

**REBUILDING THE RELATIONSHIP IGNORED
BETWEEN CHILDREN AND NATURAL-BUILT
ENVIRONMENT THROUGH
SCHOOL GARDEN DESIGNED
BY PERMACULTURE METHOD**

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**by
Merve Ayten KILIÇ**

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We approve the thesis of **Merve Ayten KILIÇ**

Examining Committee Members:

Assist. Prof. Dr. Hikmet GÖKMEN

Department of Architecture, Dokuz Eylül University

Assist. Prof. Dr. Tonguç AKIŞ

Department of Architecture, İzmir Institute of Technology

Instructor Dr. Zeynep DURMUŞ ARSAN

Department of Architecture, İzmir Institute of Technology

10 July 2014

Instructor Dr. Zeynep DURMUŞ ARSAN

Supervisor, Department of Architecture, İzmir Institute of Technology

Assoc. Prof. Dr. Şeniz ÇIKIŞ

Head of Department of Architecture,

Prof. Dr. R. Tuğrul SENGER

Dean of the Graduate School of
Engineering and Science

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ABSTRACT

REBUILDING THE RELATIONSHIP IGNORED BETWEEN CHILDREN AND NATURAL-BUILT ENVIRONMENT THROUGH SCHOOL GARDEN DESIGNED BY PERMACULTURE METHOD

Child's perspective is ignored when designing built environment. Areas where child can contact with nature in built environment have decreased. Natural areas in the city are necessary for child's development. This study searches for one of the ways of rebuilding relationship between children and natural-built environment via permaculture design system, which took a major role here as a tool used for strengthening tie between nature and children.

The basic objective of this thesis is to improve the relationship between children and natural-built environment through design of school garden-playground area. To introduce permaculture method into child education and to equip the child with skills for both self-production of own food and maintain lifecycle without harmful to nature are the secondary aims of thesis. A design proposal on permaculture learning-playing garden is developed and implemented in the Secondary School of Karacaoğlan District in Bornova, Izmir. The questionnaires, seminars, workshops and discussions are performed in both design and implementation phases of this garden, which can be ascribed as a new natural environment in the built one for children.

The case study shows that the collaborative platform revealed between child and designer is the essential strategy to rebuild the relationship of children with built environment. Furthermore, it is observed that it is possible to rebuild the relationship between child and natural environment via the education of permaculture design system, when it is provided in appropriate time period of childhood without relying on his/her socio-cultural background, family factor, and natural-built environment that he/she has grown.

Keywords: children and nature environment, children and built environment, permaculture design system, school garden design

ÖZET

GÖZARDI EDİLEN ÇOCUK VE DOĞAL-YAPILI ÇEVRE İLİŞKİSİNİ PERMAKÜLTÜR YÖNTEMİ YOLUYLA TASARLANAN OKUL BAHÇESİYLE YENİDEN KURMA

Yapılı çevre tasarımında çocuk bakış açısı göz ardı edilmektedir. Çocuğun yapılı çevre içerisinde doğal çevre ile ilişki kurabileceği alanlar azalmıştır. Kent içi doğal alanlar çocuk gelişimi için gereklidir. Bu çalışma çocuğun doğal ve yapılı çevreyle ilişkisini yeniden kurabilmenin yollarından birini permakültür tasarım sistemi üzerinden araştırır. Bu çalışmada permakültür tasarım sistemi, çocukların doğa ile olan bağına güçlendirmesinde kullanılan bir araç olarak başlıca rol almaktadır.

Bu tezin ana hedefi, çocukların yapılı ve doğal çevre ile olan ilişkisini okul bahçesi ve içindeki oyun alanı tasarımıyla iyileştirmektir. Çocuk eğitimi ile permakültür yöntemini tanıştırmak ve çocuğa doğaya zarar vermeden hem kendi besinini üretebilme hem de yaşam döngüsünü sürdürebilme becerisini sağlamak tezin ikincil amaçlarıdır. İzmir'in Bornova ilçesinde yer alan Karacaoğlan Mahallesi Ortaokulu'nda permakültür öğrenme-oyun bahçesi tasarımı önerisi geliştirilmiş ve uygulanmıştır. Çocuklar için yapılı çevrede yeni bir doğal çevre olarak nitelenebilen bu bahçenin, hem tasarım hem de uygulama aşamasında, anket, eğitim, atölye ve tartışmalar gerçekleştirilmiştir.

Alan çalışması, çocuk ve tasarımcı arasında ortaya çıkan işbirliği platformunun, çocukların yapılı çevre ile kurduğu ilişkiyi yeniden kurmada etkili bir strateji olduğunu göstermiştir. Ayrıca, çocuğun sosyo-kültürel altyapısı, aile faktörü ve yetiştiği doğal-yapılı çevreye bağlı olmaksızın, uygun çocukluk döneminde aldığı permakültür tasarım sistemi eğitimi ile çocukla doğal çevre arasındaki ilişkinin yeniden kurulabildiği gözlenmiştir.

Anahtar Kelimeler: çocuk ve doğal çevre, çocuk ve yapılı çevre, permakültür tasarım sistemi, okul bahçesi tasarımı

To My Husband

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CHAPTER 1

INTRODUCTION

1.1. Problem Statement

I dreamed I was in an elephant.
I dreamed I was stepped on by a giant chicken.
I dreamed I was dreaming.
I dreamed I had no brain.
I dreamed that my ears were bigger than me.
I dreamed that I had static hair forever.
I dreamed that I ate too much food.
I dreamed that when I sneezed it was a tornado.
I dreamed when I spit it was a great flood.
I dreamed that I flew to a different galaxy.
I dreamed that I was a brownie and I ate myself.
I dreamed I turned into a hockey puck and got a lot of concussions.
I dreamed I had to be cross-eyed forever.
I dreamed I finished my poem.
Peter Weinberg, age 7¹

In most of the cities, built environment today bears the certain problem arose from the designs in which children's presence and perspective are forgotten. It is shaped by the presumption of adults, not by children's perceptions, yet this designed built environment is offered to use of children. Children, who are not included in the design process or whose expectations are not considered, are obligated to live, be educated and play in that built environment designed by adults. Day and Midbjer (2007) state this problem that adults design building with influence and concern of practicality, energy-conservation, aesthetics and economy rather than considering children's experience. 'Children's experience' is the essential keyword for the problem statement of this thesis. As pointed out by Piaget's hypothesis on children's learning process, cited in Bilgin (1984), children do not represent the miniature of their adults. Having been a child once does not mean that adults identify the children well. Adults create an idealized model of child in their mind, yet it does not represent the existed child's experience. Thus designing according to idealized model and defending corresponding design is not appropriate for children.

¹ Quoted from Building for Life: Designing and Understanding the Human-Nature Connection (Kellert, 2005:63)

The major problem of built environment in the cities is the decrease or lack of natural areas, i.e. schoolyard, public park, playground, garden, balcony, square, recreational area, urban forest, and botanical garden, where children can create relationship with nature. Başal (2005, cited in Talay et al., 2010) emphasizes the problem that nowadays, especially in bigger cities, children grow as isolated from nature. As a result of skewed and unplanned urban settlements which have a limited safe open space or even no safe open space, children actually spend most of their time in the interior spaces.

Children have the relationship with society and nature in a very limited way which damages the spatial perception of children. Akarsu (1984) states that according to Piaget's hypothesis, the spatial perception of children follows a logical development path which was believed quite the opposite. Children's practices turn into firstly kinetic movement, later interiorized practices and lastly operational practices by interacting with the environment. Therefore a limited relationship between natural-built environment and children do not allow to children to perceive the place.

The children exist in the built environment over the social relationship.² Güvenç (1984) points out that children lived in a city in the past with the combination of people from all ages like a family.³ The street was appropriate for being together among rare and harmless vehicles, people, vendors and children. Therefore, children could discover their neighbors and the neighborhood slowly. A range of people and spaces that placed between a small private space and a free public space attributed person to society, family to city. Today's children are foreign to these relationships and these spaces. On the other hand, if children comfortably go outside to be with their friends, their neighbors, elders and working people in a transparent space, they can add new degree to their sense of spatial proximity. Thus, playing in the streets is essential for children in order to establish social relationships with the built environment.

However, nowadays children are obligated to play in the streets due to lack of playgrounds unlike there is no other choice. Bulut and Yılmaz (2008: 35) convey the problem of the children that lived in the cities as "...due to the rapid and distorted construction, playgrounds for children are consumed up and outdoor play-spaces are

² The author's note: the meaning of built environment here covers both the physical area composed of constructed buildings and the social environment including the urban social life.

³ This quotation is the translation of Güvenç (1984) from *L'Architecture D'Aujourd'hui*, written by Françoise Barre September, 1979.

converted to the structural land uses; therefore, because of the lacking of these areas (park, playground, urban forests, squares), children have to play on the streets and roads.”

Today, children are forced to stay at home rather than play in streets because of parents’ fears of security. Thus these children lose their health, e.g. obesity, by sitting at home and get addicted to technology day by day (Dyment and Bell, 2008). Louv (1992: 5) describes the changing fact by generalizing it over the qualities of new generation who recently appears. He expresses that this generation is “the first daycare generation, the first truly multicultural generation; the first generation to grow up in the electronic bubble, the environment defined by computers and new forms of television; ...the first generation for which nature is more abstraction than reality; the first generation to grow up in new kinds of dispersed, deconcentrated cities, not quite urban, rural, or suburban.”

A recent research conducted by TEMA (The Turkish Foundation for Combating Soil Erosion, for Reforestation and the Protection of Natural Habitats) also conveys a similar fact on new generation for the students of primary, secondary and high schools in Istanbul, Turkey. According to the research with the children from 7 to 17 in 500 schools in the academic year of 2012 – 2013, 62% of children use social media. Besides, they mostly watch television in their leisure time. They do not make any correlations between their lifestyles and problems in nature. Students playing the computer games are alienated from gardens and natural environment. For example, 40% of them do not hiking, while 57% of them do not play in the garden if their houses is not close to gardens (Minik TEMA, 2013).

Children stay at home more than their parents. The survey with 800 mothers and their children from 3 to 12 by Hofstra University in New York, USA signifies that “85% of today’s children play outdoors less often than children did just a few years ago; 70% of the mothers reported playing outdoors every day when they were young, compared with only 31% of their children (Clements 2004, cited in Charles et al. 2009: 22).”

Children deal with less outdoor activities, and thus stay less in the natural environment. Hofferth and Curtin (2006, cited in Charles et al. 2009: 22) conveys that “from 1997 to 2003, there was a decline of 50% in the proportion of children nine to twelve who spent time in such outside activities as hiking, walking, fishing, beach play, and gardening... Children’s free play and discretionary time declined more than seven

hours a week from 1981 to 1997 and an additional two hours from 1997 to 2003, a total of nine hours less a week of time over a 25-year period.”

In The United Kingdom, Playday Organization, i.e. the voluntary campaign supporting children’s rights to play, organized a similar investigation composed a series of four studies in 2007. According the results, “71% of adults reported playing near their home every day when they were a child as compared to just 21 percent of children today. (Playday, 2007, cited in Charles et al. 2009: 24).” A quarter of the children that attended to survey informed that the traffic prevents them from playing close to home, and that adults consider traffic danger. Yet, streets are still the second most common place to play outside the home, after parks. Parents’ fear about security issue has an essential spot in this research. “51% of children ages 7 to 12 reported that they are not allowed to climb a tree without an adult present, and 42% said they are not allowed to play in local parks without an adult (Playday, 2007, cited in Charles et al. 2009: 24).”

As indicated in these studies, children grow in the built environment without awareness and love of nature. The previous researches inform that there can be diverse reasons behind: parents’ fear of security, insufficient or lack of outdoor playground, and lack of interest and awareness to natural environment. Whatever the reason is, the result is that children suffer from deteriorated and neglected relationship with natural environment. Ignored, deteriorated or even neglected relationship between children and natural environment is the worldwide problem. Louv (2008: 45) calls this problem as the “nature-deficit disorder” which “describes the human costs of alienation from nature: diminished use of the senses, attention difficulties, and higher rates of physical and emotional illnesses.” Even if this is not as the medical disease, he previsions that “nature-deficit can even change human behavior in cities, which could ultimately affect their design, since long-standing studies show a relationship between the absence, or inaccessibility, of parks and open space with high crime rates, depression, and other urban maladies (Louv, 2008: 45).”

Children enhance understanding about real life by experiencing nature in the built environment. They attain abstract and concrete, living and non-living concepts by observing the functioning and mechanisms in nature. Hence, the child's growth divorced from the nature is a critical problem for society. As a result, in many countries nature education forced to be given to children as at least a course in the school curriculum.

Giving children awareness on and love of nature is, furthermore, essential for the success of future scenarios. For example, there are four scenarios defined by Değirmenci (2011). The first scenario is that capitalism would have continuous growth with a vast energy resource. The second scenario is based on the technological stability. If population growth could be stopped, resource consumption would be reduced spontaneous. The third scenario intended to reduce energy use and attract community to pre-industrial living conditions. And the last one is the collapse. In other words, civilization has already started to collapse at this point. In each scenario it is possible to see that the fundamental problems are due to environmental pollution and lack of natural awareness. This lack of natural awareness results from the human-centered viewpoint what the deep ecologists were against to in the 1970s. Durmuş Arsan (2003: 80) defines that deep ecology “emphasizes harmony with nature and the intrinsic worth of all forms of life, as well as simplifying material needs so as to reduce human impact on the world.” Basically, this approach is based on Aldo Leopold's Land Ethic's perspective. As a scientist Aldo Leopold insists on biotic communities' rights, who propose the land as a single community that contains and constitutes pieces of land and water, plants and animals. He advocates that the soil should not be seen as of personal goods (Özdağ, 2011). Parallel to Leopold's approach, children need to be grown in the close relationship with nature, not as the owner of it, but being the part of it. Therefore, to be in contact with nature in Leopold's modest viewpoint has become the necessity for today's children. Besides the relationship of children with nature is the subject of children education that should be dealt with the early education of childhood included the curriculum.

1.2. Aim of Study

This thesis aims to rebuild the relationship which is deteriorated and ignored between both children-natural environment and children-built environment. It searches for one of the ways of rebuilding relationship among children, natural environment and built environment via permaculture design system. The research questions which will be answered in this thesis are as follows:

- What are the reasons behind deteriorated and ignored relationship between children and natural-built environment?

- How can this relationship be rebuilt?
- How does the built environment appear in the children's world?
- How does the relationship between children and natural environment affect child development?
- Is being in relationship with natural environment necessary in the child development?
- What is the playground and how does it affect child development?
- Do the current playgrounds in the built environment qualify the necessities of children's development?
- How do children imagine their school garden?

This study intends to create a garden, playground and outdoor classroom appropriated and designed by children. It also anticipates respecting the parents' fear of security in the cities. One of the essential strategies of this thesis is to choose schoolyard as the case study area which is more safeguarded and where children spend most of their day time.

In this study, the schoolyard has the closest means to reach the children. The design of schoolyard with students of that school is the other aim of thesis. Their expectations, imagination, perspective and designs are determined through workshops and questionnaire. Hence children are included in the design process to create a new schoolyard, i.e. natural environment, in a new built environment.

The deteriorated and ignored relationship of children with natural environment is aimed to be improved by giving seminars, i.e. lessons on nature via permaculture design system, in the new school garden. This study examines some alternative teaching methods which specifically deal with nature and child in their curriculum. Montessori and Waldorf teaching methods are selected as the focal methods to analyze how the concept of nature is treated in their educational curriculums. The unique character of this thesis is its effort to integrate the findings obtained from the analyses of teaching methods into the national curriculum of the school defined by The Turkish Ministry of National Education. The proposed outdoor classroom in the schoolyard enables to follow classes outside and teach the related courses, e.g. Technology and Design Course, Science Course or Games and Physical Activities Course, supported with on-site practice.

This study also aims to introduce permaculture design system with the objective of nature education into child education. The permaculture design system has a major role in the design of schoolyard in this thesis as a tool used for strengthening tie between nature and children. It constitutes the central strategy of the project, as well as the integration of child perspective into the design process. The reason for the selection of this system is its philosophy in which the humanity is seen as the part of nature, rather than the owner. Its holistic approach to nature serves a strong conceptual base for children, in fact the adults of future generations, to rebuild ignored ties.

1.3. Methodology

This thesis uses the qualitative methodology to analyze and rebuild relationship ignored between children and natural-built environment. The book of Social Science Research Method by Chadwick et al. (1984) states that the term qualitative research expresses different modes of data collection such as field research, participant observation, in-depth interviews, etc. These modes have differences in the context and way of collection data. Yet, they all emphasize getting close to the source, e.g. case and people, based on self-experience. Filstead (1970) contributes to this definition in his book of Qualitative Methodology:

Qualitative methodology refers to those research strategies, such as participant observation, in-depth interviewing, total participation in the activity being investigated, field work, etc. which allow the researcher to obtain firsthand knowledge about the empirical social world in question. Qualitative methodology allows to researcher to 'get close to data' thereby developing the analytical, conceptual, and categorical components of explanation from the data itself-rather than from the preconceived, rigidly structured, and highly quantified techniques that pigeonhole the empirical social world into the operational definitions that the researcher has constructed (Filstead, 1970: 6).

In order to examine relationship between children and natural-built environment in more "experienced" (Chadwick et al., 1984: 206) way, the case oriented study was defined as the research strategy for the thesis. Gagnon (2010) points out the main advantages of case study which enables producing an in-depth analysis of phenomena in context. He mentioned that "the observed phenomena are authentic representations of reality (Gagnon, 2010: 2-3)." According to Gagnon (2010), the observer and observed phenomena should represent the reality objectively. The representation of reality is

essential part of this study. The relationship that existing but deteriorated and ignored between children and natural-built environment can be revealed and recognized, if only the reality is represented objectively. Yin (1993: 31) points out that “case studies are an appropriate research method when you are trying to attribute casual relationships—and not just wanting to explore or describe a situation.”

To get closer to the problem and gather the firsthand data from the case, the participant observation method was used. This method makes the researcher get closer to major unit, i.e. students, of this study in experienced way.⁴

This research examines the relationship both between children-built environment, and children-natural environment. During the analysis, the comprehensive literature is surveyed. The literature survey of thesis can be categorized into two parts. The former focuses on the relationship between natural-built environment and children that form conceptual background, while the latter part supports the case study.

The reciprocal relation between children-natural environment and children-built environment, that each has multi-dimensional perspectives, requires scrutiny of literatures from different disciplines. Therefore, the examined literatures in the former part can be grouped under five main headings:

- 1- Relationship between children and built environment,
- 2- Relationship between children and natural environment,
- 3- Necessity of education on nature,
- 4- Ethical principles of permaculture design system,
- 5- Designing outdoor classroom and schoolyard.

The literature inspirational for conceptual background of thesis are *Last Child in the Woods* by Richard Louv (Louv, 2007), *The Montessori Method* by Maria Montessori (Montessori, 1912), and *Modern Art of Education and The Renewal of Education* by Rudolf Steiner (Steiner, 1920). The literature inspirational for case study of this thesis are *Introduction to Permaculture* by Bill Mollison (Mollison, 2009), *Outdoor Classrooms* by Carolyn Nuttall and Janet Millington (Nuttall and Millington, 1970) and *Earth User’s Guide to Permaculture Teacher’s Notes* by Rosemary Morrow (Morrow, 1997).

The deep analysis in the literature on children and natural environment indicates that there have been particular education models emphasizing the necessity of keeping

⁴ For more detailed information about participant observation, see chapter 3.1.

strong ties between children and natural environment. These education models argue that the contact between children and natural environment should not be blocked, since learning skills of children in early childhood develop with observing nature. Montessori and Waldorf Teaching Methods, strengthening the tie between the children and nature, are the focal models of this thesis. First of all, they are widely applied teaching methods in abroad, yet newly emerged in Turkey. Thus this enables the researcher easy to access to the practices on school gardens, designed based on Montessori and Waldorf education principals. Secondly, both models target to implement in early childhood. Finally, the education on nature takes place as the topic in their school curriculums.

Besides to these methods, the other focal point of this thesis, permaculture design system emerged in the 1970s as harmless method of agriculture and imminence to nature, is investigated. The basic principle of this system is to grant necessary information to maintain individuals' life cycle in a simple and primitive way without harm to environment. Mollison (2009: 1) conveys the definition of permaculture in his book *Introduction to Permaculture* as, "permaculture is a system by which we can exist on the earth by using energy that is naturally in flux and relatively harmless, and by using food and natural resources that are abundant in such a way that we don't continually destroy life on earth." The harmless approach of permaculture design system to nature and all living things is the fundamental viewpoint directing this thesis. The quality, whether it is sustainable or not, and ecological or not, of viewpoint is

The schoolyard is the implementation place of case study. The reason behind the decision of schoolyard rather than other public spaces such as parks or playgrounds is that children spend most of their time, at least six hours per day through weekdays, in the school. The case study is implemented in Karacaoğlan Mahallesi Orta Okulu (Secondary School of Karacaoglan District) located in Bornova, Izmir. This is a public school with students from different income levels. This school is chosen as the case study area, because it attends a project named as Okullar Hayat Olsun (School Gets Life) supported by The Republic of Turkey, Ministry of National Education that suggest designing outdoor play areas, outdoor classrooms and school gardens. The second reason is that this school hosted the Permaculture Practice Course organized by The Permaculture Research Institute of Turkey in which the researcher was attended in September 2013 to design schoolyard as the permaculture garden. The methodology of case study is presented in the Chapter 3.

1.4. Structure of Thesis

The thesis structured within the sequence of the following main topics: problem statement, research questions, method, literature review, case study and conclusion. It is elaborated in four chapters. The first chapter initially states the problem of this thesis to describe the theoretical framework and rationale for the study. This part also includes the literature review about the lack of perspective of children in the design of built environment. Then, the goals and objectives of thesis are mentioned at the aim of the study in the Chapter 1. The methodology of the study is explained in two categories, locating in two different chapters: methodology of the thesis in the Chapter 1 and methodology of the case study in the Chapter 3. The overview of chapters and limitation of thesis are at the end of Chapter 1.

The Chapter 2 presents the theoretical framework of thesis about childhood and natural environment based on previous literature and applications. Here, the researcher examines the deteriorated and ignored relationship between children and natural environment, and necessity of nature and natural environment in childhood. Contemporary approaches to ecological school garden and current alternative teaching methods, such as Waldorf and Montessori approaches, are investigated. Moreover, the ethical principles of permaculture design system and its methods of application are analyzed and introduced as the focal point for fieldworks. Finally, the similarities and differences among permaculture design system, Montessori and Waldorf teaching methods, and contemporary approaches to ecological school garden are investigated. The school applications from domestic and abroad are evaluated.

In the Chapter 3, the case study in the Secondary School of Karacaoğlan District in Bornova, Izmir is introduced. This part starts with the detailed review of methodology and structure for the case study. The aim and scope of questionnaire and workshops are explained respectively.

Finally, the Chapter 4 completes this study with a summary of results from the case study, conclusions and the recommendations of researcher for further studies.

CHAPTER 2

CHILDHOOD AND NATURE

There was a child went forth every day,
And the first object he looked upon, that object he became,
And that object became part of him for the day or a certain part of the day,
Or for many years or stretching cycles of years.
The early lilacs became part of the child,
And grass and white and red morning glories, and white and red
clover, and the song of the phoebe-bird,
And the Third-month lambs and the sow's pink-faint litter,
and the mare's foal and the cow's calf.

WALT WHITMAN (1819-1892)⁵

Nature has the major role in childhood for development of a child both physically and mentally. Children need to safe open places e.g. parks, playgrounds, urban forests, squares to connect natural environment in the built environment. Decreasing of these spaces children becomes lost their connection with natural environment. Their relationship between children and natural-built environment deteriorated and ignored.

Therefore, various methods to improve this relationship have been developed in the field contemporary education for children. In this chapter, initially necessity of natural environment in childhood will be mentioned and then some of this methods and examples handled in Turkey and abroad will be investigated. Finally, permaculture design system will be introduced and the similarities and differences between them will be revealed.

2.1. Necessity of Natural Environment in Childhood

Natural Environment represents both the outdoor safe play area in built environment and natural wildlife itself throughout this thesis. Yet, initially the first meaning discussed more than second. Because nowadays children do not even reach the wildlife. Primarily it should be provided for children that reach the natural environment in built environment to

⁵ Quoted from Building for Life: Designing and Understanding the Human-Nature Connection (Kellert, 2005).

improve the deteriorated relationship between children and nature. After this, children can long for wildlife. In essence there is a strong bond between children and wildlife. Sobel (2008) describes the relationship between tree and children as;

I learn about children-tree relationships through phenomenological observations of children interacting with trees naturalistically. What is it that children actually do with and in trees? Well, they climb them, build forts in them, read in them, hug them, make nests with their leaves, create carnival rides on their branches, play with dolls in their shade, gaze at the sky through their leaves, smell them, become friends with them (Sobel, 2008: 19).

Children connect to nature to learn with nature, spending time to play and needs of love. The cause of dependent on natural environment for their development is this relationship that they build. Children can make the elements of natural environment a part of their game. As Sobel (2008) mentioned children can build a game on leaves of a tree. At that point, it takes attention that playing with nature element or playing on natural environment takes major role for development of a child. According to Gökmen (2012) game is the natural right of every child and mainstay of education process to improve children's experience and skills e.g. cognitive development, imagination, creativity, discovery and understanding and problem solving skills. Moreover she adds: when children playing, a game provide to gain such skill as imagination and creativity, abstract thinking, feelings of intuition and the ability to cooperate, social and cognitive skills, learning of problem solving, confidence and self-esteem, skills to coping with success and failure, gaining skills for adult life, get used to select, learning to decide. There is no events in life of children can provide them these skills as much as a game.

Furthermore, the essential point of game activity is to perform it in natural environment. Being in relationship with nature is required part of child's development. The outdoor playing activity is more beneficial than interior ones to support children's development both physically and physiologically. Fjørtoft (2001: 111) express the relationship among children, natural environment and game that the natural environment provides children active and bumpy playground. The topography, e.g. slopes, rocks and hills, are natural obstacles that children have to cope with and play with it, vegetation can be imagined as shelters, trees are other obstacles for climbing. According to this perspective, children are very active physically when playing in the natural environment which will contribute the development of his/her body. Moreover, they are also active mentally and psychologically. Akkılıç Kansu (2009, cited in Çukur, 2011) pointed that using of natural elements in playground design enables to children a

healthy development with in harmony of their existence, creativity, exploration and to meet requirement of moving, ability to use their all sense organs (hence development of perception), concentration, ability to identifying her/himself and nature, and to provide resting. Gökmen (2012) adds that outdoor play environment probably the most stimulating areas that children can play and offered them opportunity to meet with people from different ages and different backgrounds. These environments support social cohesion and provide a suitable atmosphere for social activities. Children's learning is not limited with learning from school. Tolerance, the value of diversity and respect for others are the lessons that gained during the game. Today, children experience on nature is limited and having from secondary circumstances. That is why children's conception is difficult to grip.

Today children are obligated to play at home such reason as security concerns of parents, failure to provide enough playgrounds or play areas. According to the results of questionnaire that implemented by Tandy (1999: 154-164) with 421 children aged between five to 12 and 165 parents at three suburban primary schools in Newcastle, New South Wales and Australia in 1995, 59.2% children preferred play in their home or their friends' home, while 22.8% of them preferred play at the park and 9.1% of them preferred to play in the street. This involuntary preference deteriorates and damages the relationship between children and natural-built environment. Another reason of this preference is that the existing play areas cannot take attention of children and children are not interest in to play at there or bore at there. Çukur (2011) states that the playground area should be appropriate for children's size, sense of discovery, cognitive development, ability to create, urge to move, intensify of attention, self-recognition and social development. Yet, it is more essential that the playground should allow children to communicate with nature than most of all.

Fjørtoft and Sageie (2000: 83-84) cited a child's word from Titman (1994) and Moore and Wong (1997) as "climbing rocks is more fun than climbing trees—but climbing trees is more fun than the boring playground equipment." As can be understood from these cited words, built environment, i.e. playgrounds area in the city, is not sufficient to meet children's expectation. Bilgin (1984) examines that the toys in the playgrounds are easily broken and allow to children doing just certain movement. Thus children easily get bored from these places. Thus this built environment needs to support by natural environment's element to keep its attraction. In order to design in the

way of this viewpoint some regulations are offered especially in northern European countries: “Woonerf” and “Home Zone.” Ergen (2000, cited in Tandoğan, 2014) defines these regulations that although they have different names, they are essentially the same. Generally, with the decreasing of traffic at the street, some playing, resting and sitting areas are created for children (Figures 1 and 2).



Figure 1. Woonerf Regulation in Rijswijk, Holland.
(Source: <https://ctenium.wordpress.com>)



Figure 2. Home Zone Regulation in Leeds, UK.
(Source: <http://headstogether.org>)

According to research survey result done by TEMA in Istanbul (Minik TEMA, 2013), children aim to improve their deteriorated connection between him/her and natural-built environment basically with to strengthen their relationships to natural habitat. The survey found that the children who play in gardens do not play with computer and using the internet. Children feel happy mostly in garden and the most wanted thing that they want to see in schoolyard is garden. The 73% of children play in garden who have a garden at their house or nearest of house. The 72% of them express that they would be happier if they had animals or vegetation around their close environment. The 76% of them felt responsible about nature and creatures that lived in nature.

As can be seen from results today children are yearning for the natural environment. When it is realized, nature education has to be given as a course to children. At that point schoolyards become an essential part as an implementation area and also as a natural environment. UNICEF in 2006 was developed two projects named as “Child Friendly School” and “Learning through Landscapes” (Tandoğan, 2014: 26). These projects contain improving school garden and school building where describe as the close physical environment of children. The aim of the projects was providing children safe, attractive school garden that be able to answer of children’s game request and producing healthy areas that reflect children’s presences and perspectives. Yet, despite of this approach the project could not escape adult’s perspectives that used rather than children’s (Tandoğan, 2014).

Actually, the school itself is the ‘key point’ both for built environment and natural environment to access children easily. Therefore schools should reorganize to connect children to natural-built environment again. The school garden should contain natural environment elements and it should be appropriate for implementation of gardening. Nature education should not be given as a course, yet it should be taught as a lifestyle since the child born.

Moreover, Gökmen (2010) pointed out that built environment education should be given to children not make them a designer yet, to provide them to understand and read their closed built environment. Thus they gain awareness about reduction of natural environment in the built environment and they demand it more consciously.

2.2. Approaches to Children and Natural - Built Environment

The further headlines will introduce alternative teaching methods and permaculture design system to examine how the nature education is handled in childhood.

2.2.1. Lessons from Montessori Teaching Method

Montessori pedagogy is based on an idea that children have ability to determine their own future. It was developed by Dr. Montessori in Italy in 1907. The task of Montessori education approach is to help children to live alone. According to Dr. Montessori (1912), children should not be regarded as adults. Even if they are accepted as the copy of their adults, they should be categorized as special form of life in terms age, imagination, perception and structure of thought. Arslan (2008) states that Montessori's ideas and practices are recognized as the Renaissance in the field of education in 1907.

Maria Montessori was graduated from the Medical Faculty of the University of Rome in 1896. She did her specialization on the Psychiatry Department of the same university. During her studies, she dealt with mentally handicapped children who would not benefit from the Italian formal education system, and their development through special training that she developed. She examined the works of Jean Itard and Edouard Seguin, who are the French physicians and pioneers of the fields of special education. By receiving positive results from her study on mentally handicapped children, she decided to apply the same method for ordinary children. Therefore, she studied philosophy, psychology and anthropology. The Montessori education approach was developed in 1907 with the establishment of the first 'Children's House' (Casa de Bambini) for 2 to 6 aged children in the slum district of Rome (Oğuz and Akyol, 2013). Although Dr. Montessori developed her education approach to support education of children from low incomes families and mentally handicapped ones, her approach is used today to educate children that upper and middle income groups of families (Wardle, 2009).

Feez (2010) underlines that by the school of 'Casa de Bambini', the understanding of conventional classrooms and early childhood centers changed in the first decades of the twentieth century. The change in the classroom was considered innovative, even revolutionary. Dr. Montessori designed the classrooms for slum children as a clean, well ventilated and spacious room. Besides, furniture proportions were ergonomic and defined according to children age and needs. The window height was determined as low enough to allow children for contacting outside easily.

If compared to the conventional classrooms, another feature of the Montessori classroom is its proximity that should be close to the garden. In the book of Maria Montessori Methodology, in which Dr. Montessori describes even a property of furniture accompanying her approach, there is the specific chapter about the necessity of relationship between children and nature. In this chapter, Dr. Montessori (1912) indicates that;

The education which a good mother or a good modern teacher gives to-day to the child who, for example, is running about in a flower garden is the counsel not to touch the flowers, not tread on the grass; as if it were sufficient for the child to satisfy the physiological needs of his body by moving his legs and breathing fresh air.

But if for the physical life it is necessary to have the child exposed to the vivifying forces of nature, it is also necessary for his physical life to place the soul of the child in contact with creation, in order that he may lay up for himself treasure from directly educating forces of living nature. The method for arriving at this end is to set child at agricultural labor, guiding him to cultivation of plants and animals, and so to the intelligent contemplation of nature (Montessori, 1912: 130).

Dr. Montessori (1912) pointed out that the child's proximity to nature contributes to the development of child both physically and psychologically. Closeness of children to the nature emerges as an essential factor for healthy development of what she underlines that this proximity should also be valid in the classrooms. Thus in the Montessori Teaching Method the presence and the proximity of garden within the classroom gains a crucial role.

In support of this point of view, Dr. Montessori, in her book Montessori Method published in 1912, expresses the necessity of being in relation to garden for classrooms in five complementary approaches. The initial approach is that "the child is initiated into observation of the phenomena of life" by observing nature (Montessori, 1912: 131). This makes the children get interest in the nature. With the increase in the curiosity, children under the control of supervisor (teacher or parents) desire to be in the nature. At this point for school, the nature is the school garden.

Secondly, “the child is initiated into foresight by way of auto-education (Montessori, 1912: 132).” In this approach, children start to know plant’s life depends on their care in watering it and animals can be alive, if they feed them. Observing the little plant dries up without watering or an animal suffers from hunger, makes children take responsibility about the living beings and feel a mission in life. Children take credit for instinctively rules of life and within the continuity of life. The ‘auto-education’, as Montessori describes, is the doctrine that comes from observation. She also underlines that auto-education is more effective than a mother or teacher’s voice.

Third one is that “the children are initiated into the virtue of patience and into confident expectation, which is a form of faith and philosophy of life (Montessori, 1912: 133).” Waiting for a seed that they put into the ground to become a flower or fruit, this gives the children to realize how some plants grow slowly and how it wants labor. For example, while a fruit tree has a long time, some plants have rapid life. Therefore, children realize the “peaceful equilibrium of conscience (Montessori, 1912: 132).”

The fourth approach is that “the children inspired with feeling for nature, which is maintained by the marvels of creation—that creation which rewards with a generosity not measured by labor of those who help it to evolve the life of its creatures (Montessori, 1912: 132).” If children are allowed to take part in the flow of nature, rather than fear or wince, they will learn to care for plants, trees or creatures. According to the example simplifying the study in the ‘Casa de Bambini’, children choose to examine the growth track of worms or insect larvae instead of afraid or loathe from them (Montessori, 1912). Furthermore, these children take care of them for helping their growth. They naturally recognize that taking product from nature is different from getting industrial product. By taking generosity from nature, feeling response to labor born spontaneously in the child’s conscience. It teaches that if nature gives fruits, men must give labor.

The fifth and the last one is that; “the child follows the natural way of development of the human race (Montessori, 1912: 133).” Passing from creativity and education (auto-education), nature makes these children as civilized individuals. This children are get used to deal with nature, and always have a square for agriculture for later life of them. The nature also makes them spiritually relaxed. Even a pot of flowers at the window can, if necessary, fulfils the purpose.

Examples of Schools That Conducted by Montessori Teaching Methods:

1- Inciralti Montessori Kindergarten

Location: Balçova, İnciraltı, İzmir

Foundation Year: 2013

Public/Private School: Private School

Age Range: 2 to 6

Special Quality of School: The school has 5000 m² schoolyard and it has vegetable and animal system in it.

İnciraltı Montessori Kindergarten aims to grow children with self-confidence, aware of their capabilities, learning through experience and without afraid of make mistake. Another objective of this school is growing child as a creative person (İnciraltı Montessori, 2013).

The school has a big garden for playing, learning from environment and gardening lesson. In this garden children can grow their own vegetables, fruits and herbs. There are some fowls in this garden e.g. ducks, rabbits, geoses and chickens. Children take responsibility of feeding these animals, and watering and harvesting plants. These make children to learn how they can take responsibility in the life (İnciraltı Montessori, 2013).

The reason of selecting this school as an example is that the school is the first Montessori school in İzmir. The school has mission of introducing the Montessori Teaching Method in İzmir and Turkey. Also this school is the founder of Association of Montessori Education in İzmir.

The school images can be seen in Figure 3, 4, 5, 6, 7 and 8.



Figure 3. Selling the Vegetables Grown by Children.
(Source:www.facebook.com /Montessorianaokulu)



Figure 4. Vegetable Beds.
(Source:www.facebook.com /Montessorianaokulu)



Figure 3. The Playground Area.
(Source: www.facebook.com/Montessorianaokulu)



Figure 4. Animal System in School.
(Source: www.facebook.com/Montessorianaokulu)



Figure 5. Garden of School.
(Source: www.facebook.com/Montessorianaokulu)



Figure 6. Garden of School.
(Source: www.facebook.com/Montessorianaokulu)

2- Ümitköy College School Of Montessori:

Location: Ümitköy, Ankara

Foundation Year: 2014

Public/Private School: Private School

Age Range: 5 to 12

Special Quality of School: The school has a permaculture garden in the schoolyard and it has also animal system in it.

Ümitköy College School of Montessori aims to grow children with learning cause of curious not being compelled by recognizing the children's world. The school wants to gain children that perceive learning as a life style, like working and living, be at peace with them and compete with them to society. The school introduces itself as home-school. The lessons are taught in atelier, laboratory or permaculture area (ÖÜK, 2014).

The school has permaculture design system methods in their gardening lesson's curriculum this is why this school was selected as an example.

The school images can be seen in Figures 9, 10, 11, 12.



Figure 7. Outdoor Lessons.
(Source: www.facebook.com/umitkoymontessorikoleji)



Figure 8. Outdoor Lessons.
(Source: www.facebook.com/umitkoymontessorikoleji)



Figure 9. Garden's Product.
(Source: www.facebook.com/umitkoymontessorikoleji)



Figure 10. Indoor Classroom.
(Source: www.facebook.com/umitkoymontessorikoleji)

3- Princeton Montessori Schools

Location: Princeton, USA

Foundation Year: 2009

Public/Private School: Private School

Age Range: Five programs are offered: Infant (through 18 months), Toddler (through three years), Primary (through kindergarten), Elementary (through fifth grade), and Middle School (through eighth grade).

As long as Princeton Montessori School follows Maria Montessori's teaching method, it provides facilities which are designed based to the reflection of Montessori: "we must create a favorable environment that will encourage the flowering of a child's natural gifts (Montessori, 1978: 194)". Therefore, the building is located in a green area inside a farmland with lots of trees and vegetation. The teaching method that all the teachers follow is based to activities that clearly "break down the artificial division of work and play (PCTE, 2014)."

Gardening and vegetating for Princeton Montessori School are some of the most important ways and methods to transfer the knowledge, the spirit of collaboration and the creativity to the children.

Furthermore, the goal of Princeton Montessori School is to provide to the children "a spirited, independent, coeducational day school children that seeks to ignite the innate and lifelong joy of learning (PCTE, 2014)" through the connection to the nature because in that way it is believed that children become "self-confidence, with life skills, critical thinking, independence, knowledge, and character (PCTE, 2014)."

Finally, connecting students to the nature, physical education is easier to be provided because children make movements and they appreciate more the value of fitness. Students gain self-confidence, learn how to control their bodies and get basic sports skills.

The reason of selecting this school as an example that the school use Montessori Teaching Method in the age range of 18 month to 15 years although the method generated for early childhood. Another reason of selecting is the school use some of permaculture design methodology for their gardening class e.g. herb spiral (Figure 13). The school images can be seen in Figures 13, 14, 15, 16 and 17.



Figure 11. Herb Spiral in Princeton Montessori School.
(Source: www.facebook.com/PrincetonMontessoriSchool)



Figure 12. Animal System in Princeton Montessori School.
(Source: www.facebook.com/PrincetonMontessoriSchool)



Figure 13. Climbing Wall.
(Source: www.facebook.com/PrincetonMontessoriSchool)



Figure 14. Indoor Classroom.
(Source: www.facebook.com/PrincetonMontessoriSchool)



Figure 15. Nature Education Lesson.
(Source: www.facebook.com/PrincetonMontessoriSchool)

2.2.2. Lessons from Waldorf Teaching Method

The Waldorf is the school movement appeared at the end of The World War I in 1919, with the initiative of Emil Molt, the owner of the Waldorf Cigarette Factory in Stuttgart in Germany. It started with the visit of Rudolf Steiner, an Austrian philosopher, scientist and artist by invitation of Molt, to give lectures to workers of the factory. Molt asked to Steiner to build a school that was based on anthropological understanding of human for the workers' children.⁶ Steiner accepted this offer within four conditions (Kerem, 2004): school will be open to all children; school will be for both girls and boys; the class will be composed of children from seven to twelve years old together and thus teachers will care about children directly one by one; economic concerns and government's intervention will be minimal on teachers. Therefore, the teachers can take role from administration to operation of school. As a result, the first independent Waldorf School was opened on September 7, 1919.

Waldorf schools are made a point of attaining awareness on nature, and developing sensitivity to nature and entirety which is natural (Kerem, 2004). Before children start coping with turmoil of modern life, the opportunity to observe nature is provided through Waldorf education. Before the age of nine, for imparting love of nature to children, songs, poems and stories about nature are taught. Horticulture, botany and zoology courses are also given after nine years old to complete the

⁶ The meaning of anthropological here is related to humanistic view, which is not nominate people as a machine.

development of children's talent when dealing with nature. According to Steiner (2004), the ninth age is described as a threshold in the awareness on nature:

We find that, once children reach the age of nine or nine and a half, we can lead them in a beautifully organic way to understand a world where they need to learn how to distinguish between themselves and their environment. If we have devoted enough time to speaking of plants that speak to us, allowing children to look at the plant world and experience it in living pictures, we can introduce something else. They learn this in the best possible way from plants, if we begin to speak of it between the children's ninth and tenth years and gradually carry it further during the tenth and eleventh years. At this age, the human organism is ready to inwardly relate to the plant world through ideas (Steiner, 2004: 126).

According to Waldorf education, the age of nine is the right time to give knowledge to children about natural environment. Before that, the children cannot make the distinction between reality and dream of living in. As children can comprehend the real lifecycle by the beginning of this age, they are able to start transferring learned knowledge to further ages, too.

When describing the nature, Waldorf method refrains from just giving bare knowledge to the children. Because, making children to understand the logic that lay on this knowledge is essential for Waldorf's methodology. Bare knowledge is qualified as "dry information" (Steiner, 2004: 126). Teaching just classification of plants to child, for example, means give them dry information. Steiner defines this phenomenon within a resemblance of headless hair. How the hair is meaningless without a head, giving knowledge about plants as meaningless as without giving knowledge about soil. The way of teaching children about plants require firstly teaching children about the soil. Steiner (2001) expresses that:

We speak of the real earth when we think of the earth as an organism with plants that belong to it just as the hair on our heads belongs to us. When we consider it that way, our picture of the earth grows together with our picture of plants, and we get the proper feeling for how to think of the earth in connection with the plant world. We can do that when we look at the earth in the course of the year. If we are to really teach children about plants, we should not compare one class or group of plants with another. Instead we need to use all the fresh plants we have, the nature exhibits in the school, walks, everything the children remember, and everything we can bring into the classroom as fresh plants. Then we can show the children how spring magically draws the plants out of the earth. We can show them how plants are magically drawn out, then go on to May, when the earth becomes somewhat different. We then continue on into summer, and the earth looks different again (Steiner, 2001: 144).

According to Waldorf methodology, it is essential that the knowledge about nature should be thought to children in the way of learning by experiencing. Merely, the permanent knowledge can be reached with that way. Therefore, gardens and animal shelters are scheduled that close to learning area of the children. The children can study

gardening, botany and zoology lessons which are integrated into the curriculum for after nine years of period. Thus children can experience the growth rate of a plant. They can also understand the difference between trees and plants, or have the knowledge about the animal's lifecycle by observing nature.

Examples of Schools That Conducted by Waldorf Teaching Methods:

1- Waldorf School of the Peninsula:

Location: Los Altos, California

Foundation Year: 1984

Public/Private School: Private School

Age Range: Nursery through High School Program

Special Quality of School: The school has both a vegetable system and animal system in the garden and there is big playground.

The mission of the Waldorf School of the Peninsula is to awaken children about their own capability of thinking, desiring, creating and feeling. The school supported that provides a movement for social change to generate a truly human world. As a summary the school supports the idea of “awakening the highest potential of the human being (WSP, 2014).”

The reason of the selecting this school as an example is that the school encourages children to learn life by experiencing nature. Therefore it has a vegetable garden, animal systems and a big natural playing are in its schoolyard.

The school images can be seen in Figure 18, 19, 20, 21 and 22.



Figure 16. Indoor Classroom.
(Source: www.facebook.com/WaldorfSchoolofthePeninsula)



Figure 17. Outdoor Activity.
(Source: www.facebook.com/WaldorfSchoolofthePeninsula)



Figure 18. Gardening Lesson.
(Source: www.facebook.com/WaldorfSchoolofthePeninsula)



Figure 19. Shelter Producing Lesson for 3rd Grade.
(Source: www.facebook.com/WaldorfSchoolofthePeninsula)



Figure 20. Playing Time.
(Source: www.facebook.com/WaldorfSchoolofthePeninsula)

2- Sacramento Waldorf School

Location: Fair Oaks, California

Foundation Year: 1959

Public/Private School: Private School

Age Range: High School Program, Lower School Program and Early Childhood Program.

Special Quality of School: The school has both a vegetable system and animal system in the garden and there is big playground.

The school has nearly 90.000 m² garden area including art science labs, three performance hall, a gymnasium, athletic fields, and a 20.00 m² biodynamic farm. The school meets their own food in this garden. This garden also helps children to learn how to take responsibility for alive in the earth (SWS, 2014).

The reason of the examining this school is the using of another agriculture method rather than conventional ones i.e. biodynamics farm. This method was found by Dr. Rudolf Steiner in early 1990's and started using of in Waldorf schools as a curriculum of gardening class. However, nowadays some of Waldorf School follows this technics than some of them do not. Steiner defines this method as "biodynamics is a spiritual-ethical-ecological approach to agriculture, food production and nutrition (SWS, 2014)." The method has lots of similarities about implementation technics with permaculture design system. On the other hand, this method is a "farming meets religio-philosophical practice (Whitney, 2013)" and "informed by anthroposophy, the spiritual

science, which Steiner founded (Winkler, 2013).” Therefore this technic is quite not conducive for a class with different religions.

The school images can be seen in Figures 23, 24, 25 and 26.



Figure 21. Selling Products That Grown by Children.
(Source: www.facebook.com/sacwaldorf)



Figure 22. Learning How to Cook Bread.
(Source: www.facebook.com/sacwaldorf)



Figure 23. Gardening Lesson on Outdoor Classroom.
(Source: www.facebook.com/sacwaldorf)



Figure 24. Biodynamic Farm.
(Source: www.facebook.com/sacwaldorf)

2.2.3. Lessons from Permaculture Design System

“Every superfluous possession is a limitation on my freedom.”⁷
Henry David Thoreau, 1817-1862

The permaculture system was first developed by Bill Mollison and his graduate student David Holmgren in the 70's Australia. The terminology of permaculture was introduced by their book of Permaculture One in 1978. The word of ‘permaculture’

⁷ Quoted from The Permaculture Way: Practical Ways to Create a Self-Sustaining World (Bell, 1992: 30)

comes from the words of '**permanent agriculture**'. Mollison criticizes the permaculture in his book of Introduction to Permaculture (Mollison, 2009) that "the word itself is a contraction not only **permanent agriculture** but also of **permanent culture**, as cultures cannot survive for long without a sustainable agricultural base and landuse ethic." He explains it as a system that deals with plants, animals, buildings and infrastructures; while "the relationship the designers can create between them by the way designers place them in the landscape (Mollison, 2009: 1)."

The permaculture design system describes a land use system for both untouched and damaged lands providing minimum damage and maximum efficiency to the place without exploit or pollute. Indeed, it proposes a sustainable way of life style "to create systems that are ecologically-sound and economically viable, which provide their own needs, do not exploit or pollute, and therefore sustainable in long term (Mollison, 2009: 1)." Thus permaculture combines plants and animal systems with the natural characteristic of landscapes, uses wisdom that based on observing nature and farming systems, and facilitates modern scientific-technological knowledge to produce a life-supporting system for the city or country.

Permaculture has strict three ethical bases which differentiate from other eco-centric, deep environmental approaches: care of earth, care of people, return to surplus. Holmgren (2007: 7) states that "these principles were distilled from research into community ethics, as adopted by older religious cultures and modern cooperative groups. The third principle, and even the second, can be seen as derived from the first."

The care of earth refers caring of "natural resources" (McKenzie and Lemos, 2011: 4). This is the major ethical basis of permaculture defined as "care off all living and nonliving things: soils, species and their varieties, atmosphere, forests, micro-habitats, animals and waters. It implies harmless and rehabilitative activities, active conservation, ethical and frugal use of sources, and "right livelihood" (working for useful and beneficial systems) (Mollison, 2009: 3)."

Secondly, the care of people is an ethical approach for preparing a healthy and safe future for everyone. It characterizes the caring humanity and its basic needs, yet, without referring it as the center of universe. "Permaculture is about improving our opportunities, living environment, food supply, health and wellbeing (McKenzie and Lemos, 2011: 4)." Mollison (2009) also expresses this definition of the caring of people as;

Care of the earth also implies care of people so that our basic needs for food, shelter, education, satisfying employment, and convivial human contract are taken care of. Care of people is important, for even though people make up a small part of the total living systems of the world, we make a decisive impact on it. If we can provide for our basic needs, we need not indulge in broad scale destructive practices against the earth (Mollison, 2009: 3).

Lastly, the return the surplus implies the dispersal of surplus time, money, and other materials to the others who demand. Bell (1992) describes this principle with an example: if the hen of somebody lays more eggs than he/she needs, he/she should give them away that somebody who does not have egg. Mollison (2009) mentions this principle as;

The third component of the basic “care of the earth” ethic is the contribution of surplus time, money, and energy to achieve aims of earth and people care. This means that after we taken care of our basic needs and designed our systems to the best of our ability, we can extend our influence and energies to helping others achieve that aim (Mollison, 2009: 3).

The use of permaculture design system in the solution of social issues is pointed out by Bulut and Yılmaz (2008: 37) that the permaculture is “as a design system based on ethical rules and applicable to land use, food production and social works.” When dealing with children, permaculture design systems or permaculture playgrounds have become a new design approach and a method to rebuild a relationship between natural environment and children for a sustainable society (Bulut and Yılmaz, 2008). Permaculture playgrounds provide children what they need to play in an eco-friendly way. The unpolluted, harmless and compatible, in short eco-friendly, way to nature is the essential point of permaculture for rebuilding relationship between children and nature. The permaculture has become a philosophy. Bulut and Yılmaz (2008) points out the benefit of playgrounds that designed with the principles of permaculture as;

One of the most important designs taking role in growing healthy individuals is playground design. Utilizing permaculture principles in the design of playgrounds where an individual gains base-stones of his or her character as a child might be considerably beneficial. When considered the role of playgrounds in the physical, mental and social development of children, the importance of the constitution of them by adopting and applying the permaculture philosophy will be more definite (Bulut and Yılmaz, 2008: 37).

There are several schools in Turkey and abroad whose schoolyards are designed as permaculture garden. Only caring about nature is not enough according to permaculture design system, it needs also caring about all living things in a wider perspective. Bell (1992) contributed this definition as;

Permaculture invites you to care for yourself, to care for your family and immediate community, to care for your neighbors in the widest possible sense; all around the globe. It is rooted in strong historical evidence that such care cannot work unless we also care for the land. Implicit in this is the understanding that we duly respect the waters and air of the Earth as well (Bell, 1992: 30).”

Nuttal and Millington (2008) underlines about that;

Permaculture techniques and strategies are ideal for establishing successful gardens in school grounds. With over 30 years of growing experience and thousands of trials in all climates, permaculture offers the best way to garden in compacted soils, using no chemicals, with minimum work, for the best results (Nuttal and Millington, 2008: 50).

Examples of Schools That Conducted by Permaculture Design System:

1- Emine İbrahim Pekin Primary School (Emine İbrahim Pekin İlköğretim Okulu):

Location: Maltepe, Istanbul

Implementation Year: 2011

Public/Private School: Public School

Age Range: 6 to 14

Facilitator: Didem Çivici

The study facilitated by Didem Çivici in 2011 within the project named EKOPER (Ekolojik Bahçeler ve Permakültür Uygulamaları). The project aims to be served as an example model of application to other school garden. The objective of the study is introducing to children the permaculture design system and working with them by using permaculture method (Çivici, 2012).

The differences, between this study and the researcher’s study, is that the study designed by facilitator. On the other hand, the implementation project of researcher is designed by researcher within the idea and perspective of children who study in implementation area. The school images can be seen in Figures 27, 28 and 29.



Figure 25. Outdoor Classroom.
(Source: <http://permakulturcocuk.blogspot>)



Figure 26. Herb Spiral.
(Source: <http://permakulturcocuk.blogspot>)



Figure 27. Rise Beds.
(Source: <http://permakulturcocuk.blogspot>)

2- Sancaktepe Anatolian High School (Sancaktepe Anadolu Lisesi):

Location: Sancaktepe, Istanbul

Implementation Year: 2013

Public/Private School: Public School

Age Range: 6 to 14

Facilitator: Didem ivici

This project is also generated within EKOPER in 2013 by Didem ivici. This permaculture garden has one outdoor class, one herb spiral, one vegetable garden designed as mandala style, one raise bed and bird houses (ivici, 2013). This project is also designed by facilitator.

The school images can be seen in Figures 30, 31 and 32.



Figure 28. Permaculture School Garden.
(Source: <http://permakulturcocuk.blogspot>)



Figure 29. Herb Spiral.
(Source: <http://permakulturcocuk.blogspot>)



Figure 30. Rise Bed with Permaculture Keyhole Technic.
(Source: <http://permakulturcocuk.blogspot>)

3- Kiama Public School:

Location: Kiama, Australia

Implementation Year: 2011

Public/Private School: Public School

Age Range: 9-10

Facilitator: Aaron Sorensen

This project generated in one full-day with 15 children. The project aims to introduce permaculture design system to children. In this day, they produced an outdoor classroom that built on recycled tires with no-dig contour beds beyond, four no-dig beds. The children learned how to do mulching, planting and hugel culture for whole day. The project of permaculture garden is designed with taking outdoor classroom in the center by facilitator (Milkwood, 2011).

The school images can be seen in Figures 33 and 34.



Figure 31. Outdoor Classroom.
(Source: <http://milkwood.net>)



Figure 32. No-Dig Beds.
(Source: <http://milkwood.net>)

2.2.4. Contemporary Approaches to Ecological School Garden

Various approaches to ecological school garden are raised nowadays. In this part two of these approaches will introduce:

1- BBOM Bodrum:

Location: Ortakent- Bodrum/Muğla

Foundation Year: 2013

Public/Private School: Public School

Age Range: 5-10

This education movement was borne as a reaction to conventional education system. The aims of this project to generate a school model that:

Actualize the rights declared in the Convention on the Rights of Children, provide children opportunities to self-realize, is managed with participatory democracy, respectful to ecological balance and do not seek profit, to generalize this education mentality and constitute a model in order to actualize similar other schools (BBMO, 2012).

In this school model children are able to make their own choose about their education. The lessons and levels are organized by the request of children and their parents. The reason of selecting this project as an example is that the project allows children to design some part of their school and their education style.

The school images can be seen in Figures 35 and 36.



Figure 33. Building Phase of School.
(Source: www.facebook.com/search/137180702999242)



Figure 34. Building Phase of School.
(Source: www.facebook.com/search/137180702999242)

2- Ithaca Forest Preschool:

Location: Ithaca, Greece

Foundation Year: 2013

Public/Private School: Public School

Age Range: 3-5

The aim of this school is to make close children to nature when they grow. This education is given in the early childhood. The program is designed to teach children about nature and provide children to experience the working of nature. The program can

be prepared as the range of per a week to five days a week. The school helps to children to meet with natural environment when they were very young (Primitive Pursuits, 2014).

The school images can be seen in Figures 37 and 38.



Figure 35. Forest School of Ithaca.
(Source: www.egitimpedia.com)



Figure 36. Forest School of Ithaca.
(Source: www.egitimpedia.com)

2.3. Evaluation

Considering the alternative teaching methods and permaculture design system that mentioned in this chapter, according to the implementation study there are some similarities and differences between them. These alternative education models support that the learning skill of the children is improved by the relationship between nature and children via safe green area and play area. This study is also support that strategy of these education models.

On the other hand permaculture design system is not an education model. As a difference of these education models, this study does not use conventional agriculture technics in its curriculum of nature education lessons. This study includes permaculture design system as a designing tool that helps preparing of curriculum of gardening and nature education lessons which are the same as the alternative education models have to close children to the nature. Rather than conventional agriculture technics or biodynamics farming methods that uses for Waldorf Teaching Model, permaculture preferred because of feeding by Aldo Leopold's Land Ethic philosophy that deep ecology is also based. This philosophic background helps children to gain a new perspective which make them close to naturalist life style.

Then again, biodynamics farming method is not appropriate for person who has different religion in a class. This is the another reason of selecting permaculture design system as a curriculum of gardening lessons in the case study rather than Waldorf teaching model uses. Besides, Montessori gardening class does not follow any approach. Its style is almost like a mixture of conventional agriculture method and permaculture design system. As mentioned in the examples, some of Montessori schools can follow permaculture methods for their gardening class.

Arne Naess defined two movements: deep ecology and shallow ecology in 1972. Deep ecology movement is environmental centered approach when shallow ecology movement is human centered (Drengson et al., 2010). Actually permaculture design system includes both two approaches, although it is closer to deep ecology movement, this why it is preferred as a tool for this study. As the ethics of permaculture design system were introduced in the part 2.2.3 of this chapter, when the 'care of earth' ethic of permaculture design system has the same base with deep ecology movement the 'care of people' ethic has the close approach with shallow ecology movement. According to the permaculture design system, it contains both approaches that people are parts of environmental system and designing for human while caring the environment. Therefore using permaculture design system as a tool for this study provided to teach children both implementation technic and philosophical background of environmental understanding.

CHAPTER 3

CASE STUDY: PRACTICES ON NATURE EDUCATION IN KARACAOĞLAN MAHALLESİ ORTAOKULU

In this chapter case study implemented in the Secondary School of Karacaoğlan District in Bornova, Izmir, which includes fieldwork mentioned as workshops in whole study and questionnaire, will be investigated. The workshops and questionnaire were decided to implement by researcher to build a collaboration platform between children and designers while designing and implementing school garden, and make children closer to natural-built environment via permaculture design system.

3.1. Methodology of the Case Study: Participant Observation

In order to examine relationship between children and natural-built environment in more “experienced” (Chadwick et al., 1984: 206) way, the case study was selected as the research strategy. To get closer to the children and gathering data from the case, participant observation method was used. This method provides researcher to observe and participate the action in its “natural setting” (De Walt and De Walt, 2002: 4). The researcher becomes more ‘experienced’, if he/she observes the ‘setting’, here the students, in its ‘natural’ environment, here the schoolyard.

De Walt and De Walt (2002: 1) defines participant observation as “...a method in which the researcher takes part in daily activities, rituals, interaction, and events of a group of people as one of the means of learning the explicit and tacit aspects of their life routines and their culture.” Besides, Selltiz et al. (1959, cited in Chadwick et al., 1984) underline that observation offers to researcher some clear advantages over other methods. The most remarkable advantage of direct observation is that “allows the researcher to record behavior as it occurs, as seen by disinterest outsider, rather than relying on a subject’s retrospective or anticipatory reports of personal behavior (Chadwick et al., 1984: 74).”

Working with the children is the challenging task requiring certain degree of sensitivity.⁸ Therefore, the selection of method used when dealing with them is critical. Participant observation provides the required sensitivity to observing data. Children have wide imagination; to know how they imagine their school garden and how built environment looks like in their world without any guidance are the essential research questions of case study.

Observing child through the case study provides unbiased and valuable data. Fawcett (2009) points out the merit of child observation in his book of *Learning Through Child Observation* as;

Observation is about taking children seriously, hearing what they have to say, respecting their interpretations, and valuing their imagination and ideas, their unexpected theories, their explorations of feelings and viewpoints. We can learn about children through watching and listening in an alert and informed way that raises awareness and sharpens understanding (Fawcett, 2009: 17).

This is the decision of this thesis that the researcher aims to be highly participatory as an observer, yet less visible as a guide during the whole case study.

The major units of analysis for the case study are the students between nine and twelve years old which constitute The Environment Protection Club in the Karacaoğlan Mahallesi Ortaokulu (Secondary School of Karacaoğlan District).⁹ The population of the club is composed of 46 students; among 45 of them are the major units of case study.

The methodology of case study is designed by using two data collection tools of participant observation: fieldwork and questionnaire which are built to support and feed each other. The fieldwork is accompanied with the questionnaire, since it is incapable of collecting enough information about children's socio-cultural background, family, and natural-built environment where they have grown by fieldwork.

The fieldwork contains designing process for school garden, seminars of permaculture methods and on site implementations. All studies related to fieldwork are called as workshops throughout the thesis. De Walt and De Walt (2002) convey that the method of participant observation provides to conduct open-ended interviewing. "It is a way of approaching the fieldwork experience, gaining understanding of the most

⁸ To overcome about this, during the thesis, the researcher consulted a child psychiatrist, a pedagogue and a professor doctor of department of child development.

⁹ The terminology of major unit used here refers to participants of case study. It is quoted from the book of *Application of Case Study Research* (Yin, 1993: 32).

fundamental processes of social life. It provides context for sampling, open-ended interviewing, construction of interview guides and questionnaires, and more structured and more quantitative methods of data collection (De Walt and De Walt 2002: 2).” Yet, working with children is not appropriate for doing interview as stated by Clough and Nutbrown (2007):

...if young people had negative views about men working with young children, they would be more likely to express these in an anonymous questionnaire, rather than face to face with an interview or within a focus group. As the project relied solely on the result of the questionnaire, the data was a little inflexible and unsophisticated as it could not clarify the attitudes of the young people any further (Clough and Nutbrown, 2007: 124).

Hence, as a complementary tool of fieldwork, the questionnaire is generated. The method of questionnaire is examined in the book of Social Science Research Method (Chadwick et al., 1984: 137) that “the respondent may consult with others, review records, think about a question before answering, and interrupt the process of completing the instrument if necessary. In an interview setting such time-consuming or disruptive actions are usually inappropriate.” Therefore, this thesis prefers to conduct the questionnaire as the sensitive data collection tool for children, instead of the method of interview. The open-ended questions are prepared under five categories (see in the part 3.2.2.). The reason for the preference of open-ended questionnaire is to learn about children’s perspective to natural and built environment without any guidance.

For the analysis of open-ended questions, a “codebook” is prepared (Baker, 1994: 319). In the process of preparation of codebook, responses per each question are separated into different variables for pre-coding phase. An example of contingency question is as follows: children were asked whether they go out, or not, for playing. If they go out, the place of play is also questioned. For this question, the major response, which refers that the researcher expect to receive, is ‘to go out and go somewhere for playing’. In this case, the codes of answers are as follows: 1. variable = ‘I do not go out for playing’; 2. variable = ‘I go out with my parents’; 3. variable = ‘I go out somewhere to play’. According to this coding, none of information is lost. In this study, there are two or three variables defined depending on the question (Baker, 1994) (Appendix A).

The result of open-ended questions¹⁰ indicated that the best way to analyze them is to group children into three. Thus three groups were constituted as:

¹⁰ See Appendix B for all answers of open-ended questions.

1. Close, i.e. children which has close interest to nature,
2. Middle, i.e. children which has medium interest to nature,
3. Far, i.e. children which has less interest to nature.

Three groups of children, derived from the results of questionnaire, acted in different raised beds of school garden in the workshop 4 to compare whether to be close to nature was influential in the fieldwork, or not.

3.2. Structure and Process of Case Study

This thesis required the organization of certain steps through which both theoretical and practical fieldwork and design of schoolyard can be realized properly. The following section introduces the steps, and describes the relations and feedbacks among them so that the structure and process of case study can be well understood.

The case study is structured over the information and experience gathered from the Permaculture Practice Course held in the same school in September 2013. Even if it was not a planned fieldwork in the scope of this thesis, it is included here as the preparation phase for the case study in order to inform the scope and outcomes of previous study undertaken in the schoolyard.

The case study is composed of two main categories: questionnaire and fieldwork. The fieldwork is designed into four workshops (Table 1):

Workshop 1: ‘We are Designing School Garden Together (Hep Beraber Bahçemizi Tasarlıyoruz)’

Workshop 2: ‘Permaculture Methods Seminar (Permakültür Metodları Semineri)’

Workshop 3: ‘Tree Planting Workshop (Ağaç Dikim Atölyesi)’

Workshop 4: ‘We are Building School Garden Together (Hep Beraber Bahçemizi Kuruyoruz)’.

Table 2 shows the steps of the case study feeding each other throughout the design process. After preparation phase, the Workshop 1 and questionnaire were implemented independently. The results of the questionnaire and Workshop 1 were utilized to design school garden project, and to create structure and topic of Workshop 2. However taught in Workshop 2 was the implemented case of Workshop 3. Finally Workshop 4 was creating with both questionnaire and all the other elements of fieldwork.

Table 1. Structure of Case Study.

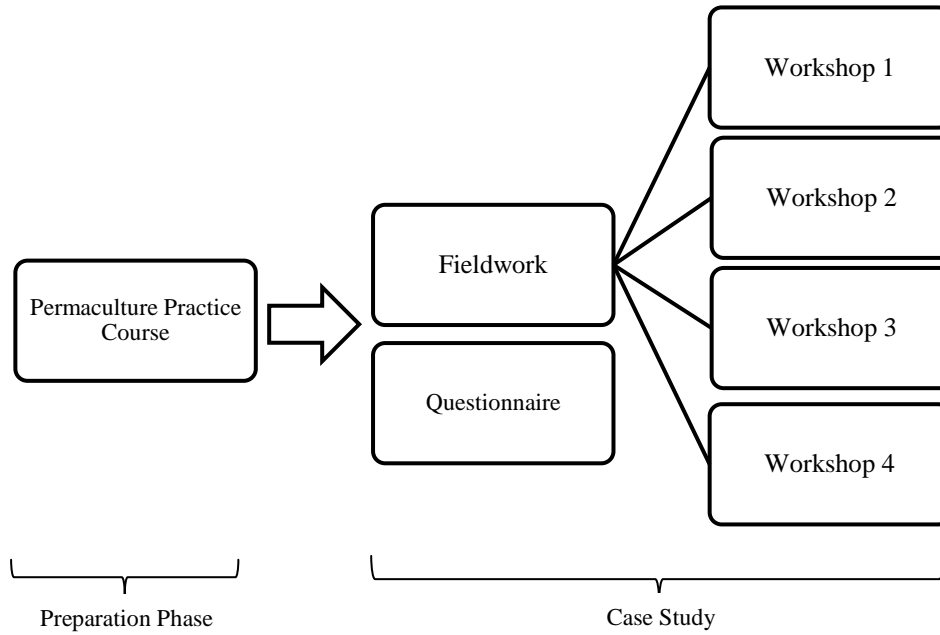
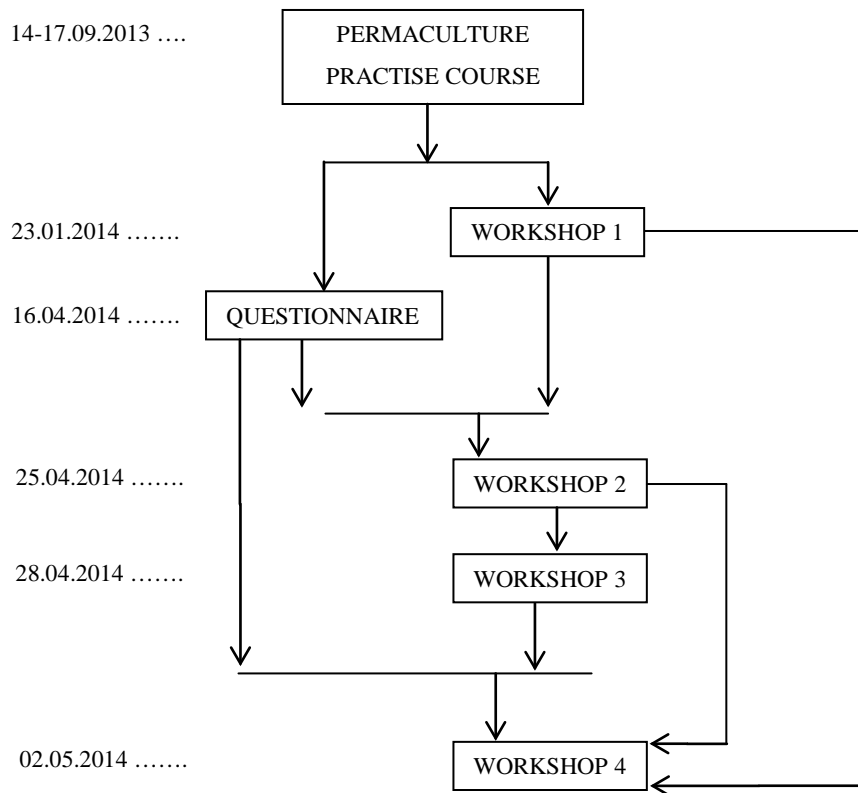


Table 2. Process of Case Study Including Timeline.



3.2.1. Preparation Phase for the case study

The Permaculture Practice Course which provided the conceptual and practical information for the forthcoming case study was the official certification course for permaculture designers. It was organized by The Turkey Permaculture Research Institute in Karacaoğlan Mahallesi Ortaokulu (Secondary School of Karacaoğlan District) between 14th and 17th September of 2013.¹¹

The participants of the course were the permaculture designers, who have the permaculture designer's certificate given by Turkey Permaculture Research Institute.¹² There were two design groups, each of whom has five participants to design the schoolyard as the permaculture garden. Two groups produced two different design proposals. The first group, in which the researcher attended, paid attention to design the cycle stand, play area for children, outdoor classroom, cascade pool, adobe building, adobe play wall, rise vegetable beds, herb spiral, composting area, irrigation canal and football field in their design (Figure 39). The design of second group, moreover, included the grey water tank, playing area, outdoor classroom, vegetable area, dry toilets, compost area, ware house and atelier building, football field, bower, volleyball court and log home for children (Figure 40).

The design process started with a meeting with five children, ages from 12 to 14, and the head of school, in which their basic needs and imaginations about school garden were listened and discussed. These requests and interview inspired the groups to focus the area, and fulfill them toward the permaculture design system.

In the preparation phase, the researcher designed two more proposals for the schoolyard by herself. The former was primarily based on the evaluation of two final proposals that were generated in the attended practice course in September 2013 by the request of the school manager for implementation. It considers the strengths and weaknesses of previous two proposals (Figure 41). However, this proposal considers adult's perception and perspective more than children's one, even if it was based on a meeting with a small group of children before the design process commenced. The

¹¹ The content and schedule of the course can be seen in Appendix C

¹² The Permaculture Designers Certificate of researcher can be seen in Appendix D

researcher believed that the project needed more imagination and perspective of children. Therefore, the designer decided to prepare a new proposal for which the scope and method of this thesis was formulated. The constitution of a new design platform was decided to allow that more children state their ideas easily. This platform was fed by the discussions, seminar, questionnaire and workshops, which will be represented in the following part.

On the other hand, in the middle of process of case study in early March 2014, The Ministry of National Education, Directorate of Izmir Provincial National Education decided to build an additional school building in the schoolyard. Thus the design area decreased and the necessary permission is taken¹³. The second proposal was developed in the borders of new schoolyard.

The initial version of second design of researcher was prepared, after the questionnaire was conducted with the children. It was fed by the results of Workshop 1, especially the pictures produced in (see in part 3.2.2.), and the questionnaire.

The school garden design covers an outdoor classroom, five rise vegetable beds, a small vegetable bed, a herb spiral, fishing net line to protect the rise vegetable bed area from play areas, sawdust surface play area, benches, table tennis area, a tire toy figure with vertical garden on it, outdoor play area, i.e. outdoor chess and hopscotch, two bird houses, a football field, an amphi-hill and dirt surface play area.

The project was reviewed several times through the case study, and evolved according to results of questionnaire and Workshop 1. Figure 42 shows the final version of the learning-playing garden in Karacaoğlan Mahallesi Ortaokulu (Secondary School of Karacaoğlan District).

¹³ The permission of the study can be seen in the Appendix E



Figure 37. Product of First Group in Permaculture Practice Course.



Figure 38. Product of Second Group in Permaculture Practice Course.

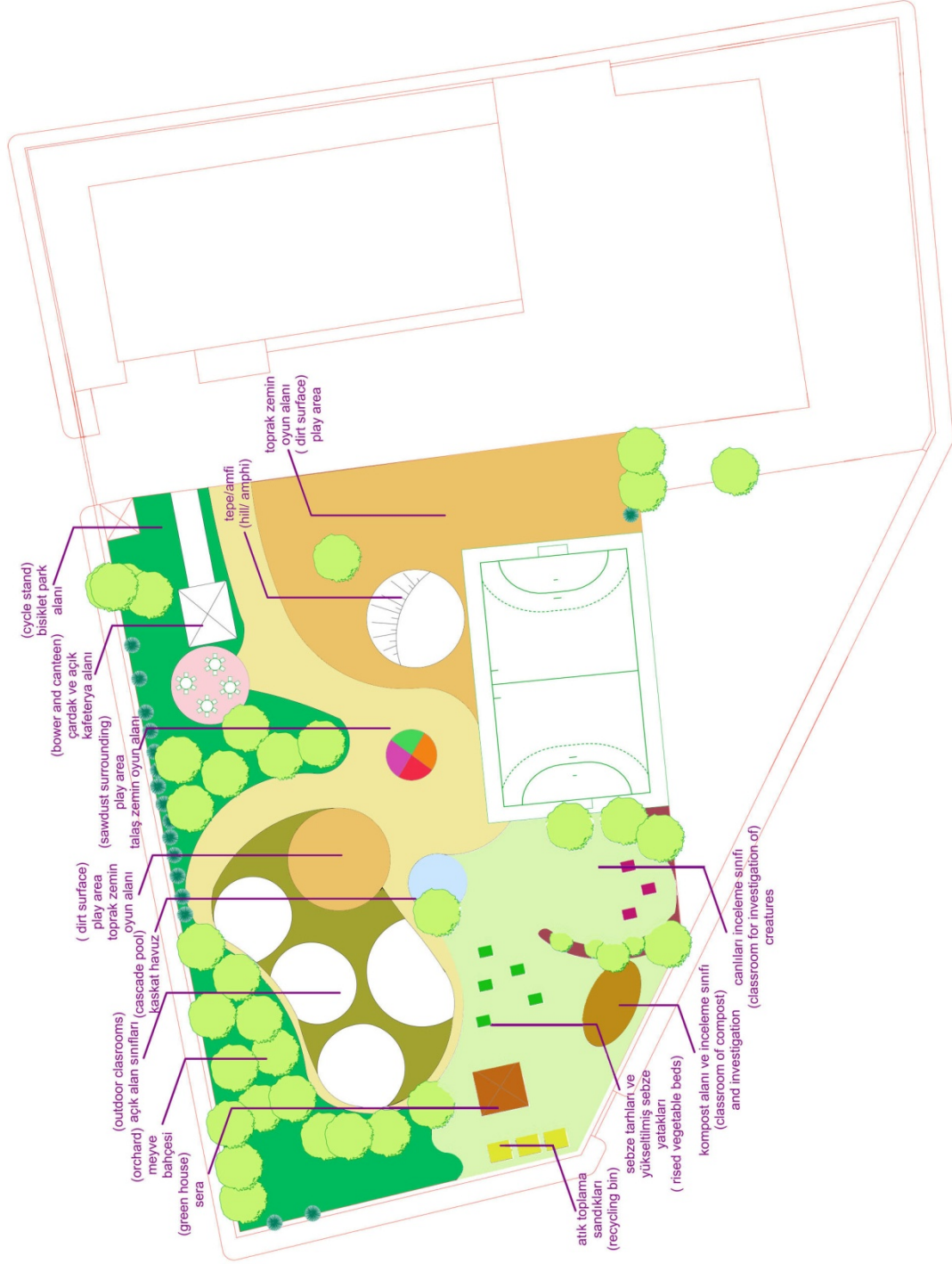


Figure 39. The First Proposed School Garden Design.



Figure 40. Final Proposed School Garden Design.

3.2.2. Workshop 1

Name of the workshop:	We are Designing School Garden Together (Hep Beraber Bahçemizi Tasarlıyoruz)
Time Period:	80 minutes (during two lessons)
Date:	23.01.2014
Place:	Secondary School of Karacaoğlan District (Karacaoğlan Mahallesi Ortaokulu)
Age Group:	9-12
Number of Participants:	33
Facilitator:	Merve Ayten Kılıç
Tools:	Data show, powerpoint presentation, voice recorder, white paper, colored pencils, computer.

Program of Workshop and Aim:

The workshop 1 was conducted with children from two different levels, i.e. 4/A and 5/İ, who are the members of The Environment Protection Club in this school. The objective of this workshop was to observe children about imagination of their school garden in a harmless way without giving any formal seminar on natural environment. The workshop was conducted in the seminar room of school. All dialogues recorded via voice recorder.

The workshop was composed of two sections: think and design. Each section took 40 minutes. In the first section, the game was played with all children in the seminar room at the same time. The purpose of the game is to attract their attentions to think about designing school garden and concentrate them on designing especially with reusing of waste materials. The game was performed through a power point presentation via data show. Totally eleven slides watched. The slide show includes used plastic bottles, glass bottles, tires and old boots described as the waste material (Appendix F). Firstly, a small portion of the picture on each waste material was appeared on the screen. Secondly, the facilitator asked two questions: ‘what is it?’ and ‘what do we use it for?’ Thirdly, the answers were collected randomly. Fourthly, when the whole picture of that waste appeared on the screen, let the children expressed their ideas freely. For example, when the child saw the portion of used boots, he/she answered that it is for

rainy days. When he/she saw the whole picture on the next slide that shows the boots used as the flower pot, students were become surprised, and started to think differently.

He/she realized that the used boots can be used for another purpose (Figures 43 and 44). The first part of workshop1 was ended with the discussion on reusing the waste material in the school garden.

In the second section, children were asked to depict their dreams about school garden on a white paper via drawing picture with color pencils (Figures 45, 46, 47, 48, 49, 50, 51, 52, 53 and 54). The target of this section was to determine the design tools, i.e. “key elements”, which will be facilitated in the design of new school garden (Mullins, 2011: 24). All children also attended to this section. In the beginning of this section, two questions were announced:

- 1- How is your dreamed school garden look like?
- 2- How can you reach this school garden from your classroom?



Figure 41. The first slide.



Figure 42. The second slide just after.

At the end, the facilitator collected 33 garden drawings which were analyzed to determine the key elements that children imagined in their garden.

The Workshop 1 provided to change their presumptions about school garden. For example, after the fourth slide in the first section, children adapted to the game and started to propose different uses of waste materials for their school garden design. When a portion of a tire appeared on slide, children offered to use this tire as swing or vases.

For analysis of the pictures in the second section, the list of key elements was initially prepared according to the permaculture design methods. The pictures were traced in order to find any new element. If there was, it added into the list. The key elements were counted and categorized into two groups: highly and somewhat desired

(Table 3). The key elements which were drawn very often called as ‘highly desired’, while rarely ones called as ‘somewhat desired’. They were defined as the design tools for new school garden.

Table 3. Key elements pointed out by the design drawings of school garden.

<u>Highly Desired</u>	<u>Somewhat Desired</u>
Water feature	cages
Fruit tree, tree, bush	Insect
Grass and flower	Fence
Sun	Pharmacy
Animal and animal shed	Cinema
Tree house	Cafeteria
Playground tool	Use of recycle materials
Vegetable and fruit bed	Sculptures



Figure 43. The atmosphere in the first section of Workshop 1.
(Source: Photo taken by Murat Çelik, 2014)



Figure 44. A child in the second section of Workshop 1.
(Source: Photo taken by Murat Çelik, 2014)



Figure 45. Products of Workshop 1.

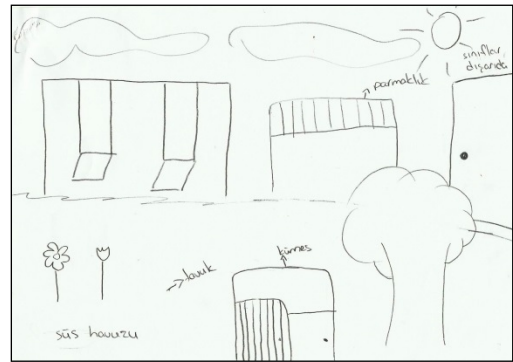


Figure 46. Products of Workshop 1.

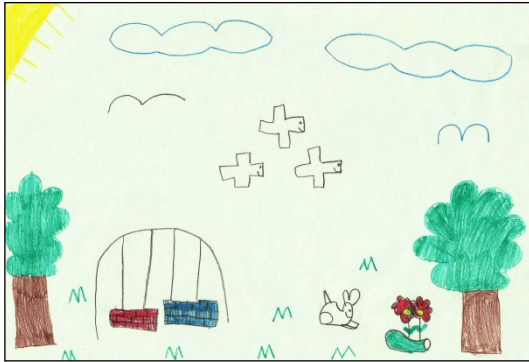


Figure 47. Products of Workshop 1.

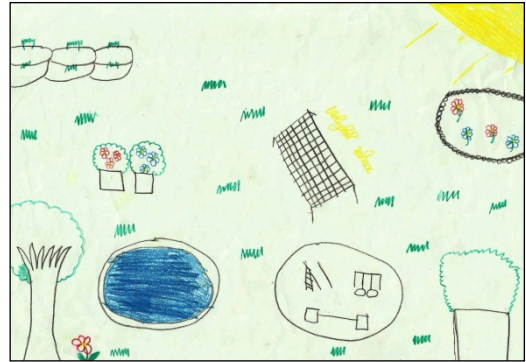


Figure 48. Products of Workshop 1.



Figure 49. Products of Workshop 1.



Figure 50. Products of Workshop 1.

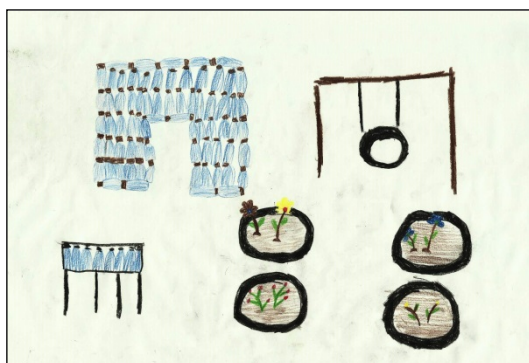


Figure 51. Products of Workshop 1.



Figure 52. Products of Workshop 1.

3.2.3. Questionnaire

Time Period:	40 minutes (during one lesson)
Date:	16.04.2014
Place:	Secondary School of Karacaoğlan District (Karacaoğlan Mahallesi Ortaokulu)
Age Group:	9-12
Number of Students:	46
Facilitator:	Merve Ayten Kılıç

The questionnaire was conducted with children from two different levels, i.e. 4/A and 5/İ, who are the members of The Environment Protection Club in this school. There were 46 participants; 45 of them were considered for the evaluation. The objective of questionnaire was to reflect the perspective of children to the design process and understand their relationship with natural and built environment. The questionnaire was conducted in the seminar room of school.

The questionnaire is composed of totally twenty open-ended questions including five parts (Table 4). It is prepared in Turkish, and has two pages. The paper is selected in A3 size for helping children to read, write and draw clearly and comfortably.

In the preparation phase of questionnaire, the psychology of child who could be bored during answering questions was considered. Thus the paper of questionnaire peculiarly was designed to attract child's attention and admiration. There are unpainted figures which enables them to paint and customize the paper.

The first page of questionnaire covers four parts (Figure 55). It is designed to understand the relationship of child with natural and built environment. The parts include:

1. information about his/herself
2. information about his/her home and environment
3. information about his/her school
4. information about the playground in his/her district

The second page of questionnaire is designed to learn about children's conception and imagination about the natural environment, built environment and school garden (Figure 56). Thus the half of questionnaire paper is left blank to allow children to draw (Figure 57, 58, 59 and 60). The English version of questions can be seen in Table 4.

1- Adın ve soyadın nedir?

2- Kaç yaşındasın ve kaçınıcı sınıftasın?

3- Sahibi olduğun bir canlı (evcil hayvan, çiçek, ağaç) var mı? Varsa adı nedir?

4- Ailenizde bahçesi, tarlası ya da arsası olan birisi var mı? Varsa yerini biliyor musun?

10- Okula nasıl geliyorsun?

11- Okula gelirken geçmekten çok hoşlandığın bir yer var mı? Varsa orası nasıl bir yer anlatır mısın?

12- Peki okula gelirken geçmekten çok hoşlanmadığın bir yer var mı? Varsa orası nasıl bir yer anlatır mısın?

13- Okula gelirken gördüğün nesnelere arasından en çok hangisini seversin?

5- Oturduğunuz evin bahçesi var mı?

6- Oturduğunuz evin çevresinde ağaç veya bitki var mı? Varsa sen isimlerini biliyor musun?

7- Evinde senin, annenin veya başka büyüklerin yetiştirdiği bitkiler var mı? Varsa sen de onlarla ilgileniyor musun?

8- Değiştirebilseydin yaşadığın evin nelerini değiştirmek isterdin? Neden?

9- Geri dönüşüm ile ilgili ne biliyorsun? Evinizde geri dönüşüm için toplanan atıklar (kızartma yağı, piller, camlar, kağıtlar, plastikler, vb.) var mı?

14- Dışarıya çıkar mısın? Eğer dışarıya çıkarsan nerede oyun oynarsın?

15- Oyun oynadığın alanda arabalar var mı? Varsa orada olması seni rahatsız ediyor mu?

16- Peki seni oyun alanında rahatsız eden şeyler nedir? Değiştirebilseydin bu alanda neyi değiştirdin? Neden?

Figure 53. The first page of questionnaire.
(Source: Figures of questionnaire paper are quoted from www.free-power-point-templates.com)

17- Sence doğa ne demektir?

18- Değiştirebilseydin yaşadığın çevrede neyi değiştirdin? Neden?

19- Eğer sen bir mimar olsaydın nasıl bir okul bahçesi tasarlardın bana anlatabilir misin? Bu bahçenin içinde neler var?

20- Tasarladığın okul bahçesini bana alttaki alana çizebilir misin? Tasarımını yaparken sınıfın nerede olduğunu da bana gösterebilir misin? Sınıftan bu güzel bahçeye nasıl ulaşırm?

TEKRAR GÖRÜŞMEK ÜZERE HOŞÇAKAL...

Figure 54 The second page of questionnaire.
(Source: Figures of questionnaire paper are quoted from www.free-power-point-templates.com)



Figure 55. Drawings of questionnaire.



Figure 56. Drawings of questionnaire.



Figure 57. Drawings of questionnaire.



Figure 58. Drawings of questionnaire.

Table 4. Parts and questions of questionnaire.

The First Page of Questionnaire		Parts	Questions
information about his/herself	1-	What is your name and surname?	
	2-	How old are you and which class are you membered?	
	3-	Are you an owner of a living thing, i.e. pets, tree, house plants? If you have, what does it name?	
information about his/her home and environment	4-	Is there any owner of a field or land in your family? If there is, where is it placed?	
	5-	Is there any garden around your house?	
	6-	Are there any plants or trees around your house? If there are, what kind of plants/trees are they? Do you know about it?	
	7-	Are there any home plants that grown by you or your family member in your home? If there are, are you care about them?	
	8-	What would you change if you could change a part of your home?	
	9-	What do you know about recycling? Do you separate your waste for recycling?	
information about his/her school	10-	How do you get the school?	
	11-	Is there any place that you like, while you are going to school? If there is, which kind of place is it?	
	12-	Is there any place that you do not like, while you are going to school? If there is, which kind of place is it?	
	13-	While you are going to school, which inanimate or alive object do you like most?	

(Cont. on next page)

Table 4. Parts and questions of questionnaire. (Cont.)

The First Page (cont.)	information about the playground in his/her district	<p>1- Do you go out for playing? If you do, where do you go for playing?</p> <p>2- Is there any car in your playing area? If there is, does it disturb you?</p> <p>3- Does anything disturb you in your playground? If it does, how do you change it?</p>
The Second Page of Questionnaire	conception and imagination of nature environment, built environment and school garden	<p>4- How can you describe the nature?</p> <p>5- What would you change, if you could change the environment that you live?</p> <p>6- If you were an architect, how would you design a school garden? Could you tell a bit?</p> <p>7- Could you draw your imagine about school garden and think about how can you reach this garden from your class?</p>

For the results of questionnaire, 15 of 20 questions are taken into consideration. Two of five questions in the out of consideration are the personal information of child, including name, age and class. The 12th question is also kept out of consideration, because it is misunderstood by children. The 10th one is a preparation question for the next question. Therefore it is evaluated as informed about children's spent time and form of being in the environment that between school and their home. The last one, 20th question, is a drawing question. According to the results of questionnaire, it can be derived that

- 73.3 percent of the children surveyed are owners of the pet, house plant or tree.
- 62.2 percent of the children' families have the field or land.
- 55.5 percent of the children have the garden around their home.
- 35.5 percent of the children do not have the garden around their home.
- 33.3 percent of children have plants or trees around their house, and they know the names of them.
- 40 percent of the children do not have plants or trees around their house.
- 71.1 percent of children have house plants in their homes and they take responsibility to care about them.
- 73.3 percent of children want to change their homes to add gardens or plant more trees.
- 24.4 percent of children want to change the physical appearance of their homes or their rooms.
- 68.8 percent of children have awareness of recycling.
- 46.6 percent of children like going to school through green areas or playgrounds.
- 95.5 percent of children go out to play.
- 44.4 percent of children complain about cars that occupied the play area.
- 53.3 percent of children feel uncomfortable and disturbed in the current situation of their play area.
- 71.1 percent of children complain about increasing numbers of new building. They want more playground area.
- 93.3 percent of children want green areas, trees, animals in their school garden
- 44.4 percent of children have cars in their playground area and 53.3 percent of children are disturbed in their play area by car, construction material and vehicle or garbage.

For the analysis of open-ended questions, a codebook was prepared.¹⁴ The coding of results enabled to evaluate children in terms of the degree of being close interest to nature. According to the coding, children were classified into three groups as close, middle and far in order to conduct a comparative study in the Workshop 4, based on the permaculture practice in the schoolyard. Table 5 presents the groups of children classified according to codebook.

Table 5. Group of children classified according to codebook.

Groups	Students	Average	Students	Average	Total
Close	Student 28	2,9	Student 10	2,7	14 Students
	Student 1	2,8	Student 12	2,7	
	Student 5	2,8	Student 16	2,7	
	Student 9	2,8	Student 19	2,7	
	Student 23	2,8	Student 31	2,7	
	Student 4	2,7	Student 34	2,7	
	Student 8	2,7	Student 43	2,7	
Middle	Student 22	2,6	Student 40	2,5	16 Students
	Student 25	2,6	Student 29	2,4	
	Student 37	2,6	Student 14	2,3	
	Student 3	2,5	Student 15	2,3	
	Student 6	2,5	Student 27	2,3	
	Student 17	2,5	Student 35	2,3	
	Student 21	2,5	Student 7	2,2	
	Student 38	2,5	Student 44	2,2	
Far	Student 26	2,1	Student 13	1,9	15 Students
	Student 40	2,1	Student 2	1,8	
	Student 42	2,1	Student 32	1,8	
	Student 45	2,1	Student 20	1,7	
	Student 30	2,0	Student 33	1,7	
	Student 36	2,0	Student 18	1,6	
	Student 41	2,0	Student 24	1,6	
	Student 11	1,9			

¹⁴ For detailed explanation on how the codebook is prepared, please see the part of 3.1 Methodology of the Case Study: Participant Observation.

3.2.4. Workshop 2

Name of the Workshop:	Permaculture Methods Seminar (Permakültür Metodları Semineri)
Time Period:	80 minutes (during two lessons)
Date:	25.04. 2014
Place:	Secondary School of Karacaoğlan District (Karacaoğlan Mahallesi Ortaokulu)
Age Group:	11-12
Number of Participants:	29
Facilitators:	Merve Ayten Kılıç
Tools:	Data show, power point presentation, computer.

The workshop 2 was conducted with children from two different levels, i.e. 4/A and 5/İ, who are the members of The Environment Protection Club in this school. The objective of workshop is to attain children basic knowledge about permaculture design system. This workshop was designed as the lecture format. It was conducted in one of the classrooms of school.

The workshop was composed of two sections. In the first part, the permaculture design system was explained within the lecture. Later, the proposed version of new school garden project was introduced, and the feedback about garden design was taken by interviews with children.

The lecture was initially fictionalized on the philosophical background of permaculture design system, including permaculture ethics, pattern understanding and zoning (See whole lecture in Appendix G and H). The technical methodologies of permaculture design system including the edge effects, water managements, composting, hugel culture, energy consumption, plant and animal systems in basic expression were also described (Figure 61).

In the last part of workshop, the new design of school garden was introduced and discussed (Figures 62 and 63). All discussions were noted by researcher to evaluate feedback of children. The critics of children were considered to improve the design.



Figure 59. Example of a lecture slide.
 (Source: Photos of slide are quoted from <http://permacultureturkey.org>)

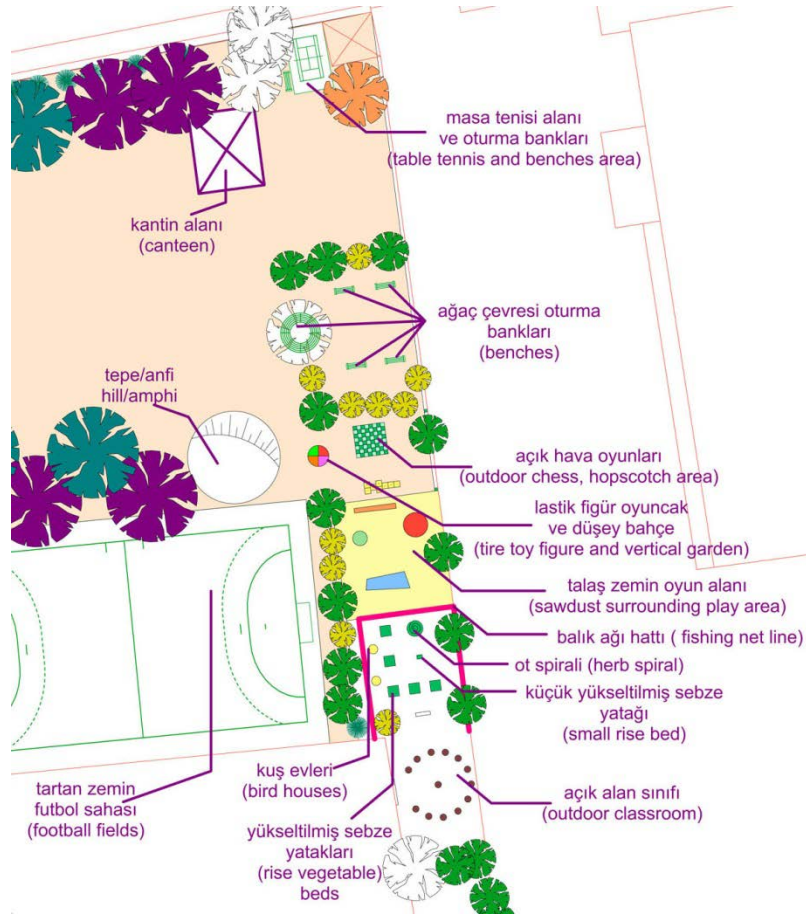


Figure 60. Closer view of proposed design on school garden.



Figure 61. The environment of Workshop 2.

3.2.5. Workshop 3

Name of the Workshop: Tree Planting Workshop (Ağaç Dikim Atölyesi)

Sponsor: Izmir Regional Directorate of Forestry, Management of Torbalı Plantation

Time Period: 3 hours (during afternoon)

Date: 03.04.2014

Place: Secondary School of Karacaoğlan District (Karacaoğlan Mahallesi Ortaokulu)

Age Group: 8-12

Number of Participants: 25 children and three teachers

Facilitators: Merve Ayten Kılıç, Dalya Hazar

Tools: mattock, shovel, colorful ribbon, white paper, colored pencil

Workshop Program and Aim:

The workshop 3 was conducted with children from two different levels, i.e. 4/A and 5/İ, who are the members of The Environment Protection Club in this school. The target is to create the children get interest in nature, to create desire to be in the nature, to know plant's life, to make children take responsibility about the living beings and feel a mission in life, to give the children to realize how some plants grow slowly and how it wants labor. This workshop was the initial effort of the implementation of school garden design. It was conducted in the garden of school. All dialogues recorded via voice recorder.

The workshop was about the tree planting in the schoolyard. Totally 43 saplings procured from the Izmir Regional Directorate of Forestry, Management of Torbalı Plantation were dibbled. They were composed of 20 laurels, 10 plane trees, 10 crab apple trees, 1 sophora, 1 China tree and 1 pine tree. Each child, who participated in dibbling in groups or individually, owned and took responsibility of a tree. The ownership of tree by children was essential for the future maintenance of trees. Therefore children were asked to draw pictures of their trees to show how they will look like in the future (Figures 64, 65, 66, 67, 70 and 71). These drawings were attached to the saplings by colored ribbons.



Figure 62. Products of Workshop 3. Figure 63. Products of Workshop 3.



Figure 64. Products of Workshop 3. Figure 65. Products of Workshop 3.

Saplings were dibbled with permaculture design methods by opening orthogonal hole to planting (Figures 68 and 69). In addition, the mulching method was shown to the

students. This workshop motivated children to desire their school garden, and created a base for garden implementation. This workshop was the first practice in which children faced to permaculture design methods. Children expressed that they possess a tree first time in their life. The activity of planting tree provided them the mission of protection and take responsibility of elements of natural environment.



Figure 66. Group working.



Figure 67. Group working in Workshop 3.
(Source: Photo taken by: Dalya Hazar, 2014)



Figure 68. While drawing their imagination of tree.



Figure 69. Products of Workshop 3.

3.2.6. Workshop 4

Name of the Workshop:	We are Building School Garden Together (Hep Beraber Bahçemizi Kuruyoruz)
Time Period:	5 hours (during a school day)
Date:	02.05.2014
Place:	Secondary School of Karacaoğlan District (Karacaoğlan Mahallesi Ortaokulu)
Age Group:	9-12
Number of Students:	33
Facilitators:	Merve Ayten Kılıç, Sercan Kılıç
Tools:	mattock, shovel, painting stuff, oil color, bucket, nail, hummer, gloves, plastic bowl

The workshop 4 was conducted with 33 children among from 46 children who were participated to the questionnaire. There were three groups according to the result of questionnaire. The first group having close relationship to nature includes 12 children. The second group was composed of 11 children who have medium interest to nature. 10 children constitute the third group. The workshop was conducted in the schoolyard. According to the new design, the closest side of garden to the school building was selected as the implementation area (Figure 72). All practices recorded via video recorder.



Figure 70. Selected area of project before implementation.
(Source: Photo taken by Hasibe Akın, 2013)

This workshop was the major step to implement the school garden project. The project includes three raised beds, a herb spiral, an outdoor classroom and a small raised bed. These ingredients were designed according to permaculture design methods.

The necessary preparations were completed prior to the day of workshop. The wooden crates were located, and filled with the soil. The implementation area was surrounded with the help of fishing net and wooden stakes in order to avoid any potential harm caused from balls that may come from play area. The wall of herb spiral was also built to ready for planting.



Figure 71. Garden prepared prior to the workshop 4.

The **rise beds**, elevated from the ground, are utilized as fruit or vegetable beds which can be built from wooden crates, stone walls or waste materials such as old water tanks (Figures 73 and 74). The project has five raised beds sized 90x90x80 cm made of the wooden crates. The material of wood is the marine plywood to allow plants irrigate enough without any deformation. Their height is 80 cms; 20 cms of them were sunk under the ground level. Thus the final height is 60 cms, included 10 cm bleed margin. The soil in the beds was using from the case area which was obtained from nearest construction site's excavation in February 2014, and the purchased compost soil (Figures 75 and 76). The raised beds were designed as convenient to build worm tower in the further studies. Each group of children practiced in their own rise bed.

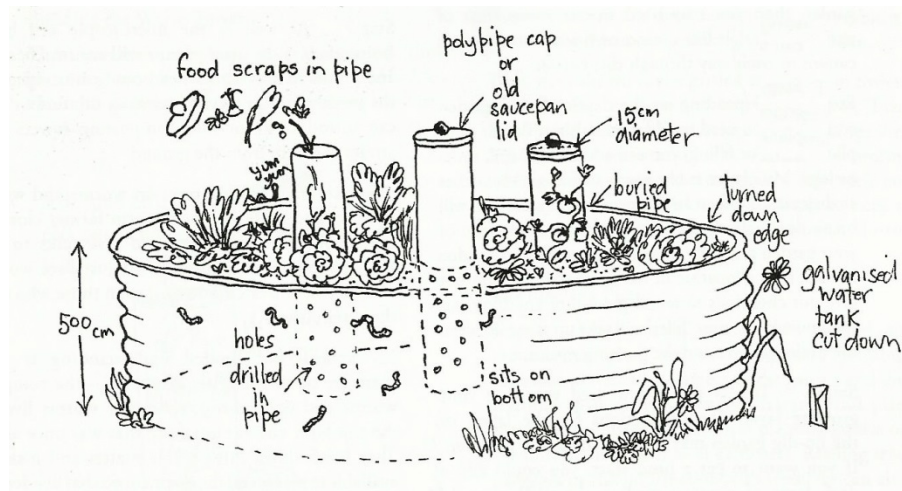


Figure 72. Rise bed with worm towers.
 (Source: Figure is quoted from Nuttal and Millington, 2008)



Figure 73. The wooden crate filled with soil.



Figure 74. Wooden crate was filling with soil.

In the Workshop 4, children planted 75 vegetable seedlings including 15 cucumbers, 15 peppers, 15 tomatoes, 15 eggplants, and 15 chili peppers in the rise beds. Each group had five cucumbers, five peppers, five tomatoes, 5 eggplants and 5 chili peppers seedlings. The logic of combining the sibling plants was introduced to each group of children according to the permaculture design methods. Afterwards, they were asked to plant seedlings by interpreting this logic. Each of three groups was designed their own rise bed without any help (Figures 77 and 78).



Figure 75. Children while planting.



Figure 76. Children were discussing about rise bed design.

The resulted plantation of rise beds indicated that there was no noticeable difference among three groups (Figure 79). The seedlings were dibbled in compatible way to the logic of sibling plants that they learned it from Workshop 2. Therefore, it could not be said that it is possible to establish a direct relationship between closeness of children to natural environment and quality of final products. Children in all three groups were very enthusiastic to work in this workshop.



Figure 77. Results of raised beds from groups following left to right: close, middle, far.

After planting, children painted their rise beds in the way they wanted. The painted boxes include flowers, cartoon characters, streams, garden houses, rainbows, hearts and words of love to nature (Figure 80). After painting finished, strawberry seedlings were planted to the other two rise beds with the help of children.



Figure 78. While group are painting in the order of far, middle and close

The **seed balls** are used to introduce the land with vegetation by the way of throwing compressed soil including living seeds inside. It is a method used for avoiding deforestation in permaculture design system. The seed bombs are mixture of water, soil, clay and seeds. In the school garden design, the seed bombs of flowers were prepared with children for the vegetation of garden area (Figure 81).



Figure 79. Seed Balls.
(Source: Photo taken by: Sercan Kılıç, 2014)

The **small rise bed** has the same logic with rise bed, yet it is for the younger child. It elevates 20-30 cm from the ground level to allow easy access. This element of permaculture design system was also erected in the garden to introduce children with this type of implementation. It was erected by the cement paving stones. The celery seeds were planted in this small bed with children (Figure 82).



Figure 80. The implementation of small rise bed.
 (Source: Photo taken by: Sercan Kılıç, 2014)

The **herb spirals** are designed to keep the water intolerant herbs high and dry. By building a herb spiral, the planted area is doubled (Nuttal and Millington, 2008). The spiral form makes harvesting and maintaining easier on a circular pathway access (Figure 83). In the designed school garden, the herb spiral was built by paving stones. The mints, dills, leeks, rockets, cresses, parsleys, basil, purslanes and lettuces were dibbled with children (Figures 84 and 85).

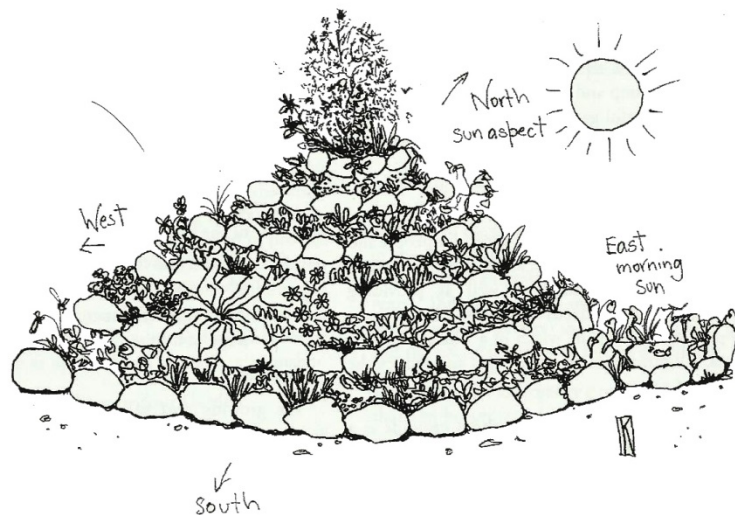


Figure 81. Herb spiral.
 (Source: Figure is quoted from Nuttal and Millington, 2008)



Figure 82. Herb spiral.
(Source: Photo taken by: Sercan Kılıç, May 2014)



Figure 83. Herb spiral in process.
(Source: Photo taken by: Murat Çelik, June 2014)

The **outdoor classroom** is the essential part of outdoor leaning, providing a gathering area for the children and teacher. It allows children direct learning (Nuttal and Millington, 2008). In this schoolyard, the outdoor classroom was built with the 9 cut tree stumps, placed next to the school garden (Figures 86, 87, 88, 89 and 90).



Figure 84. Outdoor classroom.



Figure 85. Products of the Workshop 4.



Figure 86. Fish net and Herb Spiral.



Figure 87. Process of seedlings.
(Source: Photo taken by: Murat Çelik, 2014, June)



Figure 88. Process of seedlings.
(Source: Photo taken by: Murat Çelik, 2014, June)

3.3. Evaluation

According to the result of this fieldwork, it was seen that children are willing to connect with nature when they have chance. The existed built environment does not allow children to build a relationship between them and nature. Therefore they need safe green areas in built environment. The definition of nature or natural environment, considering of this results, represent the safe green areas rather than wild nature. These areas are as a first stage to access wild nature for children. There are several safe green areas to connect children to natural environment e.g. parks, playgrounds, schoolyards, urban forests, recreational areas and squares which are designed by architects, interior designers, landscape architects, and urban and regional planners.

However, as mentioned before schoolyard shines out as a 'key area' both natural and built environment. Furthermore considering the results of this case study are in support of this sentence. Children attended to see schoolyard with building of school itself. School building is an element of schoolyard for children (Figure 51, 52, 59, 60). These pictures drawn by attended children from Workshop1 and Questionnaire showed that the children see schoolyard and school building as a whole. Therefore the architects should take responsibility to design schoolyard and school building together. The school garden and schoolyard should be designed as a fluid projects that passing with each other.

This fieldwork was essential to help children to improve their relationship between natural environment and them. On the other hand, it was also essential to see children could take place themselves in built environment by the creating a collaborative platform e.g. for this thesis it was the case study. It was also essential to see how children imagined their built environment and how they produce a new one.

CHAPTER 4

CONCLUSION

Ignoring the presence and perspective of children by designers, when designing built environment, causes the certain problem today, i.e. deteriorated relationship between children and natural-built environment. The natural areas in urban settlements, where children can contact with nature in the built environment, have decreased. The natural environment in cities implying safe open spaces, e.g. parks, playgrounds, schoolyards, urban forests, botanical gardens, recreational areas, cemeteries, balconies and squares help children to connect with nature itself. Montessori (1912) points out that the child's proximity to nature contributes to the development of child both physically and psychologically. A child needs to natural environment for his/her mental and physical development (Munoz, 2009). Despite these requirements, today, children grow in the built environment without awareness and love of nature, are isolated from nature and spend most of their time in interior spaces.

The basic objective of this thesis is to improve the relationship between children and natural-built environment through design of school garden and within playground area with using permaculture design methods. To introduce permaculture method into child education and to equip the child with skills for both self-production of own food and maintain lifecycle without harmful to nature are the secondary aims of thesis.

The thesis searched for one of the ways of rebuilding relationship between children and natural-built environment via permaculture design system. In this scope, it examined the current literature on presence and perspective of children in the built environment in cities, the effect of natural environment on children's development process, and the ethical principles and philosophical background of permaculture design system. The examples from Montessori and Waldorf Schools and nature oriented practices on school gardens designed with children in Turkey and abroad are also investigated.

To reveal deteriorated relationship extant between children and natural-built environment required an objective and sensitive observation which provided the researcher to monitor the reality and allowed her to record children's imaginations, perceptions, and ideas as they thought originally, without any guidance. In order to

maintain the sensitivity about gathering the firsthand data from the case, the participant observation method was used. This method enabled the researcher get closer to major unit, i.e. child, of this study in an 'experienced way' which offered to researcher required sensitivity. Therefore, it was the decision of this thesis that, while using participant observation method, the researcher aimed to be highly participatory as an observer, yet less visible as a guide during the whole case study.

With the intention of warming up children to natural environment, a design proposal on learning-playing school garden was developed and implemented in a case study, the Secondary School of Karacaoğlan District in Bornova, Izmir. The case study was conducted with totally 46 students between nine and twelve years old who constituted The Environment Protection Club in this school. In accordance with the case study, fieldworks and questionnaire were built. The structure of questionnaire was generated with open ended questions because of learning children's imagination and opinion without any restrictions. Furthermore, the fieldworks, which were called as workshops throughout the thesis, included the design process considering children's opinions for school garden, seminars about permaculture design methods and site implementations.

Generating a new natural environment in the built environment, that is a learning-playing school garden for this thesis, is a sophisticated task that requires working within a platform composed of various disciplines from architecture, interior design, landscape architecture, and urban and regional planning. To be able to reflect children's presence and perspective to the design of built environment, a platform for collaboration that can bring related professionals and users together is needed. The case study brought the child, as user, and designer, as professional, together. It showed that building a collaborative platform revealed between child and designer is possible, and becomes the essential strategy to rebuild the relationship of children with built environment. Hereby, in this study, children had chance to express their thoughts both in design and implementation processes.

Moreover, this thesis provided a perspective of a new profession, i.e. the permaculture designers' perspective, into this collaboration to help designing places specific to child, especially designing of green areas, parks, school gardens, and playgrounds in the city. The permaculture design system was a tool to help actualize children's imaginations.

The results of questionnaires, which have parallelism with the results of research on nature-children relations conducted in Istanbul, Turkey by TEMA in 2013 (Minik

TEMA, 2013), indicated that the children are willing to rebuild the relationship through being close to nature. They need to the outdoor places where they are allowed spending time and playing easily in the natural environment without fear of security.

Furthermore, according to the results of case study, it can be stated that rebuilding the relationship between child and natural environment is possible via the education of permaculture design system, when children reached it in the appropriate time period of childhood without relying on his/her socio-cultural background, family factor, and natural-built environment that he/she has grown.

The case study undertaken in this thesis motivated children to contribute their close environment. It increased the level of awareness and consciousness about nature by living and applying in the schoolyard via using permaculture design system. To use permaculture design methods as an improvement strategy indicated that permaculture is not only an implementation technic on agriculture, but also a way of lifestyle that made children close to nature. For this reason, educating children on nature via permaculture design system, while keeping in mind that today's children will be the future generations of our planet, helps ensure about our healthy future.

The next step for making this study sustainable is to make neighborhood residents included this project. Therefore, the canteen of the school will move to the garden. The project of the canteen was prepared by school manager and it is waiting for economical foundation. The reason of moving canteen to outside of the school building is managing this building as a cafeteria for neighborhood residents to open garden for them and make them owned to the school garden. In the future the cafeteria would be local building of the permaculture.

The last step of this study should be to complete the designed playground tools shown in the proposal by overcoming the economic and official constraints. The further study is to develop and convert this project of playing-learning school garden study into a pilot project for other schoolyards in Izmir.

Finally, as an architect, the design of school buildings should handle with their gardens. When architects design the buildings of the schools, they should design the building and the garden as a whole. The gardens and school buildings should flow inside of each other. The proposal collaborative platform that created in this study should be managed by architects. Thus the projects of the buildings would be collaborative works including other profession to make it more succeed.

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APPENDIX A

CODING TABLE OF RESULTS OF QUESTIONNAIRE

Further table shows the coding and average results of the questionnaire according to codebook that examined in the part of 3.1. of Chapter 1. The average results were used to generate three groups that worked together in Workshop 4.

Table A.1. Coding Table of Results of Questionnaire

STUDENTS	Question 3	Question 4	Question 5	Question 6	Question 7	Question 8	Question 9	Question 11	Question 13	Question 14	Question 15	Question 16	Question 17	Question 18	Question 19	Average
Student 1	3	2	3	1	3	3	3	3	3	3	3	3	3	3	3	2,8
Student 2	1	1	1	3	0	1	3	0	3	3	0	2	3	3	3	1,8
Student 3	3	2	3	1	3	3	3	1	3	3	1	3	3	3	3	2,5
Student 4	3	2	3	1	3	3	1	3	3	3	3	3	3	3	3	2,7
Student 5	3	2	3	1	3	3	3	3	3	3	3	3	3	3	3	2,8
Student 6	3	1	3	3	3	1	2	3	0	3	3	3	3	3	3	2,5
Student 7	3	2	3	3	3	1	3	3	0	3	3	0	3	0	3	2,2
Student 8	3	2	3	2	3	1	3	3	3	3	3	3	3	3	3	2,7
Student 9	3	2	3	2	3	3	3	3	3	3	2	3	3	3	3	2,8
Student 10	3	1	2	2	3	3	3	3	3	3	3	2	3	3	3	2,7
Student 11	3	1	2	1	3	3	1	3	3	1	2	1	3	0	1	1,9
Student 12	3	2	3	1	3	3	2	3	3	3	3	3	3	3	3	2,7
Student 13	3	1	1	2	3	1	3	1	1	3	1	1	3	1	3	1,9
Student 14	3	2	3	2	3	1	3	1	3	3	1	2	3	1	3	2,3
Student 15	2	2	2	3	1	1	2	3	3	3	2	1	3	3	3	2,3
Student 16	3	2	2	3	1	3	3	3	3	3	3	3	3	3	3	2,7
Student 17	2	1	3	2	2	3	3	2	3	3	2	2	3	3	3	2,5
Student 18	1	1	1	1	2	1	3	1	1	3	1	2	2	1	3	1,6
Student 19	1	2	3	1	3	3	3	3	3	3	3	3	3	3	3	2,7
Student 20	3	0	3	1	3	1	0	1	3	3	1	1	3	3	0	1,7
Student 21	3	2	3	3	1	3	3	2	2	3	2	2	3	3	3	2,5
Student 22	3	2	1	1	3	3	3	3	3	3	3	3	3	3	3	2,7

(Cont. on next page)

Table A.1. Coding Table of Results of Questionnaire (Cont.)

STUDENTS	Question 3	Question 4	Question 5	Question 6	Question 7	Question 8	Question 9	Question 11	Question 13	Question 14	Question 15	Question 16	Question 17	Question 18	Question 19	Average
Student 23	3	2	3	3	3	3	3	3	3	3	3	3	3	3	1	2,8
Student 24	3	1	1	1	1	1	1	2	2	3	2	2	3	1	0	1,6
Student 25	2	2	3	1	3	1	3	3	3	3	3	3	3	3	3	2,6
Student 26	1	2	1	2	3	1	3	3	3	0	3	3	3	1	3	2,1
Student 27	2	1	3	3	3	3	3	3	2	3	3	1	3	1	3	2,3
Student 28	3	2	3	3	3	3	3	3	3	3	3	3	3	3	3	2,9
Student 29	3	2	1	1	3	1	1	3	3	3	3	3	3	3	3	2,4
Student 30	3	2	3	2	3	1	0	1	3	3	1	2	3	0	3	2,0
Student 31	3	2	1	3	3	3	3	2	3	3	3	3	3	3	3	2,7
Student 32	1	1	1	1	0	3	3	1	0	3	3	3	3	1	3	1,8
Student 33	1	1	1	1	1	3	3	1	3	3	1	1	3	1	1	1,7
Student 34	3	2	3	2	3	3	3	2	3	3	2	3	3	3	3	2,7
Student 35	2	2	1	2	3	3	1	2	2	3	2	3	3	3	3	2,3
Student 36	3	1	1	1	3	3	3	1	0	3	3	3	3	0	3	2,0
Student 37	3	2	3	2	3	3	3	1	3	3	1	3	3	3	3	2,6
Student 38	3	2	3	2	3	3	1	1	3	3	1	3	3	3	3	2,5
Student 39	3	2	1	1	3	1	1	2	2	3	3	3	3	3	1	2,1
Student 40	3	2	1	3	3	3	3	2	3	3	2	2	3	3	1	2,5
Student 41	3	2	3	3	2	0	1	1	2	3	2	1	3	1	3	2,0
Student 42	3	1	1	3	1	1	3	1	3	3	2	1	3	3	3	2,1
Student 43	3	2	3	3	3	3	3	3	3	3	2	1	3	3	3	2,7
Student 44	3	2	3	3	1	3	1	1	2	3	1	1	3	3	3	2,2
Student 45	2	1	1	1	2	3	3	2	3	3	1	2	1	3	3	2,1

APPENDIX B

QUESTIONS AND CHILDREN'S ANSWERS OF QUESTIONNAIRE

1- Adın ve soyadın nedir?

1. Beyza Arslan
2. Özge Dağcı
3. Serkan Turgut
4. Ayşenur Çetinkaya
5. Nazlı Korkmaz
6. Ceylin Doğruya
7. Aslı Görür
8. Özgül Baloğlu
9. Çiçek Parıltı
10. Tuğba Çakan
11. Rabia Nur Parlak
12. Miray Geç
13. Nehir Kaplan
14. Mustafa Emir Duyar
15. Ayşenur Kuzu
16. Ensar Şen
17. Elif Gençaliolu
18. Ece Naz Almış
19. Hatice Kılıç
20. Alperen Metin
21. Sıla Çelik
22. Cansu Dağ
23. Zeynep Durak
24. Ali Berat Alza
25. Furkan Fındıkzadeoğulları
26. Rifat Gündoğdulu

27. Gökçe Dinç
28. Gülcan Karazeybek
29. Furkan Doğan
30. Bulut Ayçiçek
31. Sudenaz Topçu
32. Ozan Gümüş
33. Hakan Büyükler
34. Eren Kaş
35. Hatice Şen
36. Celal Aygün
37. Kadir Hakan Belgen
38. Hasan Uzluer
39. Enes Akpınar
40. Enes Özel
41. Emre Ermin
42. Enes Yapıcı
43. Gökçe Türkoğlu
44. Eray Ersoy
45. Büşra Çeşmeci

2- Kaç yaşındasın ve kaçınıcı sınıftasın?

1. 9.5 yaş – 4. Sınıf
2. 10 yaş – 4. Sınıf
3. 11 yaş – 4. Sınıf
4. 10 yaş – 4. Sınıf
5. 9.5 yaş – 4. Sınıf
6. 10 yaş – 4. Sınıf
7. 10 yaş – 4. Sınıf
8. 11 yaş – 4. Sınıf
9. 11 yaş – 4. Sınıf
10. 10 yaş – 4. Sınıf
11. 9.5 yaş – 4. Sınıf
12. 10 yaş – 4. Sınıf
13. 10 yaş – 4. Sınıf

14. 10 yaş – 4. Sınıf
15. 10 yaş – 4. Sınıf
16. 11 yaş – 4. Sınıf
17. 10 yaş – 4. Sınıf
18. 10 yaş – 4. Sınıf
19. 11 yaş – 5. Sınıf
20. 10 yaş – 4. Sınıf
21. 10 yaş – 4. Sınıf
22. 11 yaş – 5. Sınıf
23. 11 yaş – 5. Sınıf
24. 11 yaş – 4. Sınıf
25. 10 yaş – 4. Sınıf
26. 10 yaş – 4. Sınıf
27. 11 yaş – 5. Sınıf
28. 11 yaş – 5. Sınıf
29. 10 yaş – 4. Sınıf
30. 11 yaş – 5. Sınıf
31. 10 yaş – 4. Sınıf
32. 10 yaş – 4. Sınıf
33. 10 yaş – 4. Sınıf
34. 11 yaş – 4. Sınıf
35. 11 yaş – 5. Sınıf
36. 11 yaş
37. 10 yaş – 4. Sınıf
38. 12 yaş – 5. Sınıf
39. 11 yaş – 5. Sınıf
40. 12 yaş – 4. Sınıf
41. 12 Yaş – 5. Sınıf
42. 11. Yaş -5. Sınıf
43. 11. Yaş -5. Sınıf
44. 11. Yaş -5. Sınıf
45. 12. Yaş – 5. Sınıf

3- Sahibi olduğun bir canlı (evcil hayvan, çiçek, ağaç) var mı? Varsa adı nedir?

1. Var, adı menekşedir.
2. Yok.
3. Var adı Arap.
4. Evet, var ben hayvan olarak tavşan besliyorum. Ve ben sebze olarak biber, sarmaşık besliyorum. Bir de ağaç besliyorum. Ağacımın adı çam ağacıdır.
5. Var, adı Beyaz Zambak.
6. Evet, iki tane kuşum var birinin adı Bıdır diğerrinin ki Fıstık. Ben evde bir de bitki besliyorum adı Küçük Hanım, bir de ağacım var adı gül.
7. Kedim Maviş, tavşanım Boncuk, köpeğim Duman. Benim çınar ağacım var, çiçeğim gül ve papatya var.
8. Köpeğim ve papağanım var. Köpeğimin adı Garniald, papağanım Mutlu.
9. Evet, var. İki tane kuşum var. İsimleri Şeker ve Şirindir. İki tane çiçeğim var. Bir tane balığım vardı. Adı da Tonton idi. Ama öldü, çok üzüldüm.
10. Tavşanım var, adı Pamuktur.
11. Sokakta okula gelirken bir güzel ağaç var. Onu çok seviyorum. Adı da Yeşil.
12. Benim bir muhabbet kuşum var.
13. Evcil hayvanım vardı. Adı Boncuk ve Mavişti.
14. Benim bir tavşanım vardı. Öldü ve adı Boncuktu.
15. Benim çiçeğim vardı ama soldu.
16. Bir köpeğim, bir de su kaplumbağam vardır. Köpeğimin adı Leydi, kaplumbağamın adı Kaptan.
17. Sadece bir hafta önce erik ağacı dikmişim.
18. Yok.
19. Yok.
20. 2 tane tavşanım var. Birinin adı Binbir, diğerrinin Süslü.
21. Köpek, adı Pamuktur.
22. Var kaktüs var. Ama bir kuşum da olmasını çok istiyorum.
23. Benim bir tane ağacım var. (Erik ağacı) İsmi ağaç Tonton.
24. Kedim var.
25. Yok. Ama almak istiyorum.
26. Yok.
27. Evet var. Bir.
28. Ben çiçek sahibiyim ve adı Uzun yaprak. Bu ismi kendim koydum.

29. Var ama Akhisar' da. Zeytin ağacım var.
30. Sahip olduğumuz 7 tane ağacımız var. 1 muşmula (yenidünya), 3 tane üzüm, 2 tane erik, bir tane zeytin ağacım vardır.
31. 8 köpeğim var. Ceylan, Boncuk, Elif, İlay, Güzel.
32. Yok.
33. Hayvanım yok.
34. Var ağaç adı Hayal.
35. Bir çiçeğim var, o da gül. Adı Emriye Ecrin.
36. Var, kaplumbağam var.
37. Tavuk, muhabbet kuşu ve balığım var. Öldü çok üzuldüm.
38. Evet var ve bunlar, kedi, köpek, karanfil, lale, yeni dünya, gül, erik.
39. Kuş ve ağacım var. Maviş.
40. Köpeğim var. Adı, Pulsar. Çiçeğim var. Adı, Menekşe.
41. Var adı cesur.
42. Var adı Boncuk.
43. Vardı. Adı Maviş'ti. Yavruydu. Ama kuş gribinden öldü.
44. Bahçemde yenidünya ağacım var.
45. Evet, çiçeğim var.

4- Ailenizde bahçesi, tarlası ya da arsası olan birisivar mı? Varsa yerini biliyor musun?

1. Var. Evet biliyorum.
2. Hayır.
3. Dedemin, anneannemin ve babaannemin tarlası var.
4. Evet var. Bizim evimizde küçük bir bahçemiz var.
5. Var, evet bahçemiz var.
6. Hayır yok.
7. Benim anneannemin bahçesi var. Dedemin arsası var. Halamın bahçesi vardır.
8. Var ama Ayvalık' da. Her yaz Ayvalık'a giderim ve denizin yanında.
9. Evet var. Evimizde bir bahçe var. Orada bir sürü ağaç var. Bahçemize hep sebze ve meyve ekliyoruz.
10. Hayır, yok.
11. Olup olmadığını bilmiyorum. O yüzden yerini de bilmiyorum.
12. Köyümüzde tarlamız var.
13. Yok bilmiyorum.

14. Bir bahçem var ve kapımızın önünde.
15. Dedemin bahçesi var tarlası var her şey yetişiyor orada. Anneannemin çok büyük tarlası var.
16. Anneannemin tarlası var köyümüzde ve yerini biliyorum.
17. Benim bildiğime göre yok.
18. Yok.
19. Bizim arsamız var. Zeytin ağaçlarıyla dolu. Menderes' te.
20. –
21. Köyde bahçemiz var ve yerini biliyorum.
22. Evet, var ama yerini bilmiyorum.
23. Evet, var bizim evimiz.
24. Yok.
25. Ailemizde bahçesi olan var. Yerini biliyorum. O bahçede 4 ağaç var.
26. Dedemin var oraya gidiyorum.
27. Hayır yok.
28. Var. Babaannemin tarlası köyde oraya gidip patates çıkarıyoruz domates yiyoruz.
29. Var babamın zeytin ağaçları var ama Akhisar' da var.
30. Babaannemin tarlası vardır. Bu ise Denizli' dedir.
31. Anneannemin tarlası var. Yerini biliyorum.
32. Yok
33. Tarlam yok.
34. Var evde bahçede biliyorum.
35. Var o da Kocaeli (İzmit'te). Bir de, babaannemlerin orda her bitkiyi yetiştiririm.
36. Yok.
37. Bahçemiz var orda.
38. Evet, anneannemin Konya' da tarlası var.
39. Var. Biliyorum.
40. Benim tarlam var köyde. Orada bazen meyve toplarım.
41. Var Manisa'da
42. Yok.
43. Var. Anneannemin. Yeri Torbalı- Atalar Köyü'nde. Bitki, meyve ve sebze yetiştiriyor.
44. Dedemin köyde tarlası ve arsası var.
45. Hayır yok.

5- Oturduğunuz evin bahçesi var mı?

1. Evet, var.
2. Yok.
3. Var
4. Evet var, oturduğum evin küçük bir bahçesi var.
5. Evet, var.
6. Evet, var.
7. Evet oturduğum evimizde bahçemiz var. Örnek çiçek, ağaç var.
8. Var.
9. Evet var. Çok güzel.
10. Maalesef yok.
11. Yok ama çok isterim.
12. Bahçesi var.
13. Yok.
14. Evet var ve orada ağaçlar var.
15. Var ama bizim değil o bahçe.
16. Var ama bize ait değil.
17. Var ve oraya ağaç dikmişim.
18. Yok.
19. Var.
20. Küçük bir bahçesi var.
21. Evet var.
22. Hayır yok ama yakınında bulunan bir arazi var.
23. Evet var. Bizim evimiz ortada ve 4 bir yanı da bahçeyle kaplı.
24. Yok.
25. Var. O bahçeyi çok seviyorum.
26. Yok
27. Evet var.
28. Var bir sürü çiçekler var.
29. Oturduğumuz evin bahçesi yok.
30. Evet var.
31. Hayır bahçemiz yok.
32. Yok.
33. Hayır yok

34. Var
35. Yok.
36. Yok.
37. Evet var.
38. Var.
39. Yok.
40. Yok.
41. Var.
42. Yok.
43. Oturduğum ev site bahçesi var.
44. Var.
45. Hayır, yok.

6- Otuduğunuz evin çevresinde ağaç veya bitki var mı? Varsa sen isimlerini biliyor musun?

1. Yok
2. Çam ağacı, zeytin ağacı.
3. Yok.
4. Hayır yok.
5. Yok
6. Evet var güller, çiçekler, ağaçlar var.
7. Bizim evin yanında çok çiçek var. Onların adı papatya, gül vardır.
8. Var ama isimlerini bilmiyorum.
9. Evet var. Ama isimlerini bilmiyorum. Öğrenmek isterdim.
10. Yok ama istiyorum.
11. Girişinde yok.
12. Ağaç ve bitki yok.
13. Var ama isimlerini bilmiyorum.
14. Evet var ama adını bilmiyorum.
15. Var. Sanırım adı asma.
16. Ağaç var. Cinsi meşe ağacı.
17. Maalesef yok.
18. Yok.
19. Yok.

20. Yok.
21. Evet var bir zeytin ağacı bir limon ağacı var.
22. Hayır yok
23. Evet var. Ama isimleri papatya, gül ve değişik isimli çiçekler.
24. Yok.
25. Yok. Bilmiyorum.
26. Var bitki mevcut
27. Evet biliyorum. 5-10 demet gül 8-9 adet karanfil 5-10 demet ise papatya var.
28. Var güller, papatyalar, kasımpatılar var orda.
29. Yok.
30. Oturduğum evin bahçesi var.
31. 1 tane var. Adı çimendir.
32. Yok
33. Hayır yok.
34. Var
35. Evet. İsmi Rukiye
36. Yok
37. Vardı. Kestiler.
38. Evet var.
39. Yok.
40. Bakkalın önünde ağaç var. 2 çam 1 çınar.
41. Var. Gül, papatya, dut ağacı.
42. Üzüm ağacı var.
43. Var. Gül var, bitki, çiçek, ağaç ve böcek var.
44. Var limon ağacı.
45. Hayır yok. Karşı tarlada çim ve papatya vardır.

7- Evinde senin, annenın veya başka büyüklerin yetiştirdiği bitkiler var mı? Varsa sen de onlarla ilgileniyor musun?

1. Evet var. Ben onları her gün suluyorum.
2. –
3. Var ve ilgileniyorum.
4. Evet var. Babam bir sürü çiçek ve sebzeler besliyor. Ben de o bitkileri suluyorum ve gübreliyorum.

5. Evet bahçemiz olmasına rağmen var. Ben her gün onları suluyorum.
6. Evet var ve ben de onlarla ilgileniyorum.
7. Annemin çok güzel çiçekleri vardır. Ben onları çok severim onlarla her zaman ilgilenirim çok güzeldir.
8. Var ilgileniyorum. Orkide, menekşe, papatya, sümbül, nergiz bakıyorum.
9. Evet var. Bir çiçek. Ben de boş zamanlarımda onunla ilgileniyorum.
10. Var hem de bir tohum diktim.
11. Aslında var ben de ilgilenirim ama kurudu. Çünkü neredeyse 1 hafta İstanbul'a gittik.
12. Var ve ben bitkilerle ilgileniyorum.
13. Var ilgileniyorum.
14. Evet ilgilenirim ve domates ve roka diktik.
15. Yok Merve Abla.
16. Hayır yok
17. Kuzenim var fasulye yetiştirdi.
18. Var. Ben de onlarla ilgilenebilirim.
19. Var. Ben de onlarla ilgileniyorum.
20. Var bazen onlara su döküyor.
21. Hayır yok ben bitkiyle ilgilenirim.
22. Evet var. Onlara su vererek onlara zarar vermeyerek ilgileniyorum.
23. Evet var kuzenimin bir lalesi var. Bazen kuzenim olmuyor ona ben bakıyorum.
24. Yok.
25. Var. Ben anne veya babam unuttuğunda ben sularım.
26. Var onla ilgileniyorum.
27. Evet var. Annem çiçek yetiştiriyor. Ben de onu suluyorum.
28. Var onlarla çok iyi ilgileniyorum.
29. Babamın diktiği köyde bir erik ağacı var.
30. Annemin yetiştirdiği çiçekler var. Annem yardım isterse ilgilenebilirim.
31. Evet bir çok bitkimiz var. Çok ilgilenirim.
32. –
33. Hayır.
34. Yok ama benim diktiğim var. Ona iyi bakıyorum.
35. Babaannemlerin var ve ben de ilgilenirim.
36. Var, ilgilenirim.

37. Bizim evin üstünde halamın bitkileri var ben sularım.
38. Evet var onlarla ilgilenirim.
39. Var. Ben de bakıyorum.
40. Gül var onu besliyorum.
41. Var. İlgilenmiyorum.
42. Yok.
43. Var. Benim bir bitkim var. Onunla ilgileniyorum. Güzel sözler söylüyorum.
44. Yok.
45. Evet. Babaannemin yetiştirdiği salatalık vardır.

8- Değiştirebilseydin yaşadığın evin nerelerini değiştirmek isterdin? Neden?

1. Her yerini çimenler ve ağaçlarla değiştirmek isterdim
2. Evin bölümlerini
3. Yanları yeşillendirirdim.
4. Ben değiştirebilseydim evime büyük bir bahçe kazandırmak isterdim. Çünkü ben büyük bahçe olunca rahatlıkla oyun oynayabiliyorum.
5. Daha çok bitki ve çiçek olmasını isterdim. Çünkü çiçekleri severim.
6. Bir şeyi değiştirmek istemezdim. Sadece halının yeni yerinin altına sığınak yapmak isterdim. Nedeni bir şey olduğunda oraya saklanırdım. Evimi değiştirmek istemememin sebebi evimi sevdiğim için
7. Evimin içini ve dışını değiştirmek isterdim.
8. Hiçbir yerini değiştirmezdim.
9. Değiştirmek istemezdim. Çünkü benim evimde güzel bir bahçe var. Ben bundan mutluluk duyuyorum.
10. Ben değiştirseydim odamı değiştirirdim. Aynı projeksiyonda gördüğüm gibi bir oda yapardım.
11. Bahçe
12. Evimin etrafını yeşilliklerden evimin her tarafını pastadan yapardım.
13. Değiştirmezdim.
14. Kendi odamı değiştirmek isterim.
15. Yok.
16. Evimizin önündeki yolu kaldırıp park koymak isterdim. Çünkü oyun oynayamıyoruz.
17. Evimizin önünü daha çok yeşillendirmeye çalışırım. Daha güzel olması için.

18. Odamı deęiřtirdim. Çünkü odamın güzel olduęunu düşünürüm.
19. Bahçemin deęiřmesini isterdim. Çünkü daha yeřil ve daha çok bitkiler olmasını isterdim ve oynayabileceğim alan olmasını isterdim.
20. Evimin parkelerini
21. Odamı deęiřtirmek isterdim. Çünkü duvarlara çiçek yapmak isterdim.
22. Evi yakınında bulunan arazinin daha yeřillik olmasını istiyorum.
23. Katını deęiřtirmek isterdim. Mesela müstakil bir ev isterdim.
24. Perdelerini
25. Evimizin kapısını deęiřtirmek isterdim. Çünkü çok zor açılıyor.
26. Hiçbir şey deęiřmesin.
27. Hiçbir yerini deęiřtirmek istemezdim çünkü apartmanın altında bulunan çiçeklik alana bir sürü bitki ekili. Bu yüzden ekmek istemezdim.
28. Deęiřtirmek istemiyorum bahçemiz çok güzel bu yüzden deęiřtirmek istemiyorum.
29. Dıřarıdaki kapıyı deęiřtirmek isterdim bir de boyasını deęiřtirmek isterdim.
30. Evimin halini seviyorum.
31. Yatak odamın rengini, hayal ettiğim hayvanları boyanın üstüne çizmek isterdim.
32. Bahçeli olmasını isterim.
33. Bahçe olmak isterdim severim.
34. Yeřillik alana.
35. Bizim mahalleye arabalar park etmese. Çünkü bize çok dar alan kaldığı için oyun oynayacak yer kalmıyor.
36. Bahçe isterdim. Ben oynarken arabalar geçiyor.
37. Bahçemizi daha temiz çok daha yeřil ve daha bitkili olmasını isterdim.
38. Hiçbir şeyini deęiřtirmek istemiyorum. Bahçemin her şeyini seviyorum.
39. Deęiřtirmem.
40. Caddesini yeřillik yaptırırım.
41. –
42. Çatısını. Çünkü çatıdan güzel manzara gözüktür.
43. Atımın, civcivimin, ördek yavrusunun, köpeğimin ve kedimin olmasını isterdim. Çünkü hayvanlara büyük bir sevgi duyuyorum.
44. Her yerini çünkü evimiz çok havasız. Evin içine ağaçlar koyar ağaçlandırırım.
45. Evimizin bahçesi olmasını isterdim. Çünkü ben bitki yetiřtirmeyi çok seviyorum. Ama yetiřtiremiyorum.

9- Geri dönüşüm ile ilgili ne biliyorsun? Evinizde geri dönüşüm için toplanan atıklar (kızartma yağı, piller, camlar, kağıtlar, plastikler, vb.) var mı?

Not: İlk 40 öğrenci için bu soru, evinizdeki bitmiş olan pilleri ne yaparsınız olarak sorulmuştur.

1. Bir kutuya koyarız.
2. Pil kutusuna atarım.
3. Geri dönüşüme
4. Evimde bitmiş olan pilleri farklı faaliyetler ile değerlendirelim.
5. Ayrı bir kutuya koyup ilgili kişilere veririm.
6. Ben çöpe atıyordum ama artık pil kutusuna atıyoruz.
7. Ben pilleri geri dönüşüme atarım.
8. Okula getirip pil kutusuna atarım ben.
9. Biriktirip pillerin toplandığı alanlara götürürüm.
10. Okula getirip atık pil kutusuna atıyorum.
11. Çöpe atarız.
12. Çöpe atarız, bazen atık pil kutusuna atarız.
13. Okuldaki pil kutusuna atarız.
14. Pil kutusuna atarım.
15. Geri dönüşüme yollar ya da çöpe atarız.
16. Geri dönüşüme atarım.
17. Toplarız onları ve geri dönüşüme atarız.
18. Okulda atık pil kutusuna atarım.
19. Çöpe atmayız. Pil toplama kutusu oraya atarız.
20. –
21. Geri dönüşüme atıyorum.
22. Okulumuzda bulunan atık pil kutusuna atıyorum.
23. Bitmiş pilleri okula getiriyorum.
24. Atarız.
25. Atık pil kutusuna atarak çevreye yardımcı olurum.
26. Geri dönüşüme atıyoruz.
27. Marketlerde bulunan atık pil kutularına atıyorum.
28. Atık kutusuna atarım.
29. Bir poşete koyup çöpe atarım.
30. –

31. Atık pil kutusuna eldiven takarak koyarım.
32. Geri dönüşüme atıyoruz.
33. Atık pil kutusuna atarım.
34. Atık pil kutusuna atarım.
35. Çöpe atarız.
36. Geri dönüşüme veririm.
37. Biriktirip pil kutusuna koyarım.
38. Atarız.
39. Çöpe atarım.
40. Pil kutusuna atarım.
41. Yok.
42. Evde geri dönüşüm yapıyoruz.
43. Geri dönüşüm ile ilgili çeşitli atıkların toplanıp fabrikaya gönderildiğini ve tekrar doğaya kazandırıldığını biliyorum.
44. Yok.
45. Evet, var.

10- Okula nasıl geliyorsun?

1. Ben arabayla ve yürüyerek okula gidiyorum.
2. Arabayla, motosikletle gidiyorum.
3. Yürüyerek gidiyorum.
4. Okula yürüyerek geliyorum.
5. Bazen arabayla, çoğunlukla yürüyerek gelirim.
6. Yürüyerek geliyorum.
7. Ben genellikle ben okula gelirim yeşillik yerlerden gelirim.
8. Yürüyerek.
9. Okula yürüyerek geliyorum.
10. Tek başıma ve yürüyerek geliyorum.
11. Okula yürüyerek geliyorum.
12. Yalın ayakla ve tek başıma geliyorum.
13. Yürüyerek geliyorum.
14. Kaldırıma çıkıpta
15. Çok kısa zaman önce servisle geliyordum ama artık servisle değil.
16. Yürüyerek, yayan geliyorum.

17. Okulumu gelirken yürüyerek geliyorum.
18. Yürüyerek geliyorum.
19. Okula yürüyerek geliyorum.
20. Kendi başıma yürüyerek
21. Annem ile geliyorum.
22. Bazen araba ile bazen de yayan geliyorum.
23. Okulum eve yakın olduğu için yürüyerek gidiyorum.
24. Babaannemle gidiyorum.
25. Annem veya yengemle geliyorum. Ara sıra kuzenimle geliyorum.
26. Yürüyerek geliyorum.
27. Yürüyerek geliyorum.
28. Yürüyerek geliyorum.
29. Yürüyerek geliyorum ve tek başıma geliyorum
30. Bisikletle ile geliyorum.
31. Yürüyerek okula geliyorum.
32. Yürüyorum
33. Yürüyerek geliyorum.
34. Dümdüz gidip geliyorum.
35. Yürüyerek
36. Yürüyerek
37. Evden okula yürüyorum
38. Caddeden
39. Servisle
40. Okula kıyafet ile geliyorum
41. Yürüyerek geliyorum.
42. Babam arabayla bırakıyor.
43. Yürüyerek geliyorum.
44. Yürüyerek ve arkadaşlarımla
45. Ben okula servisle geliyorum.

11- Okula gelirken geçmekten çok hoşlandığınız bir yer var mı? Varsa orası nasıl bir yer anlatır mısınız?

1. Geçerken gördüğüm hoşlandığım ağaçlar, çiçekler var.
2. –

3. Yok
4. Evet var. Ben okula gelirken büyük bir bahçeden geçiyorum. Bahçede bir sürü papatyalar ve bir sürü ağaçlar var. Bahçe yemyeşil.
5. Evet var. Orası çok yeşillikli ve birçok büyük ağaç var.
6. Evimizin orda köprü var ve ilerisinde tarla var orada da çiçekler, papatyalar var orası.
7. Ben genellikle bisikletle geliyorum ama yürümeyi çok seviyorum. Öncelikle çimenlikte.
8. Var. Parkımız var çimenlik ve ağaç dolu.
9. Evet var. Okula giderken evimizin tanındaki bir parktan geçiyorum. Burası bana çok güzel geliyor. Çünkü etrafında çiçekler ve ağaçlar var.
10. Bir yer var hep yeşillikli, ağaçlar ve çiçekler var. Çok güzel bir yer.
11. Hoşlandığım yer gelirken çok yeşil ve çiçek olan bir yer gül papatya karanfil olan bir yer
12. Yeşillikli bir bahçe her taraf yeşillik
13. Yok yani.
14. Hoşlandığım bir yer yok.
15. Geçtiğim yerde yeşillik var orada arı, kuş, kelebek ve tavuk var bir ara keçi de vardı.
16. Parkın orası yeşillik olduğu için oradan geçmeyi seviyorum.
17. Var orası çok güzel bir yer. Arabalar bol geçiyor.
18. Yok.
19. Var. Bizim evin karşısı çiçekler var, arı ve kelebek var orası yemyeşil.
20. Yok.
21. Park orası, renkli kaydıraklar var.
22. Evet var. Ağaç ve çiçekler var oradan geçmeyi çok seviyorum.
23. Evet var. Kocaman bir erik ağacı var ona bakmak çok hoşuma gidiyor.
24. Parktan hoşlanırım.
25. Var orası bir tarla. Orada çok papatya var, ağaçlar var ve bir de keçi var.
26. Kestirme olan yer ve çiçekleri de güzel.
27. Evet var. Parkın karşısı. Çünkü ağaçlar ve çiçekler var.
28. Hoşlandığım yer var ve orası bizim bina orada çiçekler çam ağaçları var.
29. Var parkın oradan geliyorum çimenlik yerleri sevdiğim için.
30. Yok

31. Kaldırımlar o da taştan yapılmıştır.
32. Yok
33. Hayır yok
34. Var yaya kaldırımını. Yayalar geçiyor.
35. Evimizin yanındaki evde. Kar yağınca bahçe bembeyaz olur ve biz de orada kar yağınca oyunlar oynarız.
36. Yok.
37. Yok.
38. Yok.
39. Var orada bir köprü var.
40. Okula gelirken parktan geliyorum oynayarak.
41. Yok.
42. Yok.
43. Var. Okulumun ve sitenin bahçesi çiçekli ve ağaçlı bir yer.
44. Yok.
45. Yüksek bir köprü var. Oradan geçmek.

12- Okula gelirken geçmekten çok hoşlanmadığın bir yer var mı? Varsa orası nasıl bir yer anlatır mısın?

1. Geçmekte olduğum yerdeki çöplerdir.
2. Ben oynarken yoldan arabalar geçiyor.
3. Var çok araba geliyor.
4. –
5. Evet orası çok kirli ve çok kötü kokuyor.
6. Okula gelirken okula yakın mahalleden geçmekten hoşlanıyorum.
7. –
8. Bazı arabalar öğrencileri beklemiyorlar.
9. Evet var. Okula gelirken geçtiğim bir cadde var. Orada çok gürültü olduğu için beni rahatsız ediyor ve çevre çok kirli.
10. Var orası hep yeşillikti. Ama orası evle doldu.
11. Çöplük olan yer. Her tarafta oyuncak taso çöpu ve kağıt gibi şeylerin yerde olan şeyler.
12. Her tarafı yemyeşil ağaçlar var.
13. Yok yani.

14. Bir yer var orası bir kumluk alan
15. Okula gelirken geçmekten hoşlanmadığım bir yer yok.
16. Hayır yok.
17. Var parkın orası
18. Yok
19. Çöpün yanı oraya çöp atıyorlar hiç hoş değil.
20. Yok.
21. Var orası da marketler. Marketleri hiç sevmiyorum. İhtiyaçlarımızı karşılayo ama renklerinden hoşlanmıyorum.
22. –
23. Evet var çöplük bir yer var orası midemi bulandırıyor.
24. Parktan hoşlanırım.
25. Var orası bir arsa. Rüzgar çıktığında bütün toprak gözüme kaçıyor.
26. Yok.
27. Evet. Çünkü inşaat olduğundan dolayı onun çevresinde olan ağaçları kestiler. Bu yüzden hoşuma gitmiyor.
28. Var okul kapısının önündeki çöp kutusunun orası çünkü çok kirli oluyor.
29. Yok çünkü her yeri severim.
30. Çok toprak alan var.
31. –
32. –
33. Hayır yok.
34. Okula giriş çünkü seviyorum.
35. 10. Sorudakinin aynısı
36. Yok.
37. Evden okula gelirken bir yerde oradaki arsada bir araba var.
38. Yok.
39. Var. Köprü var. Onun üstünden geçmek çok eğlenceli.
40. Caddeler çünkü arabalar geçiyor.
41. Var. Geri dönüşüm kutusunun yanındaki köpekler.
42. Yok.
43. Var. Binalar çünkü ben bina, ev, yapı görmek istemiyorum.
44. Toprak bir yol ve orada ayaklarım çamur oluyor.
45. Hayır yok.

13- Okula gelirken gördüğün nesnelere arasından en çok hangisini seversin?

1. Ben en çok çiçekleri, ağaçlarıdır.
2. Ağaçları çok seviyorum.
3. Hayvanları severim.
4. Okula gelirken gördüğüm nesnelere arasından çiçekleri ve ağaçları severim. Bir de yeşil olan bahçeleri severim.
5. En çok ağaç severim.
6. –
7. –
8. Hayvanlar ve bitkiler
9. Ağaçları, çiçekleri, yeşil alanları, hayvanları seviyorum.
10. Saksıda bir tane çiçek var.
11. Ağaçları.
12. Ağaçlar, kuşlar, kediler.
13. Yok.
14. Erik ağacıdır.
15. Çayırı seviyorum.
16. Parktan geçerken büyük ağacı çok seviyorum.
17. Gül yerleri var. Orasını çok seviyorum.
18. Yok.
19. Hayvan dükkanındaki hayvanları çok severim.
20. Papatyaları çok severim.
21. Arabaları ve evleri çok severim.
22. Çiçekleri severim.
23. Çimenli bir alan
24. Araba
25. Ağaçları ve kuşları gelirken gördüğümde çok mutlu oluyorum.
26. Ağaca tırmanıyorum.
27. Çöplerin yerlere değil de çöp bidonuna atılması hoşuma gidiyor.
28. Ağaçlar, papatyalar, güller.
29. Kuşları severim.
30. Bir erik ağacı var.
31. Çiçek ve ağaçları seviyorum.
32. –

33. Çiçekler
34. Ağaçları severim.
35. Parkı.
36. –
37. Bir köpek var.
38. Şeftali ağacını
39. Köprüyü
40. Çimenli alanlardan hoşlanıyorum.
41. İnternet cafe
42. Ağaç
43. Ebegümececinin çiçeğini. Çünkü renkler çok güzel lila ve mor
44. Evleri çünkü çok güzel yapılmış.
45. Bir sitedeki ağaçlar ve çiçekler.

14- Dışarıya çıkar mısın? Eğer dışarıya çıkarsan nerede oyun oynarsın?

1. Çıkarım parka giderim.
2. Evet. Parkta, evde oyun oynuyorum.
3. Dışarı çıkarım sağda.
4. Evet çıkarım. Dışarıya çıkınca ben yeşil alan ve boş bir arazide oynamak isterim.
5. Çıkarım oyun oynamak için parka giderim.
6. Dışarıya bazen çıkarım apartman bahçesinde oyun oynarım.
7. Ben dışarı çıkarsam yeşillik yerlere giderim. Ben çok hoşlanırım.
8. Genellikle çimenlik alanlarla ailemle vakit geçirmeyi tercih ediyorum.
9. Evet çıkarım. Dışarıda bisikletim ile çimenlik alanlara gidip bisiklet sürerim.
10. Evet çıkarım dışarda sokakta oynarım.
11. Ben dışarı hiç çıkmıyorum.
12. Dışarıya çıkıyorum beton bir alanda oynuyorum.
13. Evet çıkarım, tarlada, sokakta.
14. Parka giderim ve top oynarım.
15. Dışarı çıktığımda arkadaşlarımı çağırıp dışarda oynarım.
16. Çıkarım. Yeşilliklerin bulunduğu yerlere giderim.
17. Evet çıkarım. Ve yeşil alanları tercih ediyorum.
18. Çıkarım. Çimenlik olan yerlere giderim.
19. Evet. Sokakta oynuyorum bazen yeşilliklere giderim.

20. Basket sahasında top oynuyorum.
21. Evet çıkarım ve sokağa giderim.
22. Evet çıkarım. Evimizin yakınında bulunan yeşillik bir alana
23. Evet dışarı çıkıyorum. Bizim orada çimenlik bir alan var orada oynuyorum.
24. Arkada top oynuyorum.
25. Çıkarım kapımızın önünde oynarım.
26. –
27. Evet gezerim. Lunapark veya parka gidiyorum.
28. Çıkarım oyun parkına giderim.
29. Dışarıya çıktığımda mahallenin başına çıkıyorum.
30. Dışarıya çıkan kuzenimin yanına maç yapmak için giderim.
31. Evet çıkarsam gidersem çimenlik alana giderim.
32. Parka
33. Evet parka
34. Çıkarım çok yeşillikli park var bizim orada
35. Evet. Arsaya
36. Evet
37. Okulun içeri girerim top oynuyorum.
38. Evet çıkarım ve tarlada oynarım.
39. Evet. Arkadaşıma
40. Çıkarım top oynarım.
41. Evimin karşısındaki tarlada
42. Evet. Parka
43. Dışarıya çıkarım sitenin bahçesinde
44. Çıkarım bazen parkta, bazen de evin önünde arkadaşlarımla.
45. Evet çıkarım. Yakan top, su balonu ve voleybol oynarım.

15- Oyun oynadığım alanda arabalar var mı? Varsa orada olması seni rahatsız ediyor mu?

1. Evet, var. Rahatsız ediyor.
2. –
3. Var ama rahatsız etmiyor.
4. Evet, oyun oynadığım parkın önünde arabalar ve hiç güvenli değil.
5. Evet, rahatsız ediyor.

6. Evet, var. Rahatsız ediyor.
7. Evet, ben rahatsız olurum. Bazen karşıdan karşıya geçmek zor olabiliyor.
8. Evet, rahatsız ediyor.
9. Yok.
10. Evet, rahatsız oluyorum.
11. Yok.
12. Evet, rahatsız ediyor.
13. Var, rahatsız etmiyor.
14. Evet ama rahatsız etmiyorlar.
15. Yok.
16. Evet, var. Rahatsız ediyor.
17. Yok.
18. Var ama bizi rahatsız etmiyorlar.
19. Evet, var. Evimizin önündeki boş alana park ediyorlar ve oyun oynayacak yer kalmıyor.
20. Evet, var. Rahatsız etmiyor.
21. Yok.
22. Evet, var. Onların oradan kalkmasını isterdim.
23. Evet, var. Karşıdan karşıya geçmek zor olabilir.
24. Bizim otoparkımız var. O yüzden araba yok.
25. Evet, var. Top çarptığında bize kızıyorlar.
26. Var. Rahatsız oluyorum.
27. Evet, var. Rahatsız oluyorum.
28. Evet, rahatsız oluyorum. Çünkü karşıdan karşıya geçmek zor oluyor.
29. Var. Rahatsız olurum.
30. Var, ama bizi rahatsız etmiyorlar.
31. Var, bazen parkın oraya park ederler ve rahatsız olurum.
32. Evet. Rahatsız olurum çünkü futbol oynamamızı engeller.
33. Var ama rahatsız olmuyorum.
34. Yok, arabalar yandaki araziye park ederler.
35. Yok.
36. Evet, rahatsız oluyorum. Çünkü hiç güvenli değil.
37. Var, rahatsız olmuyorum.
38. Evet, var. Rahatsız olmuyorum.

39. Evet var, sokaktaki arabalardan çok rahatsız oluyorum.
40. Yok.
41. Hayır, yok.
42. Hayır, parka araba giremiyor.
43. Hayır, yok. Sitenin otoparkı var.
44. Var ama rahatsız etmez.
45. Evet, var. Rahatsız olmuyorum.

16- Peki seni oyun alanında rahatsız eden şeyler nedir? Değiştirebilseydin bu alanda neyi değiştirirdin? Neden?

1. Yeşillik alan yapardım orayı, çünkü herkes oyun oynaması için
2. Kaydırağın renklerini
3. Oraya yeşillik yapardım.
4. Ben değiştirebilseydim araziye yeşillendirir ve araziye çöp kutuları koyardım. Çöp kutuları koyunca çevremiz daha temiz olur.
5. Daha yeşillik alan yapardım ve bol bol çiçek ekerdim. Çünkü öyle daha mutlu olurum.
6. Dışarıda oyun oynadığım alanda spor aletleri ve parktaki gibi oyuncaklar olsun isterdim.
7. –
8. Ben de ağaç dikmek isterdim.
9. Değiştirmezdim çünkü çevrem yeterince yeşil ve sevdiğim hayvanlarla birlikteyim.
10. Daha çok ben oyun odamın rengini değiştirip yeşil veya mavi yapmak isterdim daha çok doğaya benzer.
11. Ben oyun oynamadığım için bir yer değiştirmezdim.
12. Her şey değişik eşyalardan biri eşyalar. Tekerlek şişeler bunun gibi şeyler.
13. Bazı şeyleri değiştiririm.
14. Parkları futbol sahası yapmak isterdim.
15. Bir şeyi değiştirmek istemem.
16. Oyuncaklar yapar oynardım.
17. Benim oyun oynadığım alan şu anlık yok. Çünkü güzel.
18. Sokağımızı değiştirmek isterdim. Çünkü sokağımız dar olduğu için değiştirirdim.
19. Oyuncaklar olmasını isterdim ve daha yeşil alan isterdim.
20. Hiçbir şeyi

21. Lunaparkla deęiřtirirdim çünkü çocuklar mutlu olsun diye.
22. Arabaların oraya park etmemelerini isterdim. Çünkü park edilince oynanacak alan kalmıyor.
23. Daha çok ağaç ve çiçek ekerdim.
24. Futbol sahasını yenilerdim.
25. Zemin yerine çimenli bir alanda oynamak isterdim. Çünkü yere düřtüęümüzde daha az zarar alırız.
26. Yeřillikli alan çok güzel
27. Mesela parklarda çok fazla büyükler var. Bize kötü davranıyorlar.
28. Daha çok yeřillik alan yapardım.
29. Yerleri çünkü yere düřtüęümde hep kan akıyor. O yüzden deęiřtirmek isterdim.
30. Sadece maç yaptıęım yere çimen ektirirdim.
31. Parkta araba varsa onun yerini deęiřtirmek isterdim.
32. Futbol yeri isterim araba olmasın. Araba olursa top oynarken birisine araba çarpar.
33. Hiçbir şeyi.
34. Çok yeřillikli alana çevirirdim.
35. Yolların kenarlarında papatya olmasını isterdim.
36. Arabaların geçmesini deęiřtirmek isterdim. Çünkü daha güvenli olur.
37. Oynanan yerin yeri çok sert. Oraya çimen yapmak isterdim.
38. Hiçbir yeri çünkü her şeyi oynayabiliyoruz.
39. Sokaęı. Çünkü bizim sokakta her yer araba.
40. Sahayı çimenli yaparım.
41. Yok.
42. Yok.
43. Yok.
44. Rahatsız eden bir şey yok.
45. Oradaki eve ait olan otopark, top bazen oraya kaçıyor ve fazla ses çıkıyor.

17- Sence doęa ne demektir?

1. Doęa çimenlik yerdir, her zaman orada oyun oynayabiliriz, orada çiçekler, ağaçlar vardır.
2. Bizim koruduęumuz, sahip olduęumuz.
3. Ağaçlar olmazsa oksijen de olmaz ve oksijen olmazsa dünyada yaşam da olmaz.

4. Doğa birçok güzelliğin ve yeşilliğin bir araya gelmesiyle oluşur. Doğada birçok çiçek, ağaç vardır. Ve bu yeşillikler bize mutluluk verir. Biz doğa temiz olunca mutlu oluruz.
5. Doğa bir sürü canlının yaşadığı, çok güzel yerlerin bulunduğu ve ağaçların, çiçeklerin, akarsuların bulunduğu yerlerin genel adıdır.
6. Bana göre doğa bitkilerin, ağaçların, hayvanların evi. Doğa olmazsa oksijenimizde olmaz ve bitkiler ve canlılar yaşayamaz. Biz doğaya iyi bakmalıyız.
7. Doğa bizim kalbimiz ve ben doğayı çok severim.
8. Mutluluk ve eğlence zaman geçirmek için çok güzel bir yer.
9. Bence doğa insanlara huzur veren, ağaçlar, çiçekler, hayvanlar ile dolu olan birçok canlının yaşadığı çok güzel bir yerdir. Ve doğa ile olmak beni sevindiriyor.
10. Doğada ağaç olur, çok ama çok güzel kokan çiçekler olur, benim çok sevdiğim hayvanlar vardır, yeşil ve güzel çimenlikler de olur.
11. Doğa her tarafın yeşil çiçek ve kendi doğal şekliyle insan eli değmeden oluşan olay.
12. Bence doğa dünyanın en güzel parçasıdır. Doğa olmasaydı dünyamız yok olabilirdi. Doğamız çok güzel bir şeydir.
13. Yeşillik çimen çayır ağaçlar demektir.
14. Güneşin ağacın canlıların olduğu yerdir.
15. Doğa ağaçların yaşam alanıdır. Bitkilerin büyüdüğü yerdir. Bazı hayvanların mesela arı, kedi, köpek, kelebek gibi hayvanların yaşam alanı
16. Doğa canlıların, bitkilerin, böceklerin ve insanların kısacası doğada yaşayan canlıların paylaştığı çevre
17. Bence doğa demek canlıların ve bitkilerin, suların ve dağların olduğu yerdir. Ve insanların olduğu yer.
18. Eğlenmek ve gezmek demektir.
19. Bence doğa dünyada kendiliğinden oluşan ağaçlar bitkiler ve hayvanlar topluluğu. Doğal varlıkların oluşturduğu ve olduğu alan.
20. Ağaçların olduğu ve çiçeklerin olduğu bu yerdir.
21. Yeşillikleri olan çiçekli olan canlılar ve insanlar yaşayan doğadır.
22. Bence doğa yeşillik, ağaç, çiçek, böcek, kuş, hayvanlar demektir.
23. Bence doğa insanların dışarı çıktığında mutlu olduğu, hayvanların yaşadığı çiçeklerinmiş gibi koktuğu bir yer demektir.
24. Yeşillikli alan bir şeydir.

25. Bence dođa demek yeřillik bir alan demektir. Ađađlar dikip ađađları sulamak demektir.
26. iekli alan.
27. evrenin gzel olması. Ađađların ieklerin kuřların ve bazı hayvanların olması demektir.
28. Bence dođa bana gre yeřil alanlar yani iekler bcekler ađađlar
29. Temiz hava bol bir yeřillik olan bir yer
30. Bence dođa hayvanların yařadığı, bitkilerin atığı bir yerdir.
31. Bana gre dođa iekli alanların, ormanların, ađađların olduđu yere dođa derim
32. Yeřil olan yerlerdir. Parkların olduđu yer
33. ieklerin bceklerin ile nesnelere olduđu yer
34. Dođa ok iyi bir yer her yerde kořarsın dřersen hibir yerimiz acımaz ve ok gzel kokan.
35. Bitkilerin, ađađların, hayvanların bir arada olması
36. Yařamdır.
37. Dođanın ađađların kendi kendine bymesi, bazen biz onları sularız bazen de yađmurdan sulanıyor.
38. Dođa hayvanların ve bitkilerin yařadığı yer, aynı zamanda insanların piknik alanıdır.
39. Bence dođa ieklerin hayvanların ve ađađların olduđu yer demektir.
40. Yeřillik alan isterim.
41. Bence dođa gzel kuřların, yemyeřil ađađların, sapsarı papatyaların ieklerin olduđu yer demektir.
42. Ađađlar, hayvanlar
43. Hayvanların, bitkilerin ve canlıların olduđu ve dođduđu yer demektir.
44. Dođa insanların, hayvanların ve btn canlıların yařadığı yer ve insanların, ocukların oyun yařam ve eđlence alanı olarak kullanılır.
45. Dođa insanın yařam alanı ve hayatı demektir.

18- Deđiřtirebilseydin yařadığın evrede neyi deđiřtirirdin? Neden?

1. Bizim orada bahe var, ama o bahe güvenli deđil. Orada caddeler var, orada rahat oynayamıyorum.
2. Oyun parkının deđiřmesini isterdim.
3. Her yeri yeřillik yapardım.

4. Ben deęiřtirebilseydim çevreye bitkiler ekerdim. Çünkü bitkiler ekince ortalık yeřillenir. Ve lunaparkları deęiřtirirdim. Lunaparkları büyük yapardım ki çocuklar rahat oynasın.
5. Bizim evin orada bir park var. Ama o park güvenli deęil. Orada cadde olduęu için rahat oynanmıyor. O caddenin olmamasını isterdim.
6. Daha çok yeřillikli alanlar, çiçekli ağaçlı yerler yapmak isterdim. Var ama evimize uzak bir yerde var çok uzak bir yerde deęil ama yine uzak.
7. –
8. Evde bir bahçeye ait oda isterdim.
9. Yařadığım çevrede arabaların sesleri yerine kuř cıvıltılarının almasını isterdim. Her yerin çiçekler ve ağaçlarla dolu olmasını isterdim.
10. Gereksiz evleri yıkar orayı yeřillendirirdim.
11. –
12. Savařsız barıřlı ve yeřillikli ağaçlı bir dünya elde ederdim.
13. Deęiřtirmezdım ben.
14. Bizim sınıftaki konuřanların sınıfını deęiřtirebilmeyi.
15. Arabaların egzozları olmasa güzel olurdu.
16. Bahçeyi yeřillendirir, bahçeyi korurdum.
17. Çevrede otoparkların daha özenli yapılmasını
18. Ben deęiřtirmek istemezdim.
19. Ağaçları ve alanı. Çünkü daha çok ağaç ve yeřil alan olmasını isterdim.
20. Hem yeřillik hem de futbol sahası olmuş
21. Her yeri yeřillik yapardım. Çünkü yeřil diye.
22. Yeřillikler çok az daha fazla olmasını isterdim.
23. Sokağımızı deęiřtirirdim. Mesela sokağımızın evlerine bahçe yapardım.
24. Ben bir televizyon alırdım yeni
25. Arabaların yerlerini deęiřtirmek isterdim. Çünkü sokakta arkadaşlarım ile birlikte oyun oynayamıyoruz.
26. Deęiřtirmezdım çünkü yeter.
27. Apartmanların yapıldığı yerleri deęiřtirirdim. Çünkü çevresi çok fazla pis bu yüzden hoşlanmıyorum.
28. Hiçbir şeyi çünkü çok güzel çevrem
29. Daha fazla ağaç dikmeyi isterdim.
30. –

31. Çöp döküldüğü yeri, arabalar yanlış park edildiyse doğru yere koymak isterdim.
32. Bilmiyorum.
33. Hiçbir şeyi
34. Yeşillığe çevirirdim.
35. Yolların kenarlarında papatyalar olmasını isterdim.
36. –
37. Daha az ev ve daha çok çiçek bitki isterdim.
38. Hiçbir yeri çünkü her yeri seviyorum.
39. Parkın betonlarını çünkü beton yerine kum kullanabilirler.
40. Yolu maç alanı yaparım.
41. Ben değiştirmem, çevremden çok memnunum
42. Ormanları. Çünkü ormanda bir sürü ağaç kesiliyor.
43. Binaları yıktırmak isterdim. Onların yerine ağaç dikerdim.
44. Her şeyi doğaya uygun ve doğal yaşantıya uygun bir ev yapardım
45. Evlerin az ve çok katlı olmasını. Ağaçların ve bitkilerin bol olması için çabalardım.

19- Eğer sen bir mimar olsaydın nasıl bir okul bahçesi tasarlardın bana anlatabilir misin? Bu bahçenin içinde neler var? Sınıfından bu bahçeye nasıl ulaşıyorsun?

1. Çiçekler, oturma bankları ve ağaçlar yapardım.
2. Oyun parkı koyardım.
3. Yeşillik, ağaç ve çiçekler.
4. Burada bir havuz ve orda ördekler kurbağalar var. Kelebekler ve kuşlar gelebilir. Çevresinde dönme dolap gibi oyuncaklar ve renkli çiçekler var. Orada sek sek top oynayabiliriz. Ağaçların dallarında kuş evleri olabilir.
5. Okuldan bir kapıyla çıkıp bahçede ders yapmak isterdim ve burada çiçekler ve ağaçlar var.
6. Okuldan çıkınca uçarak bahçeye ulaşmak isterdim. Bahçede parktaki gibi oyuncaklar olsun isterdim.
7. Her yeri çimenlik yapar ve oralara tohum ekerdim.
8. Okuldan çıkınca ağaçlar arasında banklar ve masalar olabilir. Yatabileceğimiz yemyeşil çimenler ve etrafta hayvanlar olabilir.
9. Rengarenk çiçekler ve kelebekler ve oyun parkı koyardım. Ağaçlar dikerdim.
10. Ağaçlar, yeşillik ve oyun yerleri mesela ip atlayabileceğimiz.
11. Sınıftan bahçeye giden bir kaydırak yapardım.

12. Bir sürü renkli çiçekler, tekerlekten saksılar ve salıncaklar ve değişik şeyler tasarladım.
13. Gölgeleik ağalar ve çiçekler
14. Okulumuzun bahesi imenlik olacak ve halıları veya arşafaları serip oturacađız. Top oynanacak.
15. Ađalar, içekler, bitkiler, kaydırak, salıncak, tahterevalli, sebze ve meyve dikebileceđimiz alanlar koyardım.
16. Oyuncaklar, içekler, ağalar ve hamak.
17. Bir sınıfta bahede olmasını isterdim. Ađalar, içekler ve imenler
18. Kaydıraklar, ağalar
19. Türlü türlü bitkiler, oyun alanları, hayvanlar için alanlar yapardım. Dıřarıda ders işleyebileceđimiz alanlar yapardım.
20. -
21. içekler, ağalar ve kaydıraklar olmasını isterdim.
22. Oyuncakların olmasını isterdim. Ađaların hayvanların ve imenlerin olmasını isterdim.
23. Bu bahenin içinde yüzme havuzları dinlenmek için kafeler isterdim.
24. -
25. Ađalar, bitkiler ve oyuncaklar yapardım.
26. Top alanı, trambolin ve oyuncaklar yapardım.
27. Kuř evleri, ağa evler ve benzeri şeyler yapardım. Bitkiler ekerdim.
28. Eđlence parkı yapardım. Dođalarla ilgili şeyler yapardım. Ađalar içekler böcekler.
29. Ađalar ve içekler tasarlarım.
30. Ađalı, içekli bir bahe yaparım.
31. ok içekli ve yeřil imenli bir bahe yaparım.
32. Basket sahası ve yeřil alanlar yaparım.
33. Okuldan evime bir yol yapardım.
34. Bahede yeřillikler olmasını isterdim. Okuldan ıkınca yer altından eve gitmek isterdim.
35. Salıncak kaydırak ağa ev olmasını isterim. Dersleri dıřarıda işlemek isterim.
36. Sınıftan ıkınca hemen baheye ulaşmak isterdim.
37. Ađalar, içekler ve yeřil alan
38. Baheyi yeřillik ağa ve içek yapardım. Sınıftan baheye kaydırak yapardım.

39. Ađalar bir prefabrik ev yapardım.
40. Byk bir futbol sahası yapardım. Okulun kapısı futbol yerinde olsa dıřarıda ders yaparım.
41. Yemyeřil meyveli ađalar imler gzel iekler yaptırırdım.
42. Parklar, oyuncaklar
43. Her yerde iekler ađalar bcekler canlılar hayvanlar
44. Orman gibi yaparım her yeri yeřil alanlarla kaplarız
45. Kaydırađı salıncađı ortasında kk havuzu, bol ađaları ve bitkisi olan bir bahe

APPENDIX C

SCHEDULE OF PERMACULTURE PRACTICES COURSE



TÜRKİYE PERMAKÜLTÜR ARAŞTIRMA ENSTİTÜSÜ PERMAKÜLTÜR TASARIM ÇALIŞMASI

14-17 Eylül 2013

PDC (Permaculture Design Certificate – Permakültür Tasarım Sertifikası) (* Lütfen aşağıdaki açıklamayı okuyunuz) sahibi katılımcılar için eğitmenle birlikte gerçek bir danışan için gerçek bir arazide gerçek bir tasarım/danışmanlık işini yürütmek ve gruplar halinde yapılan çalışmaların sonucunda (17.09.2013) danışana tasarımları sunmak bu kursun en önemli amacıdır. Bu çalışma sertifikasını almış tasarımcılara gerçek bir tasarım işinde hızlı bir özgüven kazanma fırsatı verirken danışanın da arazisi için birkaç alternatifli permakültür tasarımına ve uygulama stratejisine sahip olmasını sağlar. Kursun sonunda tasarım çalışma grupları danışana tüm yaptıkları çalışmalarını sunarlar ve tasarımlarını dijital ve fiziki ortamda teslim ederler.

Çalışma 14-17 Eylül 2013 tarihleri arasında gelen talepler değerlendirildikten sonra seçilen danışanın arazisinde gerçekleştirilecektir.

Çalışma 4 günlük bir programı kapsamaktadır.

Yemekler danışan tarafından karşılanacak, barınma için çalışmaya katılacaklara bilgi verilecektir.

Program:

1. Gün:

Tanışma. Çalışma gruplarının oluşturulması. Danışanın permakültür tasarımcılarına (çalışma gruplarına) araziye tanıtması, hayalini, ihtiyaçlarını ve isteklerini anlatması, bütçeyle ilgili bilgilendirmesi.

Gözlem, enerji döngüsü analizi, örüntü gözüyle okuma; iklim, toprak, su rejimi, bakı gibi bilgilerin toplanması; ihtiyaç ve kaynakların analizi.

Çalışma grupları araştırma ve beyin fırtınasına başlarlar.

2. Gün:

Araştırma ve beyin fırtınası devam eder. Ana çerçeve tasarım taslakları tamamlanır:

- Su ile ilgili temel kararlar verilir. (Mevcut su kaynakları analizi, yağmur suyu hasadı/depolaması, atık su değerlendirme vs)
- Erişim ile ilgili temel kararlar verilir. (Giriş çıkışlar, iç dolaşım, araç erişimi, yollar, patikalar vs)
- Yapılar ve açık alanlar ile ilgili temel kararlar verilir. (Mevcut yapılar, mevcut yapılara eklemeler, yeni yapılar, mevcut yapılarla yeni yapıların ilişkilendirilmesi, toplanma alanları, sert zeminli alanlar, "dış sınıflar" vs)
- Mıntıka, dilim ve eğim analizi ve planlaması tamamlanır. (Bitki ve hayvan sistemleriyle ilgili temel kararlar verilir)

Tasarımın detaylarına inmek üzere gruplar kendi içlerinde işbölümü yaparlar.

<http://permacultureturkey.org>

3. Gün:

Alana özgü bitki örtüsü, diğer canlıların (yakın çevrede yaşayan insanlar dahil) sisteme dahil edilmesi, alternatif geçimlik (ekonomik) çözümler ve öneriler üzerine çalışılır. İşbölümlerine göre projeler detaylandırılmaya devam edilir.

4. Gün:

Detaylar ve raporlarla birlikte projelerin tamamlanması, uygulama adımlarının çıkarılması, danışana sunular ve proje teslimi.

Kutlama.

Eğitmenler:

Mustafa Fatih Bakır, Permakültür Eğitmeni, Enstitü Başkanı, Türkiye Permakültür Araştırma Enstitüsü

Murat Akhuy, Permakültür Eğitmeni, Enstitü Müdürü, Türkiye Permakültür Araştırma Enstitüsü

Detaylı bilgi için lütfen enstitümüz sitesine bakınız:

<http://permacultureturkey.org>

Çalışma içeriğinden bazı konular:

- Permakültür kuramı ve ilkeleri
- Ekolojik ev konumlandırması ve tasarımı
- Soğuk iklimler için enerji tasarrufu yöntemleri
- Geri dönüşüm ve atık yönetimi
- Kentsel ve kırsal stratejiler
- Doğadaki örüntülerin anlaşılması
- Tasarım yöntemleri
- Organik gıda üretimi
- Su hasadı ve yönetimi
- Ekolojik zararlı mücadelesi
- Kuraklık için çözümler
- Toprak ıslahı ve erozyon önlemleri
- Toprak işleri
- Çiftlik hayvanları
- Su kültürü (su ürünleri)
- Afete hazırlık ve önleme
- Rüzgarkıran bitkilendirme ve yangın önlemleri
- Biyobölgesel organizasyon


Çalışmayı; Bill Mollison'ın "Permakültür: Bir Tasarım Kılavuzu" (Permaculture: A Designers' Manual) adlı kitabının içeriği oluşturmaktadır.

Çalışma sonunda katılımcılar gruplar halinde bir tasarım çalışması yaparlar ve bu çalışmalarını diğer katılımcılara ve eğitime sunarlar. Bu tasarım çalışması hayali bir kişi veya grup ve hayali bir arazi üzerinden yapılabileceği gibi gerçek bir danışan ve arazisi için de gerçekleştirilebilmektedir.

<http://permacultureturkey.org>

APPENDIX D

RESEARCHER'S PERMACULTURE DESIGN CERTIFICATE



Türkiye Permakültür Araştırma Enstitüsü
The Permaculture Research Institute of Turkey

Merve Ayten Turan

Başarıyla
Permakültür
Tasarım Sertifikası
Kursunu
tamamlamıştır.

Has successfully completed a
Permaculture
Design Certificate
Course

with / eğitmenler
Mustafa Fatih Bakır Tesfaye Rhamis Kent

[Signature] [Signature]

Eğitmenlerin İmzası
Course Teachers' Signature

Tarih/Date: 12.07.2012 No: 142

APPENDIX E

PERMISSION OF THE STUDY



T.C.
İZMİR VALİLİĞİ
İl Millî Eğitim Müdürlüğü

Sayı : 12018877/604.01.02/2306240
Konu: Araştırma İzni

06/06/2014

Sn: **Merve Ayten KILIÇ**
159 Sk. No:1/14 Emre Apt.
Basinsitesi/Karabağlar/İZMİR

- İlgi: a) MEB Yenilik ve Eğitim Teknolojileri Genel Müdürlüğünün 07/03/2012 tarihli ve B.08.0.YET.00.20.00.0/3616 sayılı yazısı (Genelge 2012/13)
b) 02/06/2014 tarihli dilekçeniz
c) 05/06/2014 tarih ve 12018877/604.01.02/2293722 sayılı Valilik Onayı.

Müdürlüğümüz Bornova İlçesi Karacaoğlan Mahallesi Ortaokulu'nda öğrenim gören 4/A ve 5/İ sınıfındaki öğrencilere uygulamak istediğiniz "**Göz Ardı Edilen Çocuk ve Yapılı-Doğal Çevre İlişisini Permakültür Yolu İle Tasarlanan Okul Bahçesi Üzerinden Kurma(Perma Kültür Bahçemiz)**" konulu tez çalışmanız için kullanacağımız ölççekler, ilgi (c) Valilik Onayı ile uygun görülmüştür.

Araştırmanın tamamlanmasından itibaren en geç iki hafta içinde Araştırmanın Teslimine İlişkin Taahhütname Tutanağı doldurulup, araştırmanın CD'ye aktarılması sağlanarak Müdürlüğümüze gönderilmesi gerekmektedir.

Bilgilerinize ve gereğini rica ederim.

Dr. Yurdağül ARIKAN
Şube Müdürü

EKLER:

- 1- Valilik Onayı (1 sayfa)
- 2- Araştırma Değerlendirme Formu (1 sayfa)
- 3- Taahhüt Formu (1 sayfa)
- 4- Onaylı Veri Araçları (4 sayfa)

Güvenli Elektronik İmza
Asli ile Aynıdır.

Bu belge, 5070 sayılı Elektronik İmza Kanununun 5 inci maddesi gereğince güvenli elektronik imza ile imzalanmıştır. Evrak teyidi için <http://evraksorgu.meb.gov.tr> adresinden ca39-4e69-33dd-9c70-0c7d kodu ile yapılabilir.

Hükümet Konağı C Blok Kat:8 Strateji Geliştirme Hizmetleri 1 Bölümü Konak/İZMİR
Elektronik Ağ: izmir.meb.gov.tr
e-posta: strateji35_1@meb.gov.tr

Tel: (0232) 477 21 37
Faks: (0232) 477 21 07



T.C.
İZMİR VALİLİĞİ
İl Millî Eğitim Müdürlüğü

Sayı : 12018877/604.01.02/2293722

05/06/2014

Konu: **Merve Ayten KILIÇ**
Araştırma İzni

VALİLİK MAKAMINA

İlgi:a) MEB Yenilik ve Eğitim Teknolojileri Genel Müdürlüğünün 07/03/2012 tarihli ve B.08.0.YET.00.20.00.0/3616 sayılı yazısı (Genelge 2012/13)
b) Merve Ayten KILIÇ'ın 02/06/2014 tarihli dilekçesi.

İzmir Yüksek Teknoloji Enstitüsü Yüksek Lisans Öğrencisi Merve Ayten KILIÇ'ın "Göz Ardı Edilen Çocuk ve Yapılı-Doğal Çevre İlişisini Permakültür Yolu İle Tasarlanan Okul Bahçesi Üzerinden Kurma(Perma Kültür Bahçemiz)" konulu tez çalışması için kullanacağı ölçekleri, Müdürlüğümüz Bornova İlçesi Karacaoğlan Mahallesi Ortaokulu'nda öğrenim gören 4/A ve 5/İ sınıftaki öğrencilere uygulamak istediği ilgi (b) yazı ile belirtilmektedir.

Söz konusu ölçeklerin uygulanmasının, yukarıda adı geçen İlçenin okulunda, 2013-2014 öğretim yılında eğitim öğretimi aksatmayacak şekilde yapılmasına oybirliği ile karar verilmiştir.

Makamlarınızca da uygun görüldüğü takdirde olurlarınızı arz ederim.

Vefa BARDAKCI
Müdür

OLUR
05/06/2014
Mustafa ERDOĞAN
Vali a.
Vali Yardımcısı

Güvenli Elektronik İmza ile Aynıdır.

Bu belge, 5070 sayılı Elektronik İmza Kanununun 5 inci maddesi gereğince güvenli elektronik imza ile imzalanmıştır

Hükümet Konağı C Blok Strateji Geliştirme Hizmetleri 1 Bölümü Konak/İZMİR
Elektronik Ağ: izmir.meb.gov.tr
e-posta: strateji35_1@meb.gov.tr

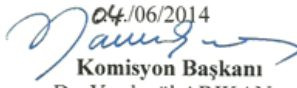
Tel: (0 232) 477 21 38
Faks: (0 312) 477 21 07

T.C.
İZMİR VALİLİĞİ
İl Milli Eğitim Müdürlüğü

ARAŞTIRMA DEĞERLENDİRME FORMU

ARAŞTIRMA SAHİBİNİN	
Adı Soyadı	Merve Ayten KILIÇ
Kurumu / Üniversitesi	İzmir Yüksek Teknoloji Enstitüsü
Araştırma yapılacak iller	İzmir
Araştırma yapılacak eğitim kurumu ve kademesi	İzmir İli, Bornova İlçesi, Karacaoğlan Mahallesi Ortaokulu
Araştırmanın konusu	Göz ardı Edilen Çocuk ve Yapılı-Doğal Çevre İlişkisini Permakültür Yolu İle Tasarlanan Okul Bahçesi Üzerinden Kurma (Permakültür Bahçemiz)
Üniversite / Kurum onayı	---
Araştırma/proje/ödev/tez önerisi	Göz ardı Edilen Çocuk ve Yapılı-Doğal Çevre İlişkisini Permakültür Yolu İle Tasarlanan Okul Bahçesi Üzerinden Kurma (Permakültür Bahçemiz)
Veri toplama araçları	Anket Formu
Görüş istenilecek Birim/Birimler	---
KOMİSYON GÖRÜŞÜ	
İlgi: Milli Eğitim Bakanlığı'nın 07/03/2012 tarihli ve 3616 sayılı Araştırma, yarışma ve Sosyal Etkinlik İzinleri Konulu, 2012/13 Sayılı Genelgesi. Genelge gereğince; araştırma başvurusu olması gereken nitelikler açısından incelenmiş olup, araştırmanın 2013-2014 öğretim yılında, eğitim öğretimi aksatmayacak şekilde yapılmasına oybirliği ile karar verilmiştir.	
Komisyon Kararı	Oybirliği ile alınmıştır.
Muhalif üyenin Adı ve Soyadı: ----	Gerekeşi: -----

KOMİSYON

04/06/2014

Komisyon Başkanı
Dr. Yurdağül ARIKAN


Üye
Pınar ERÇİFTÇİ ÇÜÇEN


Üye
Dr.Semra BAYTURAN

APPENDIX F

REUSING THE WASTE MATERIAL LESSON'S SLIDES

BAHÇEMİZİ
DÜZENLİYORUZ



ÇİZMELER



ÇİZMELER



PLASTİK ŞİŞELER



PLASTİK ŞİŞELER



PLASTİK ŞİŞELER



PLASTİK ŞİŞELER



PLASTİK ŞİŞELER



PLASTİK ŞİŞELER



CAM ŞİŞELER



CAM ŞİŞELER



LASTİKLER



LASTIKLER



LASTIKLER



LASTIKLER



LASTIKLER



LASTIKLER



LASTIKLER



LASTİKLER



DİNLEDİĞİNİZ İÇİN
TEŞEKKÜR EDERİM



APPENDIX G

NATURE AND CHILDREN LESSONS'S SLIDES



DOĞA VE BİZ



DOĞA VE BİZ



DOĞA VE BİZ



DOĞA VE BİZ



DOĞA VE BİZ



DOĞA VE BİZ



DOĞA VE BİZ



DOĞA VE BİZ



DOĞA VE BİZ



DİNLEDİĞİNİZ İÇİN
TEŞEKKÜR EDERİM



APPENDIX H

SLIDES OF PERMACULTURE DESIGN SYSTEM'S LESSON

