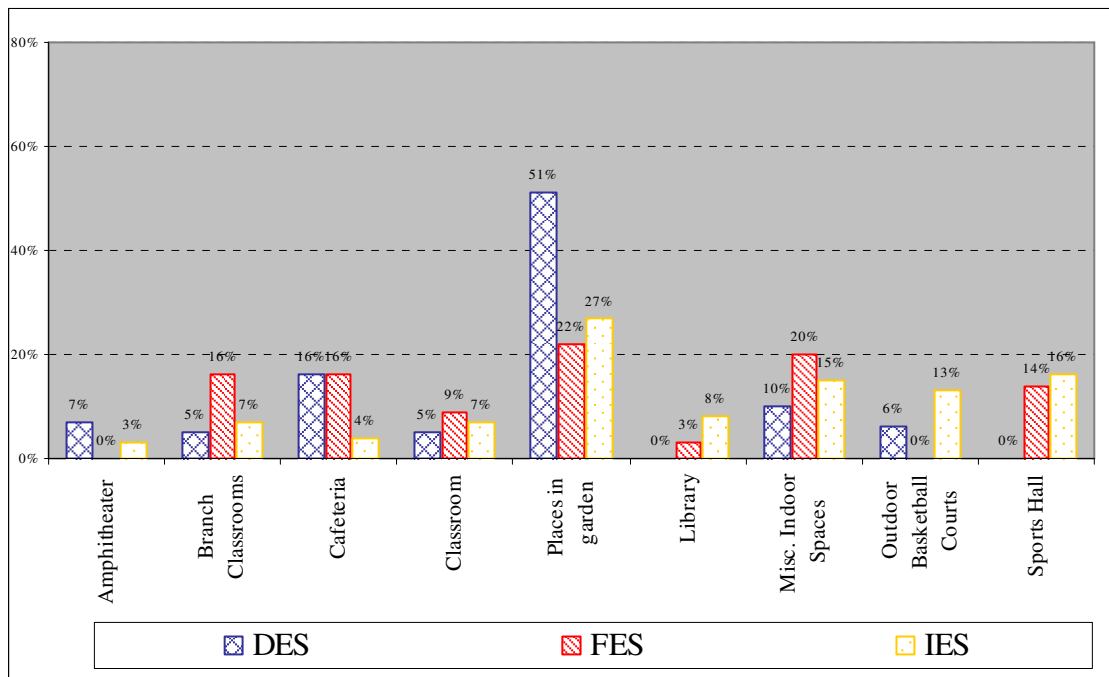
Figure 43. Favorite places of students in three case studies according to the open-ended question of the questionnaire.

The places preferred by students during their free-time are different for each school. Question 3 and Question 4 of the questionnaire investigate the students' preferences of spaces (outdoors or indoors) during breaks. There is a significant difference in students' preference of both outdoor (χ^2= 61,405, p<0,001) and indoor (χ^2=66,995, p<0,001) spaces from one school to another. In Deniz ES, which is selected as a case study for its emphasis on the use of outdoor spaces, the students prefer to spend time in outdoor places such as benches under trees, benches by the pond, outdoor sports courts, amphitheater and the playground in the school garden. In the case of Fatih ES which is a multi-storey inner city private elementary school, the preferences of

students are mostly indoor spaces such as cafeteria, branch classrooms, indoor playground, sports hall corridor or the classrooms on various floors of the building. In Işıkkent ES, which is rich in providing both indoor and outdoor places, there is no significant difference in the use of outdoor and indoor spaces according to the interviews, observations and open-ended questions of the questionnaire. Students mentioned both indoor and outdoor spaces such as central garden, sports hall and the alley as their favorite place.

Sub-question 4: Do the spaces preferred by students in their free time change from one school to another?

As it is mentioned for sub-question 1, the students have inclination toward forming social interactions. The students prefer to spend their free time at places that facilitate these interactions. Based on students' activities during their free time, the places preferred may be indoors or outdoors. Figure 44, a summary of students' comments in the open-ended question of the questionnaire, presents the favorite places classified as indoors and outdoors for each case study. According to the percentages, the places where students prefer to spend time differ from one school to another in terms of indoors and outdoors.
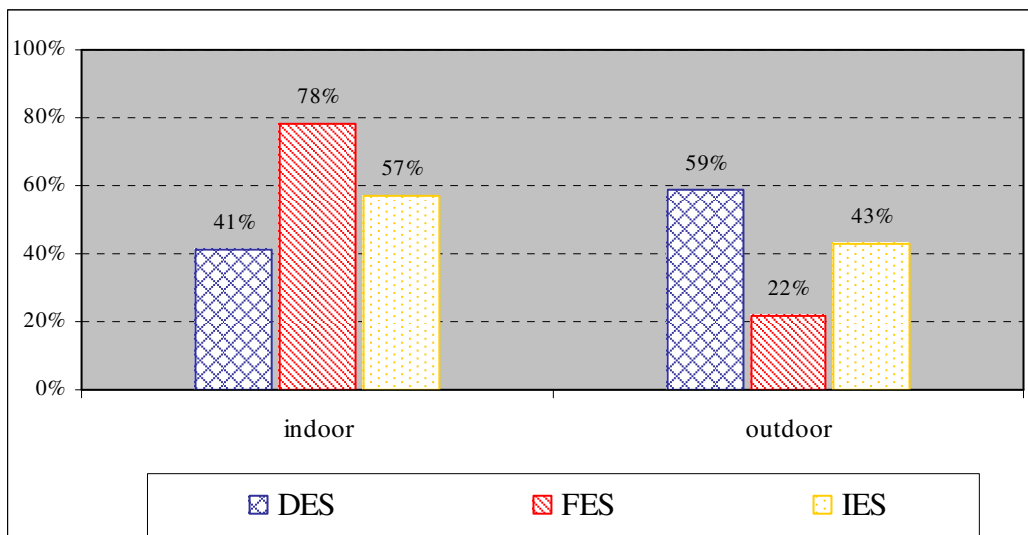
Figure 44. Children's favorite places according to the questionnaire, classified into two groups.

The activities that students prefer to participate in three case studies take place indoors or outdoors according to the spatial organization of that school facility. It is observed and recorded that spaces preferred by students are mostly outdoors in Deniz ES and indoors in Fatih ES. In the case of Işıkkent ES, the students prefer both indoor and outdoor spaces during their free time. This state of balance in Işıkkent ES, maintains an advantage for the facility among three case studies in different weather conditions. Regarding to the various indoor and outdoor spaces provided, it may be asserted that students in Işıkkent ES are less affected from weather conditions during breaks among three schools.

Sub-question 5: What are the activities that take place in spaces where students prefer to spend their free time?

'According to activity observation records for each case study, the dominant activities of students in their free time are 'wandering and talking', 'playing games', and 'playing ball games' including basketball, football, volleyball and ping-pong (Figure 45). These three activities have the highest number of students recorded in case studies. It may be concluded that students in case studies prefer to spend time together in groups talking to each other or playing games.
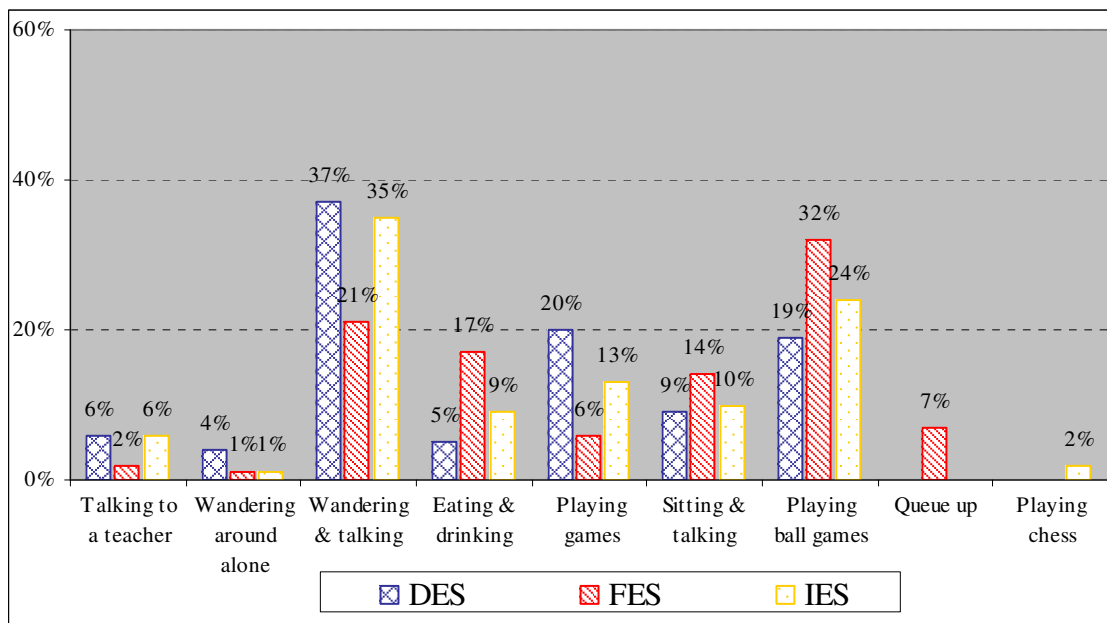
Figure 45. Students' activities recorded in activity observation forms.

The students' own comments about their activities support the results of activity observation records. Figure 45 retrieved from students' own expressions, has similarities with the chart above (Figure 46). The most frequent three activities mentioned by students are 'talk', 'play games' and 'play ball-games or sporting'. Different from observation records, there are various activities such as 'study or read' or 'comb hair' mentioned by students.
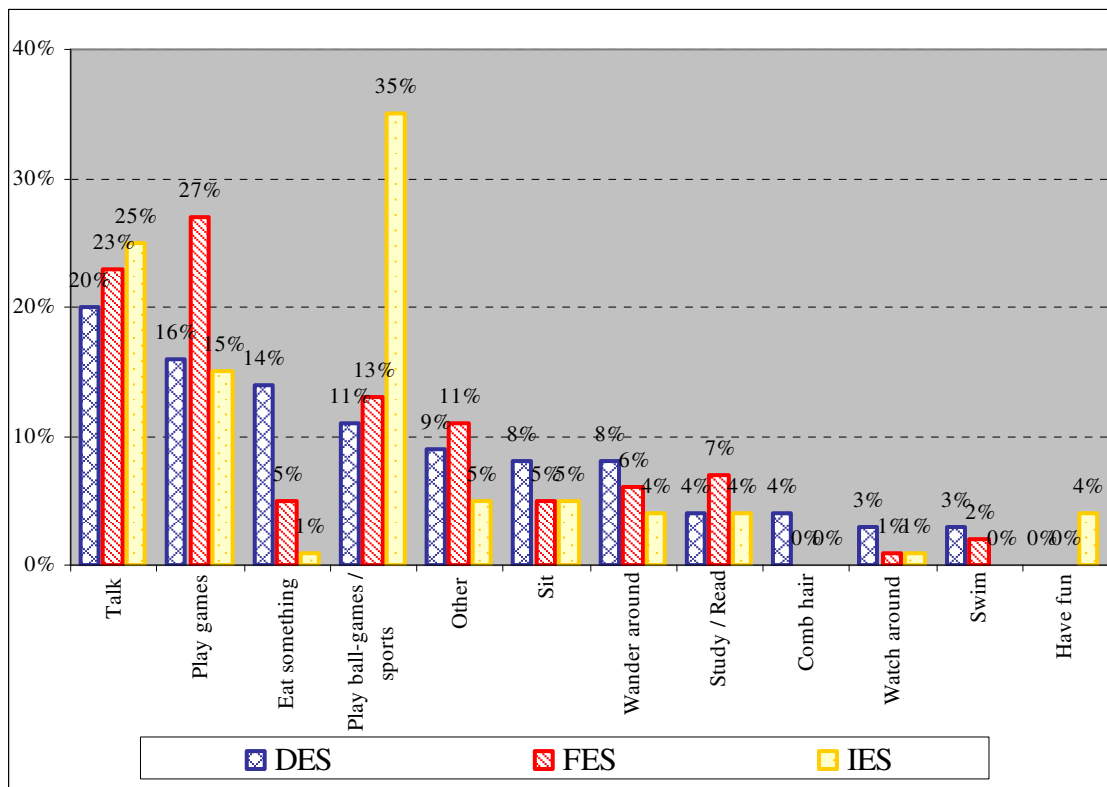
Figure 46. Students' activities according to their own expressions in open-ended questions of the questionnaire.

Sub-question 6: Do the activities that take place in spaces where students prefer to spend their free time change from one school to another?

Both activity observations and students' statements indicate similar activities of students in three private elementary schools studied. The analysis for sub-question 1 indicates that students prefer to spend time with each other rather than staying alone. The analysis for sub-question 5 supports this result by reviewing the recorded activities of students. Top three activities presented in Figure 45 and Figure 46 are almost the

same which are 'talking to each other', 'playing games together' and 'playing ball-games or sporting'. Briefly, the activities that take place do not change from one school to another. But the frequencies of activities are different in three schools. The spatial differences in three schools could be a potential explanation for the differences in the frequency of activities. The frequency of wandering and talking activity, which is mentioned as one of the top three activities, changes in three schools (37% in Deniz ES, 21% in Fatih ES, 35% in Işıkkent ES). The garden of Deniz ES and the alley of Işıkkent ES, providing opportunities for students to wander and talk, are the places that might have kept the percentage above when compared to Fatih ES.

Sub-question 7: Does the spatial organization of the private elementary school buildings studied affect students' interaction?

According to the observations, the space preferences of students change from one school to another. Spaces, whether indoors or outdoors, preferred by students have different potentials in supporting interactions among students. Since the spatial organizations and spatial qualities of three case studies are different, the activities and the interactions of students taking place in those spaces might have different characteristics. For example, at Deniz ES there is a greater chance for encounters among students from different grades because students from different grades use the school garden simultaneously. The alley of Işıkkent elementary school also may be considered as having such an impact. In Fatih ES, the encounters among students from different grades seem to be relatively limited when compared to other case studies. Students prefer indoor spaces in a relatively shorter distance, such as the cafeterias on floors four and ten, which may be considered as an obstacle to incidental interactions among students.

Question 9 of the questionnaire has asked whether students have friends from other classes or not. According to the Chi-square test comparing the Question 9 of the questionnaire versus schools indicates that there is a significant relation between the two (χ^2= 12.276, p=0.002). The percentage of positive answers for Question 9 (I have friends from other classes), is 78.4% for Deniz ES, 88.4% for Fatih ES and 100% for Işıkkent ES (Figure 47). It may be asserted that the high rate of indoor occupancy in Fatih ES may have kept the percentage for Question 9 above the percentage for the same question in Deniz ES.
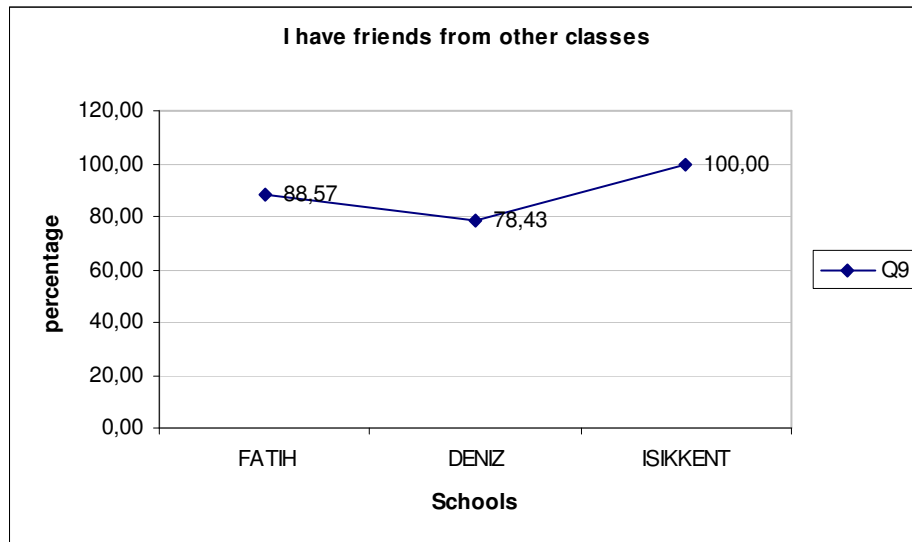
Figure 47. Percentages for Question 9 in three schools.

Another issue is that the different spatial organization of three schools may have affected the acquaintanceship which can be considered an initial agent in providing interactions among students. Question 18 is asked to determine the acquaintanceship among students (Figure 48). According to the Chi-square test comparing Question 18 versus schools indicates that there is a significant relation between the two (χ^2= 10.498, p=0.005). This result verifies that in case studies, there is a difference in the answers to Question 18 which may be explained by the difference in spatial organizations of the three schools.
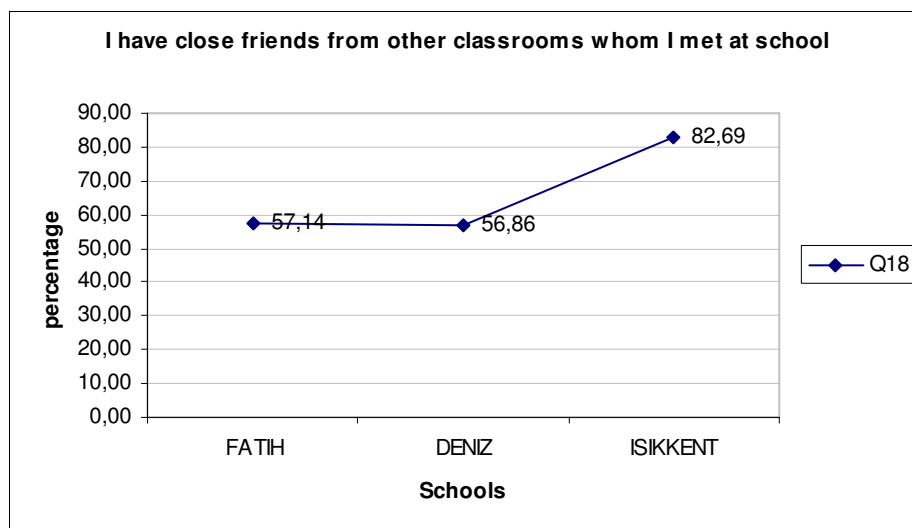
Figure 48. The percentages for Question 18.

4.8.2. Indoors

One of the major premises of this study is that peer interactions are necessary in facilitating informal learning situations. Therefore, the space and activity preference of students were investigated which is considered as affecting acquaintanceship and friendship in schools.

According to the analysis of the results of the questionnaire, the responds of students to Question 2 (I stay inside the classroom during breaks, $\chi^2 = 32.782$, p<0.001) change from one school to another. The percentage for students staying inside the classroom is highest in Fatih ES with 44.2%, while it is lowest in Işıkkent with 5.7% (Figure 49). Difference in the spatial organizations of three schools may be an explanation to the difference in the percentages for Question 2.
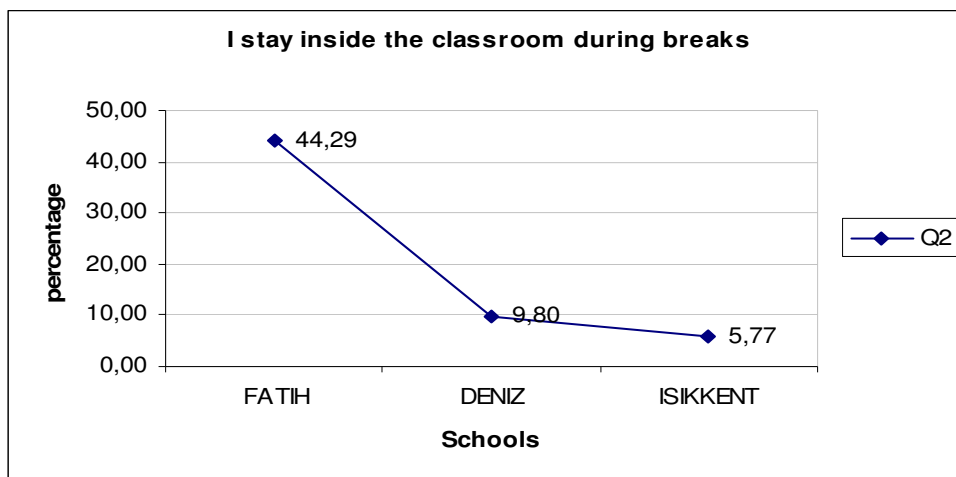
Figure 49. The percentages for Question 2 in three schools.

In Işıkkent ES, the same percentage of students (61.5%) chose the statements "I go out to garden in breaks" (Question 3) and "I spend my breaks inside the school building" (Question 4). This supports the conclusion that in the use of indoor and outdoor spaces there is a balance in Işıkkent ES. There is no such balance in other case studies (Q3: $\chi^2 = 61.405$, p<0.001, Q4: $\chi^2 = 66.995$, p<0.001). The majority of students prefer the garden in Deniz ES with a percentage of 94.1%, while the indoor use is dominant in Fatih ES with a percentage of 89.9% (Figure 50). This differentiation in use was observed and recorded during visits to the schools.
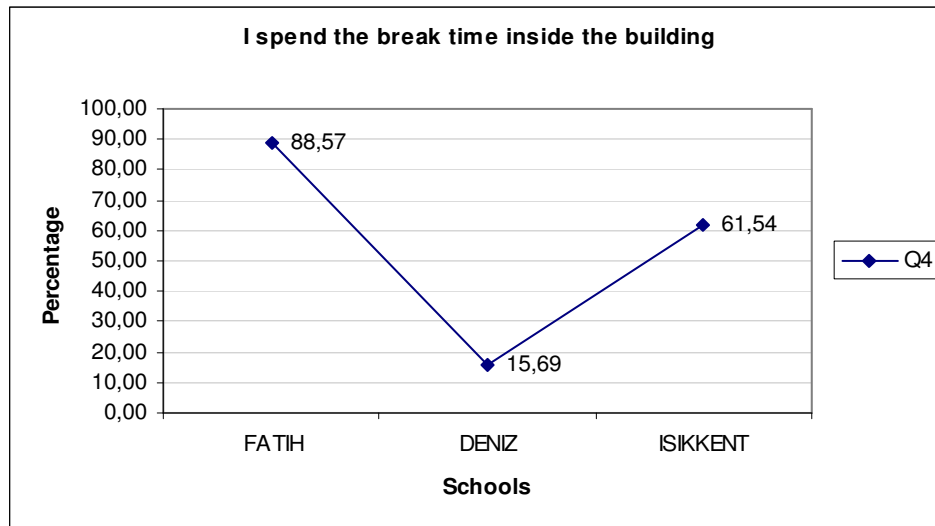
Figure 50. The percentages for Question 4 in three schools.

Işıkkent ES has the highest indoor area per student (20 sq m /student) when compared to Deniz ES (14 sq m /student) and Fatih ES (13 sq m /student). The indoor social spaces are attached to an alley which has access to the garden of the school. During the visits to Işıkkent ES, it was observed that children frequently use the chain of social spaces alongside the alley furnished to support different types of interactions among students. 'Sports hall', 'library', 'ping-pong tables' and 'red couches at the end of the alley' are the favorite indoor places mentioned in the answers of students to the open-ended questions (Figure 30).

Deniz ES has limited opportunities in providing indoor social spaces for students in comparison to Işıkkent ES. The students of Deniz ES dominantly use the garden during breaks. Only 15.6% of students stated that they spend their breaks inside the school building in Deniz ES (Figure 51).

Figure 51. The second floor corridor of elementary school building of Deniz ES.

The corridors of Deniz ES, loaded with classrooms on both sides are far from being places where students would prefer to spend time. There is no furniture, except the seats at the first floor of elementary school building (Figure 51) or no sub-spaces that may facilitate interactions among students. Also, corridors, which do not have natural light, have limited visual contact to outdoors. The Question 30 of the questionnaire asked students if they have places inside school building where they play games together. In the case of Deniz ES, as previously stated above, the indoor spaces can be considered poor in providing such spaces for students. The percentages, presented below (Figure 52), reveal the significant difference among the students of three schools regarding to Question 30. Also, according to the Chi-square test the answers of students to Question 30 differs significantly one to another (χ^2 = 25.905, p<0.001).

There are places inside school building that we play games together
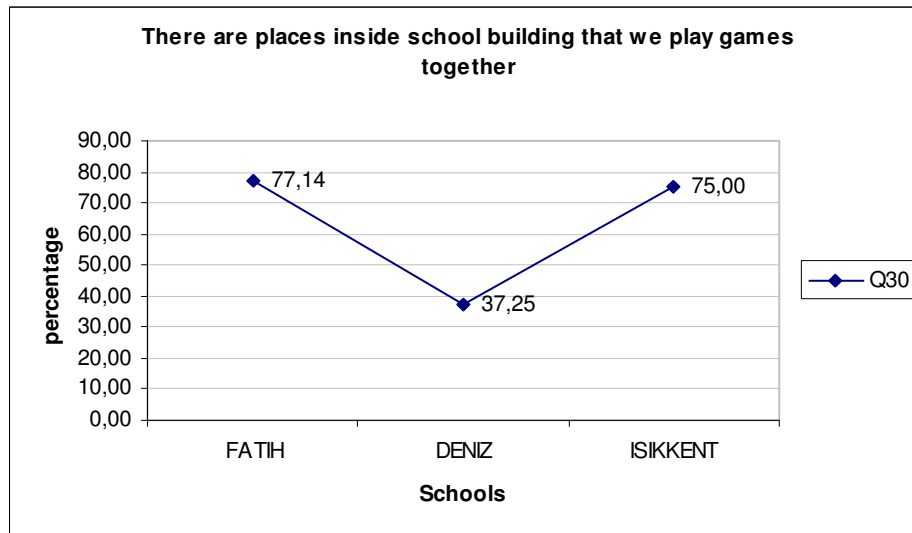
Figure 52. The percentages for Question 30.

The only indoor space that is used for social activities is the entrance hall (Figure 53) at the entrance of the administration building. The hall has a gallery void and an opening which provides natural light and visual contact to outdoors. There is no problem of accessibility (Figure 5) and the space is furnished in a way which may attract children (seats, boards, displays, green elements…etc). The space houses various activities such as student performances or exhibitions of student works, however, these activities are all planned activities. Furthermore, other than these planned activities, the hall provides opportunities for incidental encounters or interactions among students from different grades since the space is connected to upstairs and to outdoors.

Figure 53. The only indoor space in Deniz ES that is used for social activities is the gallery at the entrance of the administrative building.

Students prefer to spend their breaks indoors in Fatih ES with a percentage of 88.5% which is the highest among three case studies. The variety in indoor social spaces of the school such as three cafeterias on floors five, nine and ten, provide opportunities for encounters and interactions among students. Although the accessibility problem is again an issue for the social spaces on floors nine and ten, the students prefer to go upstairs to the cafeteria rather than going out to the garden of the school. This can be explained by frequent complaints by students about the crowd in the garden. The students of elementary school prefer to leave the garden to the upper grades because the high school and elementary school students have their breaks at the same time.

Fatih ES has the lowest indoor area per student (13 sq m /student) among three case studies. As observations during visits support, the indoor spaces are crowded when compared to Deniz ES and Işıkkent ES (Figure 54). On the other hand, students of Fatih ES stated that there are places inside the school building where they can stay alone with a percentage of 62.8% which is the lowest among the three schools.

Figure 54. Indoor use is dominant in Fatih ES with the percentage of 89.9% according to the student questionnaire.

The dominant use of the indoor spaces which can be regarded as crowded according to the observations may have a positive effect on the acquaintance in school. Sanoff (1994) states that "with no expansion of space, social density will increase with the increase of students (p.42). 87.1% of students in Fatih ES stated that they recognize the faces of most of the students in school, although the population of the school is significantly higher than other case studies. In Deniz ES 90.2% of students stated that they recognize the faces of most of the students in school, while the percentage is 88.4 in Işıkkent ES[8].

In three case studies, there are indoor places that students are observed to be spending time at each break. These indoor places, whether designed for that purpose or not, provide opportunities for students to interact with each other.

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[8] The Chi-Square test does not indicate relationship between Question 19 and schools studied.

In Deniz ES, the seats on the first floor corridor of Building C (Figure 3) that houses the classrooms of elementary grades is an example to those indoor places mentioned above. The place pops out of the corridor of the building to the west and has the view of outdoor sports courts located to the west of the campus site. Students who prefer to spend time here may have limited privacy, since the stairs and door which are located to the south are used for getting outdoors. During the visits to Deniz ES, the place is observed to be occupied by students at each break.

Figure 55. The seats at the corridor of elementary school building of Deniz ES.

In Fatih ES, the emergency staircase (Figure 56), which is annex to the elevator and the main staircase of the building, is observed to be an indoor spot where students are observed to be spending time. Similar to the seats at Deniz ES, the place provides privacy for students and it has the view of school garden. Since Building A of Fatih ES is a ten-story block, each floor has this emergency staircase where students can easily access. The emergency staircase is the only non-classroom space at floors of Building A that has the direct sunlight.

Figure 56. The emergency stairs of Building A of Fatih ES.

In the case of Işıkkent ES, the students mentioned red couches at the end of the alley (Figure 57) where they prefer to spend time. Although there are chess tables and a ping-pong table nearby, the couches located to the south end of the alley, provide privacy for students except lunch times. Similar to those spaces in other case studies mentioned above, the place is easy accessible from classrooms and the garden of the school. There are three gates to the garden which provide daylight and visual connection to outdoors.
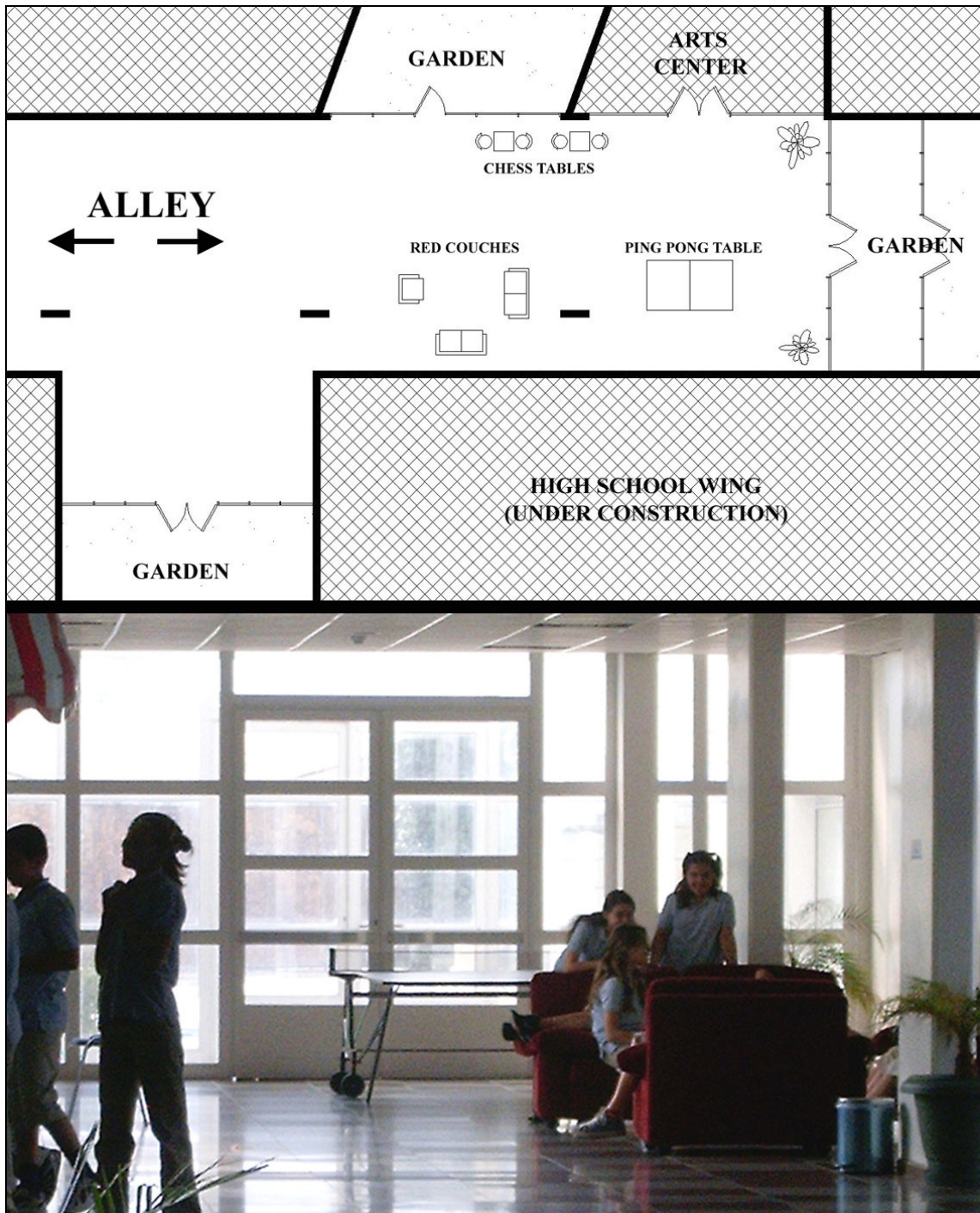
Figure 57. The red couches at the end of the alley of Işıkkent ES.

The analysis of places students prefer and the activities take place in there indicates five factors that affect students' preference of indoor spaces: (1) accessibility, (2) privacy, (3) variety of indoor sub-spaces, and (4) day lighting, (5) visual connections to other floors or outdoors.

Accessibility seems to be a factor effecting students preference of indoor spaces during breaks. In her study, Pasalar (2003) investigated the effects of spatial layouts of middle school buildings in multiple case studies. Pasalar (2003) states that:

> **The areas which are commonly used by every student in the same school community despite the grade level (gym, cafeteria, hallways, gathering areas, entry halls) are major activity nodes where possible interactions among students could occur. In that respect, the spatial layout of school buildings can enhance or inhibit those opportunities for interactions in terms of the accessibility and the occupancy rate of the common areas in the building (p.215)**

Students want to have private tranquil spaces to spend time with a friend and they also want such spaces having visibility to other non-classroom areas of school buildings. This may be seen as a contradiction. Desire for both privacy and visibility of other areas is observed in students' space preference in schools studied. Sanoff (1994) states that "since students often seek seclusion, they might prefer spaces that are not visibly isolated or cut off from view" (p.42).

In the case of Fatih ES it is observed that, the indoor spaces such as cafeterias and indoor playgrounds, which are relatively more accessible when compared to the garden of the school, are dominantly in use. On the other hand, in Işıkkent ES, according to the observations recorded, the students prefer to spend their breaks indoors, particularly in the alley which can be regarded functionally as a spine. The results of the questionnaire show that same percentage of students prefers to spend time indoors and outdoors of Işıkkent ES. The accessible indoor spaces of the school attract students as much as the garden of the school. Deniz ES has the lowest percentage (15.6%) of students preferring indoors during breaks. According to the space assessment records, there is no problem of accessibility for indoor places of the school, but there are other factors (privacy, variety of indoor sub-spaces, visibility) that draw the percentage to such low figures in Deniz ES.

There are indoor places mentioned by students in Fatih ES where students spend time talking privately to each other and which have visual connection to outdoors. The emergency stairs (Figure 56) and the cafeteria at the tenth floor are examples to such places where students prefer to spend time talking and watching people in the garden. Similarly, students spend time talking to each other and viewing the vista of İzmir Bay at the tables of the cafeteria at the tenth floor (Figure 58).

Figure 58. A group of girls spending time at the cafeteria on the tenth floor of Building A of Fatih ES.

The four factors that affect students' preference of indoors can be observed clearly at indoor spaces of Işıkkent ES. According to the observations and the questionnaire results students use a variety of indoor spaces which are easily accessible and has visual connection to outdoors or to other indoor spaces. There are also indoor spaces which provide tranquil environments for students to spend time with each other privately such as red couches at the end of the alley. It can be stated that these four factors affect students' preference of using indoors as frequently as well-cared outdoor spaces of Işıkkent ES.

In Fatih ES and Işıkkent ES, the indoor spaces are occupied by students during breaks, while the use of indoor spaces is rare in Deniz ES because of lack of variety in indoor spaces. When the weather is not convenient for outdoor use, the students in Deniz ES may have problems in spending time indoors. During the rainy-day visit to Deniz ES, most students were observed to spend their breaks at the cafeteria other than the students spending time in the garden in spite of rain. On the other hand, students of

Işıkkent ES have variety of indoor and outdoor options to spend their breaks whether the weather is fine or not.

4.8.3. Outdoor Environments

The three schools of this study have different characteristics in terms of their campus settlements. The different features of the outdoor environments were described previously. This section examines the outdoor spaces in detail.

Figure 59 presents diagrams of campus settlements for each case study. Considering the site sections (Figure 7, Figure 12, Figure 18), the three schools differ in their relationships between their buildings and their outdoor spaces.
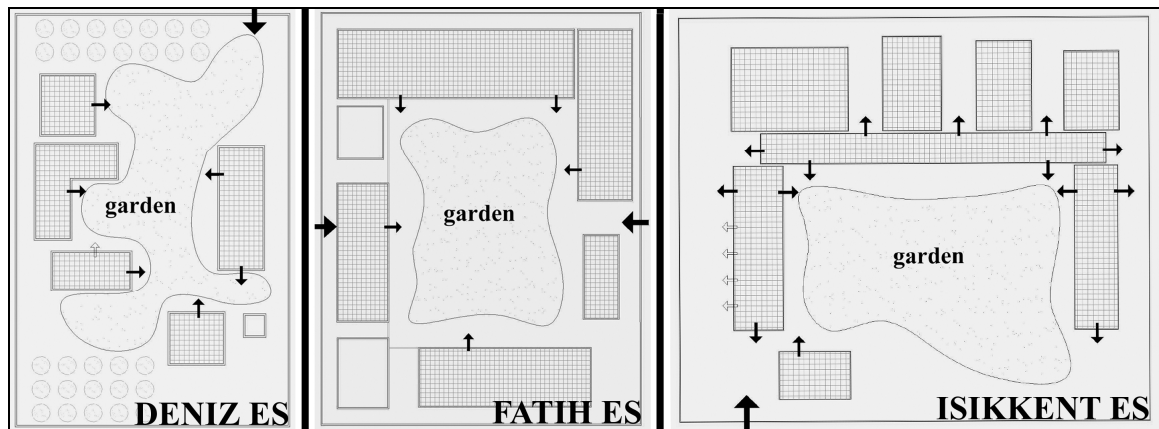
Figure 59. Diagrams for site plans for three schools.

In the case of Deniz ES, the two-story buildings of the school are located apart from each other. The outdoor spaces of the school such as the amphitheater, playground or the sports courts are spread out around the buildings. The fragmented character of the garden has three main parts which are the olive grove to the western part of the site with the main gate, the central part with the pond and the outdoor sports courts and the tangerine trees to the eastern part. These chain of spaces which have limited visual connections with each other, surround the buildings of the school.

The cloister-like garden of Fatih ES is a place that seems out of reach for students whose classrooms are located on the upper floors of ten-story buildings of the school. Other than the issue of accessibility, the buildings of the school are problematic

in terms of human scale (Figure 12). Therefore, the arcade in the garden is important in bringing the scale down to human scale at the level of the school garden and in re-organizing the sub-spaces. Also the arcade creates a secondary circulation route between buildings on the level of first floors. This three-meter wide elevated street enriches the opportunities for incidental relationships and interactions among students (Figure 10).

Similar to the layout diagram of Fatih ES, the central garden of Işıkkent ES is surrounded by buildings which have twelve gates that provide outdoor connections among building, such as from elementary school wing to the arts center, other than the indoor circulation. Both physically and psychologically, the unfragmented grass surface of the garden can be considered as an unifying agent for Işıkkent ES.

Among three case studies, Fatih ES has the minimum garden area (4,300 sq m) most of which is hard-surfaced used for different sport games (72% hard surfaced, 28% grass). The garden area in Işıkkent ES is 20,000 sq m with 33% hard-surfaced and 67% grass and in Deniz ES it is 30,000 sq m with 30% hard-surfaced and 70% grass covered (Table 6). In Fatih ES, the hard-surfaced section of the garden where the ceremonies take place is mostly used by male students for playing basketball and football. The green part of the garden, which reminds an urban park, provides benches shaded by trees for students. During breaks girls spend time at these shaded places in the garden of Fatih ES. Deniz ES has similar places in its garden. The benches under the trees of the garden are occupied by students in each break (Figure 20). Compared to both schools, Işıkkent ES has no such shaded spots in its central garden and has only free-standing concrete columns surrounding the wide open grass surface far from providing shady places. The central garden of the school is left for students' use with minimum garden furniture. Toys in the playground adjacent to kindergarten building and the log structures located to the north of garden are only outdoor furnishing elements within the central garden. There are timber desks with awnings in the small gardens between the buildings of Işıkkent ES (Figure 60), but during observations, there were no students spending times in these gardens[9]. The students recorded outdoors during activity observations were spending time in the central garden of the school.

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[9] The principal of Işıkkent ES stated that the small garden between the dormitory building and the dining hall is reserved for sixth, seventh and eighth grades of elementary school.

Figure 60. The small garden between dormitory building and dining hall of Işıkkent ES.

According to the Chi-Square test results, the preference of going out to garden (Question 3) change from one school to another ($\chi^2= 61.405$, p<0.001). 21.4% of students of Fatih ES prefer to spend their breaks in the garden. This average is the lowest compared to other schools in the study. In Fatih ES, it is observed that most students who prefer to go outdoors during short breaks are boys playing football or basketball on the hard-surfaced ground. It must be reminded that Fatih ES is the only inner city facility among the case studies and the ten-story buildings of the school have vertical circulation problems that affect the outdoor usage. Two-story blocks of Işıkkent ES and Deniz ES have adequate number of gates connecting the indoor circulation to outdoors, enriching the relationships between indoors and outdoors. There are twelve doors connecting indoor spaces of two-storey 'U' shaped building of Işıkkent ES to outdoors while in Deniz ES, each two-storey building in the campus site has two doors to outdoors. Compared to Fatih ES, the other two schools have no accessibility problems. The percentage of students who prefer to go out to the garden during breaks is 94.1% in Deniz ES while the percentage is 61.5% in Işıkkent ES. The percentage for

this question is highest in Deniz ES where it is observed that students mostly prefer to go outdoors whether they participate to various activities such as playing basketball or spend time privately with a friend. The statements of principal of Deniz ES support the observations on outdoor usage. The principal of the school states explicitly that the students go out to the garden even in rainy days.

According to the questionnaire, the percentage of students going to the school garden in Işıkkent ES is 61.5% which is (Question 3: I go out to the garden during breaks. χ^2= 61.405, p<0.001) higher than Fatih ES and lower than Deniz ES (Figure 61). It is observed that the school administration and the teaching staff in Işıkkent ES encourage students to go out to the garden at every opportunity. But compared to other schools, the school building provides many indoor spaces for students to spend their breaks inside the school building as well. Even the classroom spaces in Işıkkent ES have special school furniture such as book shelves, cushions to sit on and bulletin boards to attract children in their spare time. It is observed that the balance in the design of the indoor and outdoor spaces of Işıkkent ES–the equilibrium in the variety of indoor and outdoor spaces–keeps the average of outdoor usage higher than Fatih ES and lower than Deniz ES.
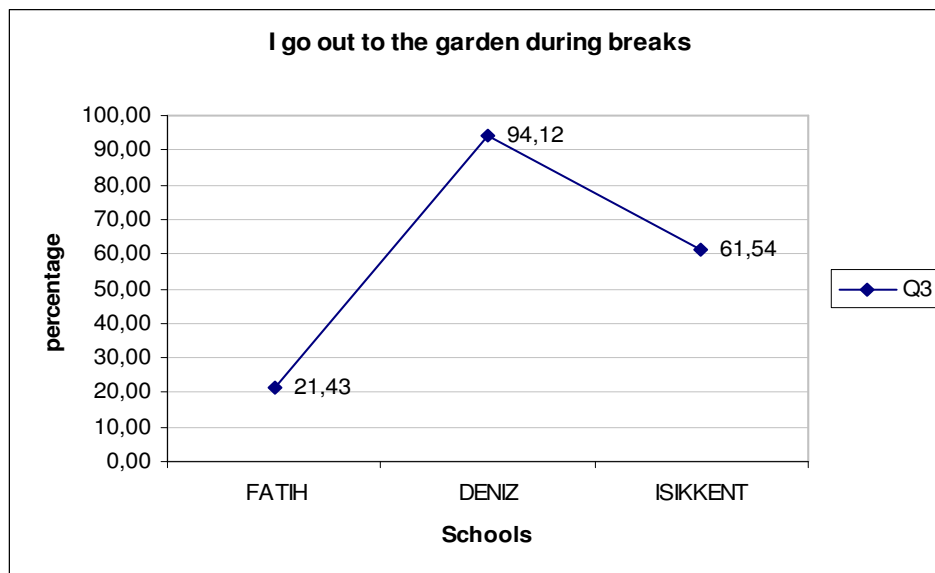
Figure 61. The percentages for the Question 3 in three schools.

The purpose for focusing on the outdoor spaces and usage is to question the potential of the school gardens in providing places for effective interaction among

students. In inner-city school cases such as Fatih ES, the garden is the only common space where students can meet and spend their free time with each other. Relationships between boys and girls take place mostly in playgrounds of school facilities. Briefly, the school garden plays a crucial role in acquaintance among students. As it is presented in the previous section that investigates research sub-questions of the study, another result supporting this relationship between acquaintanceship and school facility is the analysis for Question 9 that asks students if they have friends from other classes (χ^2= 12.276, p=0.002). For Question 9 (Figure 42), Deniz ES has the lowest percentage among three schools although the percentage was highest for the Question 20 that seeks for the acquaintanceship in school. It seems like there is a contradiction in the answers of students in Deniz ES or this contradiction could be interpreted as follows. Those students participated in the questionnaire may know each other's names but may not consider each other as friends.

In Işıkkent ES, the percentage for Question 9 is 100%, while the percentage is 78.4% in Deniz ES. Fatih ES is between them with a percentage of 88.6%. It is probable that indoor and outdoor spaces of Işıkkent ES provide enough opportunities for students from different classrooms to blend in. The balance in the usage of indoor and outdoor social spaces of the school allows students experience various activities together and establish connections with each other in meaningful ways. The non-classroom spaces of the school provide possibilities for visual encounters (acquaintanceship) that may foster interactions and informal learning situations. The administrative staff of Işıkkent ES observes and encourages these contacts among students. Vice Principal of Işıkkent ES stated that she had observed students from grades seven and eight playing chess at the desk which were recently located in different spots alongside the alley of the school.

In the example of Deniz ES, it is probable that the fact that draws the percentage to 78.4% for Question 9 is the garden of the school and not the indoor spaces. The factor which increases so much the use of garden during breaks (94.1%) could be lack of options in indoor spaces. In Deniz ES the garden can be considered as the primary space to support the interactions among students and teaching staff. The tendency to use the outdoor spaces is dominant in Deniz ES while it is the opposite in Fatih ES due to accessibility problems to outdoors.

In Deniz ES in which the outdoors are preferred significantly more than other case studies according to observation records and interviews, students stated that they know most students' name in school (Question 20) with a percentage of 84.3% which is

101

the highest among three schools. On the other hand, Fatih ES has the lowest percentage (65.7%) of positive answers for the same question. Since students prefer to stay indoors, particularly on floors which their classes are on, rather than going out to the garden, they may not have the chance to meet or even see the students from other classes whose classrooms are on different floors. It may be asserted that the accessibility problem to outdoors or to other floors of the nine-storey building of Fatih ES, effects the space preferences of students in their free time that reduces the acquaintance among students. This could also decrease the opportunities for positive interaction possibilities among students. When compared to Fatih ES, the spatial organizations of the other two case studies with easy accessible gardens provide more opportunities for positive interaction.

The garden of Fatih ES has a poor visual relationship with indoor spaces of Building A which houses the elementary grades. The garden cannot be seen from non-classroom spaces of the building. A number of boy and girl students were recorded during the observations in the garden of the school despite accessibility problems to the garden. Boy students were mostly observed playing basketball and football while girl students were observed spending time together at the covered seats and sitting on the benches in the garden talking to each other. Even in the short period of breaks the girls prefer to come down to the greener part of the garden and spend time together at the benches located in green alcoves (Figure 62). These alcoves provide spaces for students, especially for girls, to talk privately with a friend or a limited number of friends. A girl from grade six mentioned she prefers "…benches in the garden, because there are bushes between benches" because she "…can talk comfortably".

Figure 62. The benches in the green alcoves in the garden of Fatih ES provide opportunities for private conversations.

There are questions in the questionnaire to evaluate children's relationship with the garden (Question 16: There are places in the garden that I like very much). The students were asked if they have places they like in the garden or not. 85.7% of the students in Fatih ES answered the question positively with the highest percentage among the three case studies although there is a vertical circulation and accessibility problem to the garden. 82.1% of boys answered the question positively while the percentage is 88.1% for girls. Since there are indoor courts in Building A of Fatih ES, boys can spend their free time indoors playing basketball or football which they mentioned as favorite activities. On the other hand, girls' tendency to prefer spaces of tranquility was observed in all the three case studies. The high percentage of girls (88.1%) in Fatih ES having places in the garden that they like very much can be explained with girls' preference for relatively tranquil places rather than the noisy indoor spaces of the school. The percentages for the same question in other case studies are 68.1% for Deniz ES and 75.0% for Işıkkent ES.

The indoor options for the students of Işıkkent ES may have kept the percentage (73.0%) below Fatih ES for Question 16 (There are places in the garden that I like very much). In the example of Deniz ES, there is a contradiction in the answers of students and the frequency of use. The percentage (72.5%) is below the average of other case studies for the same question although the garden of the school is densely occupied by students. Furthermore, the students described many private places that they like in the garden (Figure 63). The open-ended question that asks the favorite spaces in school is answered explicitly by students in Deniz ES. There are many clear expressions by students that describe specific places in the garden such as the benches by the entrance door to Building A, place under the green-almond tree by the main gate of the school and benches by the pond.

Figure 63. Students described many private places that they like to be in the garden of Deniz ES.

There is a balance in the use of outdoor and indoor spaces in Işıkkent ES. The percentages (61.5%) for Question 3 (I go out to the garden during breaks) and Question

4 (I spend the break time inside the building) support the observations on the balance of indoor and outdoor space usage.

In Fatih ES the percentage of positive answers for Question 4 (88.5%) is higher than the other schools because of the variety of indoor spaces where students from different classes could blend in. In the case of Deniz ES, the garden is the agent that provides the social contacts and interactions among students. The percentage of students who state that they go out to garden during breaks is 94.1%.

The outdoor social spaces of the case studies can also be analyzed in terms of identity. Students often used natural or artificial elements in the gardens to define and locate specific places both during the interviews and in open-ended question responses. Many students were observed sitting on the benches under trees in the garden of Deniz ES. These benches were one of the favorite places that were described by students in the questionnaire. Students had written down a list of specific places in the garden of Deniz ES explicitly. 'The green almond tree by the main gate of the campus', 'olive grove', 'the amphitheater' and 'the pool' were places that students mentioned rather frequently. A boy from sixth grade from Deniz ES described his favorite places in the questionnaire as follows "…benches under trees and the pond[10] (also the cafeteria)".

Such clear descriptions of places indicate an awareness of surrounding environment and the strong connections between specific places and students. There is no such variety in descriptions of favorite outdoor spaces for other two schools as it is in the expressions of students of Deniz ES. The students are so familiar with the environmental features of the garden that they almost always describe the places with a tree nearby. The expressions of students in Işıkkent ES do not include detailed descriptions for favorite places in the garden of school although 'the garden' was one of the most frequent answers to the open ended question in the questionnaire. As it is mentioned before, the garden of Işıkkent ES is left to students with minimum furniture and plants which provides an easy supervision of students spending their free times in the garden.

In Fatih ES, a considerable number of students (43 out of 70) mentioned 'the garden' as their favorite place in school in the questionnaire, although the garden is sparsely occupied during breaks. As mentioned before, the students from grades one, two and three are not allowed to go out to the garden during short breaks while the

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[10] In this study, 'pond' is used instead of what students call fish pool both in Deniz ES and Fatih ES.

majority of students from higher grades prefer indoor spaces such as cafeterias or indoor playgrounds. There are detailed descriptions about places in the garden but not as frequent as it is in Deniz ES. 'The benches', 'the greener part of the garden' or 'the covered seats' are the most detailed expressions of students in Fatih ES.

The outdoor spaces of schools are important in shaping the social life in schools especially in cities like İzmir where the outdoor playgrounds are dominantly in use throughout the year. Armitage (2005) states that "the physical environment of the school playground proves to be highly significant to children's play during playtimes, as children informally allocate particular parts of the playground to a form of play, or often a specific game, that is then not played anywhere else on the school site" (p.540).

The review and analysis of the results indicate three potential factors affecting the use of outdoor spaces: (1) accessibility, (2) the need for privacy, and (3) variety of sub-spaces that garden provides for preferred activities of students.

In the case of Fatih ES, which has accessibility problems when compared to Deniz ES and Işıkkent ES, the percentage of students preferring outdoors during breaks is 21.4%, although 85.7% stated that they have places in garden that they like very much. According to the observations during visits, the students in Fatih ES may not have enough time to go to the garden during breaks. Students prefer to spend their breaks inside since the school provides indoor spaces for students, such as cafeterias on floors four, nine and ten or indoor playgrounds on floors seven and nine.

According to observations and questionnaires, 'talking to each other' is one of the most frequent activities among students in three schools. Especially girls, according to observations, prefer to spend time talking privately to their friends. Obviously, this activity needs relatively more quiet places out of the sight of others. In all three schools students mentioned such places inside the school building or outdoors. Since the student population is relatively higher and the indoor use is dominant in Fatih ES, the garden, particularly the green part provides such tranquil sub-spaces (Figure 62) for private talks among students. Students from Fatih ES mentioned an indoor space, the emergency stairs of Building A (Figure 56) as one of the places where they can talk privately with a friend or with a limited number of friends. These two places in Fatih ES can be regarded as private places of students since they were not mentioned as one of the places where students spend time by the professors interviewed.

In Deniz ES, there are three places of privacy that students mentioned in questionnaires. All these three places were outdoors; 'benches by the pond', 'green

almond tree by the main gate of the campus site' and 'olive grove'. All these sub-spaces where students can spend time privately with friends may be considered as a factor that supports the already dominant use of the outdoor spaces of Deniz ES.

'The red couches' at the end of the alley were mentioned as one of the favorite private places in Işıkkent ES. One of the students stated in the open-ended question of the questionnaire that "…we chat at the red couches, we gossip". The lower grades were not observed spending time here, although there are no such restrictions. It is observed that the red couches were mostly occupied by students of the sixth, seventh and eighth grades.

In three private elementary schools studied, the three most frequent activities mentioned in the questionnaire, and also observed during visits, were 'talking', 'playing games' and 'sporting/playing ball-games'. The variety of sub-spaces that school gardens provide for the most frequent three activities may be considered as the third factor that effect students' preference of a place. In this respect, the garden of Deniz ES, which is dominantly in use when compared to other cases, provides such spaces for students to spend their time involving in favorite activities mentioned above. In other cases, the schools also have indoor spaces for students to spend their time involving in activities mentioned. The lack of indoor options for students in Deniz ES may have affected students' preference of places in school.

CHAPTER 5

CONCLUSION

5.1. Summary of the Study

This study explored the effect of spatial organizations of school buildings in facilitating interactions among students that may happen outside of classrooms in three private elementary schools in İzmir. The focus of the study is the importance of non-classroom spaces in school buildings where unplanned activities and relationships take place.

Investigating such places in the case of Turkish elementary schools is critical for two reasons. First, there is a lack of specific research on non-classroom spaces in educational facilities in Turkey where there is an immediate need for 135,000 new classrooms (MEB, 2005) in addition to the poorly renovated and maintained existing ones. While policy makers have tried to develop higher standards for elementary education for decades, there is still need for more research both in the fields of education and architecture to support educational goals. Second, there is a tendency to convert non-classroom spaces in our existing schools to classroom spaces after the Compulsory Eight-year Education Act which was ratified in 1997. The governmental program, which considers elementary schools only in terms of their total number of classroom spaces, has followed three procedures to meet the new spatial requirements after the enactment of the Act: (1) adding new floors to existing structures, (2) adding annexes to existing buildings and new school buildings, and (3) converting non-classroom spaces such as halls, multi-purpose spaces and activity rooms into classroom spaces in hasty ways.

The decline in the quality and quantity of non-classroom spaces will certainly have an effect on factors that shape a student's social and academic life in a school. In Sanoff's (2000) words, the physical environment of a school building is "the second teacher since space has the power to organize and promote pleasant relationships between people of different ages, to provide changes, to promote choices and activities,

and for its potential for sparking different types of social, cognitive, and affective learning" (p.1).

The expansion of the learning environments beyond the walls of the classrooms is essential. Recent educational approaches stress the importance of informal interactions outside of regular class hours and classrooms. Learning solely based on classroom instructions and the traditional classroom setting are insufficient for student centered contemporary learning environments since learning can take place anywhere and anytime.

In this study, three case studies were conducted to investigate the use of non-classroom spaces in elementary school buildings. The case studies were three outstanding private elementary schools in İzmir. The selected schools have similar educational objectives and operate within campus settlements behind walls. The socio-economic structures of students' families from three schools were considered similar because the schools are private institutions with similar tuitions. The case studies were selected specifically to investigate and compare the preferences and activities of students at schools with different spatial organizations. The schools differ from each other according to their surroundings and spatial organizations. The selected case studies differ from each other in terms of the nature of their non-classroom spaces, connections between indoors and outdoors, and spatial organizations. Deniz ES has a campus with two-story buildings and a well-cared garden where students spend most of their free time. Fatih ES, settled in a populated residential district, has ten-story buildings providing spaces where students can spend an entire school day indoors involving in various activities. Işıkkent ES is the youngest among all, having non-classroom spaces both indoors and outdoors where students prefer to spend time during breaks.

The case studies were investigated using five different research techniques with different procedures. These research techniques were used to address the questions of this study from different perspectives. During visits to the three elementary schools, the space assessment and activity observation forms (1) were recorded to determine spatial features of non-classroom spaces and the students' activities that take place there. To collect students' expressions about their favorite spaces and their activities, questionnaires (2) were conducted with fifth, sixth and seventh graders of three schools. Informal interviews (3) were recorded with students and teaching staff. To provide detailed information about case study schools, walk-throughs (4) with teachers having

administrative responsibilities were arranged for each school. Finally, graphic data such as photographs, diagrams, and sketches (5) of indoor and outdoor spaces were collected.

The analysis of the data collected and the summaries of the findings for three schools were presented in Chapter 4. The recorded interviews with students and professors were transcribed and the favorite places mentioned were presented in tables (Table 1, Table 2). The places mentioned by both students and professors were overlapped to compare the occupants' preferences and observations on favorite places in schools. The questionnaire results were analyzed to determine the preferences in schools and whether preferences change from one school to another. The open-ended questions were also analyzed and favorite places and activities of students were presented in tables that provide a comparison among three case studies. Together with the statements of occupants on activities and places, the activity observation and space assessment records were discussed in Chapter 4.

5.2. Summary of Findings

An evaluation of the findings is presented in the discussion section of Chapter 4 with the analysis of results regarding to the sub-questions of this study. The major findings and conclusions of the study are summarized as follows:

- Regardless of differences among three private elementary schools studied, students have a strong tendency to interact with each other during breaks.
- The three private elementary schools of this study provide tranquil spaces—indoor and outdoor places for private talks—for students where they can spend time with a friend or with a limited number of friends. However, the places preferred by students are different for each case with respect to the variety of indoor and outdoor spaces that the schools provide. In the case of Deniz ES, the majority of students (59% according to questionnaire, 98% according to recorded observations) spend their free times at outdoors such as benches under trees, benches by the pond, playground, olive grove, the swimming pool, the playground and outdoor sports courts which were also regarded as favorite places in school according to the open-ended questions. Contrary to Deniz ES, in the case of Fatih ES the favorite places of students are all indoor spaces. Fatih ES has most of its common and multi-purpose

spaces indoors and 78% of students mentioned the spaces inside Building A (building for elementary school section) such as indoor playground, cafeterias, the emergency stairs, corridors, branch classrooms and sports hall as their favorite spaces. In the case of Işıkkent ES, which has a variety of non-classroom spaces both indoors and outdoors, there is no significant difference between indoor and outdoor occupancy of students. According to activity observations in Işıkkent ES, the indoor and outdoor use is almost equal (49% indoor, 51% outdoor) while according to open-ended questions the indoor spaces are dominant to outdoors (57% outdoor, 43% indoor).

- The analysis of places students prefer and the activities take place in there indicate five factors that affect students' preferences of indoor spaces: (1) accessibility, (2) privacy, (3) variety of indoor sub-spaces, (4) natural lighting, and (5) visual connections to other floors or outdoors that houses the most frequent activities of students.

- The review and analysis of the results indicate three potential factors affecting the outdoor use in three private elementary schools studied; (1) accessibility, (2) privacy, and (3) variety of sub-spaces that garden provides for preferred activities of students.

- The agreement between teachers and students with regards to students' favorite places in the school building and garden differs from one school to another. The number of places that overlap in the statements of teachers and students is eight out of twelve in Deniz ES, three out of eight in Fatih ES and six out of nine in Işıkkent ES. The difference among the three schools in the degree of agreement between teachers and students can be explained by the difference in the spatial organizations of school building and campus settlements and the visibility of non-classroom spaces. For example, in the case of Fatih ES, the teaching staff may have difficulties in observing students during breaks when compared to other schools since the non-classroom spaces of the school is spread out to the different floors of the ten story buildings.

- In three case studies, the dominant activities of students in their free time are 'wandering and talking', 'playing games', and 'playing ball games' including basketball, football, volleyball and ping-pong. These activities do

not change from one school to another. Thus, it may be concluded that students prefer to spend time together in groups talking to each other or playing games. The frequencies of activities recorded are different in three case studies. The spatial differences in three schools may be the potential explanation to the difference of the frequency of activities (see sub-question 6).

- The different spatial organizations of the three private elementary schools studied may have affected the acquaintanceship which can be considered as an initial agent in facilitating interactions among students. Question 19 of the student questionnaire sought the acquaintanceship among students. In the case of Deniz ES, 90.2% of students stated that they recognize the faces of most of the students in their school while this percentage is 87.1% in Fatih ES and 88.4% in Işıkkent ES. Similarly, the acquaintanceship among students by name is investigated in Question 20. In Deniz ES, 84.3% of students stated that they know most students' name in school while the percentage is 65.7% in Fatih ES and 73.0% in Işıkkent ES. Moreover, according to the analysis of the results of Question 9 (χ^2 = 12.276, p=0.002), Question 12 (χ^2 = 11.949, p=0.003) and Question 18 (χ^2 = 10.498, p=0.005), it can be asserted that the responds to these questions (having friends from other classrooms) change from one school to another. The differences in the spatial organization of campus settlements and buildings may have affected the acquaintanceship and friendship among students from different classrooms regardless of the similarities in the plan type of the three schools (double-loaded corridor). The difference in the accessibility, the spatial qualities and the location of non-classroom spaces may have affected the acquaintanceship. Furthermore, the difference in the sub-spaces of non-classroom spaces (niches, seating elements, visibility to outdoors and other non-classroom spaces…) that potentially provide opportunities for accidental encounters and informal relationships may have affected the acquaintanceship among students in three schools.

5.3. Concluding Remarks

There is a growing body of literature that views the school buildings not just as shelters or containers for educational purposes but also as active agent in education (Burke, 2005; Lackney, 1996; Yarbrough, 2001). However, it is still rare, particularly in Turkey, to consider school buildings as an agent in contributing the educational process. As Yarbrough (2001) states educational facilities should "be viewed as tools that influence learning"(p.3) by researchers, educators, designers and even by students. This study focuses on non-classroom spaces of elementary school buildings, where informal encounters and interactions among students occur, rather than on the strict settings of classrooms. These places in school buildings have been considered so far as secondary spaces in the literature.

In this study non-classroom spaces and the activities taking place there were investigated based on the premise that unplanned interactions among students taking place in non-classroom spaces should be considered as part of the learning process in addition to formal learning in classrooms. The overview of the contemporary educational theories projects us the critical approaches to traditional methods and the emerging innovative models of education. The new approaches view the informal relationships and interactions among pairs or small groups as important factors in facilitating learning.

Overall findings of this study indicate that the favorite activities of students, although they have different frequencies, almost always overlap, while the spaces in schools that these activities take place change from one school to another. Students in the three schools students mostly spend their times in groups and in group activities. Students have specific favorite indoor or outdoor places for specific favorite activities, mostly group activities, regardless of whether that place is designed and provided for that purpose or not. Students in three schools seem to be experts in space assessment and selecting appropriate places for appropriate activities. The physical features, the location and the nature of those spaces influence students to prefer those spaces in their schools. In case when students are given a choice between indoor and outdoor spaces with different degree of variety they are conscious of the difference and they tend to pick spaces which offer higher variety. For example in the case of Deniz ES, the majority of students prefer the school garden, since the school buildings can be regarded

as poor in providing various indoor spaces. Students in Deniz ES consciously prefer the places in school garden for their favorite activities. In the example of Fatih ES, students use the emergency stairs of Building A (Figure 33) as the place for private talks, since the outdoor use is limited and indoor common spaces are relatively crowded. It is a conscious choice of students in Fatih ES to spend their time at emergency stairs which is an accessible place and has visibility to outdoors. In Işıkkent ES, which provides various indoor and outdoor spaces, students tend to spend equal amount of time outdoors and indoors.

Based on the premise of this study which emphasizes positive interactions, the need for designing today's learning environments is to consider how best to shape the indoor and outdoor environments to facilitate and support interactions among students.

Private elementary schools have suffered less from spatial problems after the enactment of the Compulsory Eight-year Education Act compared to public elementary schools. In private schools, indoor and outdoor spaces can be considered sufficient to meet the demands, however, in some cases it is observed that private schools cannot benefit from their resources at maximum rate because of problems related to their spatial organizations. For example the students interviewed in Deniz ES constantly complained about the crowdedness of specific sub-spaces in the garden such as benches under trees, outdoor playground and outdoor sports courts which is dominantly in use when compared to indoor spaces of the school. Although there is some garden furniture in Deniz ES, it seems that more outdoor elements such as benches, shelters and garden toys are necessary to serve students. In the case of Fatih ES, the eighth floor, housing rooms for student clubs and gymnasium, is only occupied by students during fixed hours of the week when the curriculum allows the students to involve in social activities. There is a similar situation in the case of Işıkkent ES. The first floor of the alley is densely occupied by students while the second floor of the alley usually remains inhabited when compared to the first floor. There is no visual connection between the floors of the alley.

The multi-story inner city schools, as it is in the case of Fatih ES, where the outdoor use is limited, the indoor spaces have a vital role in students' awareness of others and encouraging informal relationships and interactions. Accessibility to garden and to common places of different floors where students may have the opportunity to interact with others is identified as the major factor that effect students' space preference in multi-story schools. In the design of high-rise inner city elementary

schools, the location and the connection of these non-classroom spaces should draw more attention together with providing a variety of sub-spaces, natural lighting and the visual connection to each floor.

In more spread-out schools, as it is in Deniz ES and Işıkkent ES, the occupancy of outdoor spaces is significantly dominant. The research indicated that the garden of the school foster more frequent interactions among students through its accessible spaces. The outdoor spaces having sub-spaces, activity pockets or niches may increase the possibilities of informal encounters and relationships. In the cases of Deniz ES and Fatih ES, the trees and the arcade, providing shaded places, is observed to be the elements that students use to describe such favorite sub-spaces in school garden. In Işıkkent ES, students mentioned the sub-spaces of the alley such as red-couches and the spaces attached alongside the alley such as sports hall and swimming pool as their favorite places in the school whereas they mentioned fewer sub-space in the school garden as their favorite places.

One of the main findings that the research results indicates is that students involve in similar activities with different frequencies in three schools and in case when students are given a choice between indoor and outdoor spaces with different degree of variety they are conscious of the difference and they tend to pick spaces which offer higher variety. In some cases, such as the emergency staircase in Fatih ES, students claim particular sub-spaces in school facilities that are designed for another purpose because of its spatial qualities. Moreover in some cases, students–unconsciously–may disown places that are designed for a particular pupose and use the space in their own way. Playing football at the amphitheater of Deniz ES may be an example to those cases. The designer should be aware of these potential attempts of attaching to or disowning various spaces in school buildings. Obviously, the research into activities and preferences of students in school buildings can assist architects or designers in designing improved school environments that are responsible to students' needs.

5.4. Recommendations

Studying learning environments has been a major topic in the field of educational research and it is as crucial as ever in the case of Turkey where the subject is frequently debated in the process of developing higher standards in education. This

study provides a brief list of activities and places that students prefer during their free time. Although a narrow sample is used in this study, people from a variety of disciplines such as designers or managers may benefit from the findings. Moreover, contributions from other areas of research by those who are interested in learning environments are extremely needed in the case of Turkey.

The building programs for educational facilities define the schoolhouse with its number of classrooms without considering and specifically describing the non-classroom spaces. Stakeholders involving in structuring the programs of future school facilities need to pay attention to those areas more closely besides classrooms. The activity areas, common and public spaces, hallways, outdoor environments of school buildings should be conceived as elements supporting interactions among students.

Most of the teachers, formally and informally interviewed in this study, stated insufficient views about non-classroom areas and these spaces' potential contribution in facilitating interactions among students. It is necessary for teachers to be more aware of the opportunities that the non-classroom spaces provide in extending the learning processes beyond classrooms by fostering more frequent interactions among students. Also, the teachers and the managers should be more aware of their school environments in terms of using places inside or outside of buildings for various learning activities. In all three schools studied in this research, it is observed that there are no such places (for example outdoor classrooms) other than classrooms that are designed and used for formal educational activities.

This research was conducted in private elementary schools in İzmir where it is observed that available spaces in the schools show more variety when compared to public schools. Further research in an effort to evaluate the adequacy of 'standard type' public school buildings located in different contexts should be conducted to extend the results of this study. Also future studies could be conducted to extend the findings of this research to other levels in elementary and high schools.

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APPENDICES

APPENDIX A. STUDENT QUESTIONNAIRE (TURKISH)

ÖĞRENCİ ANKET FORMU

Bu anket üniversitede yapılan bir araştırmanın parçasıdır. İlköğretim öğrencilerinin okul binası ve çevresine ilişkin düşüncelerini öğrenmeyi amaçlamaktadır. Soruların doğru ya da yanlış cevabı yoktur. Bu bir sınav değildir ve verdiğiniz cevaplar kesinlikle notlandırılmayacaktır. Amaç sizleri daha iyi tanımaktır. Soruları rahat bir şekilde cevaplayabilirsiniz.

Kaçıncı sınıftasın?　　1　2　3　4　5　6　7　8

Cinsiyetin?

a) Kız	b) Erkek

Başarılı mısın başarısız mısın?

c) Başarılı	d) Başarısız

Kaç kardeşsiniz?　　1　2　3　4 veya daha fazla

Bu okulda kaçıncı yılın?　　1　2　3　4　5　6　7　8

1)　　Ders dışında yalnız kalmak isterim.

a) Evet	b) Hayır

2)　　Ders aralarında sınıfta kalırım.

a) Evet	b) Hayır

3)　　Ders aralarında bahçeye çıkarım.

a) Evet	b) Hayır

4)　　Ders aralarını okul binası içerisinde geçiririm.

a) Evet	b) Hayır

5)　　Ders aralarında duvarda asılanları okurum.

a) Evet	b) Hayır

6)   Ders aralarını kendi sınıfımdan arkadaşlarımla beraber geçiririm

a) Evet	b) Hayır

7)   Ders aralarında erkek arkadaşlarımla oynarım.

a) Evet	b) Hayır

8)   Ders aralarında kız arkadaşlarımla oynarım.

a) Evet	b) Hayır

9)   Başka sınıflarda arkadaşlarım var.

a) Evet	b) Hayır

10)   Büyük sınıflarda arkadaşlarım var.

a) Evet	b) Hayır

11)   Ders aralarında büyük sınıftaki arkadaşlarımla konuşurum.

a) Evet	b) Hayır

12)   Küçük sınıflarda arkadaşlarım var.

a) Evet	b) Hayır

13)   Ders aralarında küçük sınıftaki arkadaşlarımla konşurum.

a) Evet	b) Hayır

14)   Ders aralarında öğretmenimle konuşurum.

a) Evet	b) Hayır

15)   Okuldan sonra bahçede arkadaşlarımla oyun oynarım.

a) Evet	b) Hayır

16)   Bahçede çok sevdiğim yerler var.

a) Evet	b) Hayır

17)   Okul binası içerisinde çok sevdiğim yerler var.

a) Evet	b) Hayır

18)   Başka sınıfta olan, okulda tanışıp çok yakın olduğum arkadaşım var.

a) Evet	b) Hayır

19)   Okuldaki çocukların çoğunun yüzünü tanırım.

a) Evet	b) Hayır

20)   Okuldaki çocukların çoğunun adını bilirim.

a) Evet	b) Hayır

21)   Ders aralarında oyun için arkadaş bulmakta zorlanmam.

a) Evet	b) Hayır

22)   Başka sınıftaki çocukları oyunlarımıza alırız.

a) Evet	b) Hayır

23)   Bazen büyük sınıftaki çocuklara dersle ilgili soru sorarım.

a) Evet	b) Hayır

24)   Arkadaşlarımla konuşabileceğim daha fazla zamanım olsun isterim.

a) Evet	b) Hayır

25)   Okul binası içinde yalnız kalabileceğim yerler var.

a) Evet	b) Hayır

26)   Bahçede yalnız kalabileceğim yerler var.

a) Evet	b) Hayır

27)   Okul binası içerisinde arkadaşımla oturup konuşabileceğim yerler var.

a) Evet	b) Hayır

28)   Bahçe içinde farklı oyunlar oynayabileceğim yerler var.

a) Evet	b) Hayır

29)   Okul bahçesi çok kalabalık olduğu için oyun oynayamıyoruz.

a) Evet	b) Hayır

30)   Okul binası içinde arkadaşlarımla toplanıp oyun oynadığımız yerler var.

a) Evet	b) Hayır

31) Okulda en çok sevdiğin yerler nerelerdir? Bize tanıtabilir misin?

_____

_____

_____

_____

_____

_____

_____

32) Okulda en çok sevdiğin yerlerde neler yaparsın?

_____

_____

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_____

_____

_____

Ankete katıldığınız için teşekkür ederim.

Altuğ KASALI
İzmir Yüksek Teknoloji Enstitüsü
Mimarlık Fakültesi
Araştırma Görevlisi

APPENDIX A'. STUDENT QUESTIONNAIRE (ENGLISH)

Table 12. The student questionnaire in English.

Question 1	I want to stay alone after class hours
Question 2	I stay inside the classroom during breaks
Question 3	I go out to the garden during breaks
Question 4	I spend the break time inside the building
Question 5	I read the bulletins on the wall during breaks
Question 6	I spend the break time with my classmates
Question 7	I play with boys during breaks
Question 8	I play with girls during breaks
Question 9	I have friends from other classes
Question 10	I have friends from upper grades
Question 11	I talk to my friends from upper grades during breaks
Question 12	I have friends from lower grades
Question 13	I talk to my friends from lower grades during breaks
Question 14	I talk to my teachers during breaks
Question 15	I play with my friends in the garden after school hours
Question 16	There are places in the garden that I like very much
Question 17	There are places inside the school building that I like very much
Question 18	I have close friends from other classrooms whom I met at school
Question 19	I recognize the faces of most of the students in school
Question 20	I know most students' name in school
Question 21	I don't have a hard time to find playmates during breaks
Question 22	We accept students from other classes to our games
Question 23	Sometimes I ask questions related to courses to students from upper grades
Question 24	I want to have more time to talk to my friends
Question 25	There are places inside school building that I can stay alone
Question 26	There are places in the school garden that I can stay alone
Question 27	There are places inside school building that I can sit and talk
Question 28	There are places in the school garden that I can play a variety of games
Question 29	We cannot play games in the school garden because it is too crowded
Question 30	There are places inside school building that we play games together
Question 31	Where are the places that you like most in school? Could you describe us?
Question 32	What do you do at the places you like most in school?

APPENDIX A''. PERCENTAGES OF ANSWERS.

Table 13. The percentages of answers for three case studies.

	DENIZ ES			FATIH ES			ISIKKENT ES		
	% No	% Yes	% NA	% No	% Yes	% NA	% No	% Yes	% NA
Q1	96,08	3,92	0,00	88,57	8,57	2,86	98,08	1,92	0,00
Q2	90,20	9,80	0,00	54,29	44,29	1,43	94,23	5,77	0,00
Q3	5,88	94,12	0,00	74,29	21,43	4,29	38,46	61,54	0,00
Q4	84,31	15,69	0,00	10,00	88,57	1,43	38,46	61,54	0,00
Q5	90,20	9,80	0,00	62,86	37,14	0,00	80,77	19,23	0,00
Q6	7,84	92,16	0,00	8,57	90,00	1,43	13,46	86,54	0,00
Q7	27,45	70,59	1,96	54,29	44,29	1,43	28,85	71,15	0,00
Q8	33,33	64,71	1,96	27,14	70,00	2,86	28,85	71,15	0,00
Q9	21,57	78,43	0,00	11,43	88,57	0,00	0,00	100,00	0,00
Q10	29,41	70,59	0,00	25,71	74,29	0,00	21,15	78,85	0,00
Q11	58,82	41,18	0,00	72,86	27,14	0,00	75,00	23,08	1,92
Q12	47,06	52,94	0,00	42,86	57,14	0,00	17,31	82,69	0,00
Q13	76,47	23,53	0,00	82,86	17,14	0,00	78,85	21,15	0,00
Q14	80,39	19,61	0,00	64,29	34,29	1,43	78,85	21,15	0,00
Q15	88,24	11,76	0,00	85,71	12,86	1,43	75,00	23,08	1,92
Q16	27,45	72,55	0,00	14,29	85,71	0,00	26,92	73,08	0,00
Q17	70,59	27,45	1,96	14,29	82,86	2,86	15,38	84,62	0,00
Q18	43,14	56,86	0,00	42,86	57,14	0,00	17,31	82,69	0,00
Q19	9,80	90,20	0,00	12,86	87,14	0,00	11,54	88,46	0,00
Q20	15,69	84,31	0,00	34,29	65,71	0,00	26,92	73,08	0,00
Q21	33,33	66,67	0,00	34,29	62,86	2,86	28,85	71,15	0,00
Q22	39,22	60,78	0,00	38,57	57,14	4,29	23,08	76,92	0,00
Q23	78,43	21,57	0,00	62,86	37,14	0,00	67,31	32,69	0,00
Q24	11,76	82,35	5,88	2,86	97,14	0,00	3,85	96,15	0,00
Q25	56,86	39,22	3,92	37,14	62,86	0,00	36,54	63,46	0,00
Q26	33,33	66,67	0,00	44,29	55,71	0,00	55,77	42,31	1,92
Q27	31,37	68,63	0,00	7,14	92,86	0,00	3,85	96,15	0,00
Q28	19,61	80,39	0,00	25,71	71,43	2,86	15,38	84,62	0,00
Q29	86,27	13,73	0,00	55,71	41,43	2,86	71,15	28,85	0,00
Q30	62,75	37,25	0,00	20,00	77,14	2,86	25,00	75,00	0,00

APPENDIX B. SPACE ASSESSMENT WORKSHEET

SPACE ASSESSMENT WORKSHEET

Spatial layout;

1. Entrances / Connections/ Accessibility :

2. Intelligibility :

3. Variety in Use

   a. Common use
   b. Group Use
   c. Individual use

4. Circulation system

5. Physical Features

   a. Green elements
   b. Shaded places
   c. Ground material
   d. Geometry
   e. Dimensions
   f. Natural light
   g. Acoustics
   h. Thermal comfort
   i. Ventilation
   j. Flexibility
   k. Colors
   l. Aesthetics
   m. Vista

6. School Furniture

   a. Benches / Seating elements
   b. Boards / Display elements
   c. Play tools / elements

FIELD NOTES:

APPENDIX C. ACTIVITY OBSERVATION FORM

Table 14. Activity observation form.

ACTIVITY OBSERVATION FORM

School / Location:

Date:

Duration:

	Activity	Type	# of Participants	Sex	Grade	Plan	Continuity	Resulted	Location
		Group Alone Active Passive		Female Male Mixed		Planned Unplanned			
1.									
2.									
3.									
4.									
5.									
6.									
7.									
8.									
9.									
10.									
11.									
12.									
13.									
14.									

APPENDIX D. CORRIDORS OF THE THREE SCHOOLS

Figure 64. The corridors of three private elementary schools studied.

APPENDIX E. GARDENS OF THE THREE SCHOOLS

Figure 65. The gardens of three private elementary schools studied.