Exploration of Influential Architectural Factors in Kindergarten

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ABSTRACT

Early childhood education consists of activities and experiences that are intended to effect developmental changes in children prior to their entry into elementary school. The overall effectiveness of an early childhood program is dependent upon several factors such as quality staff, an appropriate environment, proper grouping practices, consistent scheduling, and parental involvement. Early childhood education could procreate substantial benefit in learning and development on children. Because of the potential benefits to children, some people support the idea to promote innovation, creativity and sustainability in the design of space for children.

The present thesis focuses on the Exploration of Influential Architectural Factors on Children's Learning Outcome: Toward High Performance Kindergartens. To reach this goal, philosophies of early education studied and analyzed, practical implication of early childhood education including effective learning spaces, high performance kindergartens studied and analyzed. Bases on literature survey a pilot interview with selected members of Department of Architecture at EMU were conducted. This selection was based on their involvement in Kindergarten design projects and personal experiences with kindergartens as parents. The multi perspective of interviewees prepared a valuable platform in re-analyzing the literature, evaluating and studying selected cases and developing criteria.

As general findings, this study presented a list of parameters to be considered through designing kindergarten which are beyond the regular standards. These parameters should be ideologically fitted in to the concept and developed in process

of design to reach high performance building not only technologically, but also psychologically and functionally.

Keywords: Early Education, Kindergarten, High-performance Schools, Architectural Factors

ÖZ

Erken çocukluk eğitimi çocuklar ilkokula girmeden önce, gelişimleri üzerinde etkisi olması amacıyla düzenlenmiş aktiviteler ve tecrübelerden oluşur. Erken çocukluk eğitimi programlarının etkili olabilmesi, çalışanların kalitesi, uygun bir ortam, uygun grup çalışmaları, istikrarlı programlama ve ailenin dahiliyeti gibi birçok faktöre bağlıdır. Bütün bu potansiyel faydalar yüzünden, bazı insanlar çocuklar için yenilikleri, yaratıcılığı ve dizayn alanlarındaki sürdürülebilirliği desteklemektedirler.

Sunulmuş olan bu tez, anasınıflarındaki etkili mimari faktörlerin incelenmesi odaklı hazırlanmıştır. Bu hedefe ulaşmak için, erken eğitim çalışmalarının felsefesi araştırılmış ve analiz edilmiş, buna ek olarak etkili öğrenme alanlarını da içinde barındıran erken çocukluk dönemi eğitiminin pratik uygulamaları da yüksek performans gösteren anasınıfları dahilinde çalışılmış ve analiz edilmiştir. Bu seçim, mensupların anasınıfı dizayn projelerine dahiliyetleri ve anasınıfı ebevenyleri olarak kendi tecrübeleri göz önünde bulundurularak yapılmıştır.

Genel bulgular olarak bu çalışma, düzenli standartların ötesinde anasınıfları dizayn edilebilmesi adına birçok parametre sunmaktadır. Bu parametreler, ideolojik olarak konsepte uygun olmalı ve dizayn aşaması sırasında geliştirilerek, sadece yüksek performanslı teknolojik standartlar oluşturmak için değil, aynı zamanda psikolojik ve işlevsel olarak da etkili performans sağlamak için kullanılmalıdır.

Anahtar Kelimeler: Erken Eğitim, Anasınıfı, Yüksek-performanslı Okulla, Mimari Faktörler.

This thesis is dedicated to my lovely partner, Samira; who always offered unconditional love and support to me. She has been a source of encouragement and inspiration in my life.

To Samira

With my love and appreciation

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I would like to acknowledge my dear supervisor Assist. Prof. Dr. Badiossadat Hassanpour, for her patience, help and guidance. This research could not have been done without her invaluable support.

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Finally, I want to express my warmest thanks to my family, I have been far from them for many years but they supported me in every step of my life. To my dad and my mum, who I always feel them in my heart.

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INTRODUCTION

1.1 Research Background

Education is as long and as broad as our lives. In any society the national welfare requires that education be recognized. What we now call education is a mere generalization of parental instruction covering the period of most active interest in the most abstract ideas (Fägerlind & Saha, 2016). Real education in the interest of the students should be such as to develop and bring into action all the latent possibilities in every individual (Gopnik, Meltzoff and Kuhl, 1999). We have to do useful activities as a human at any period of our lives; we should be continually receiving and assimilating new ideas with both bodies and minds fresh and active. (Nutting, 1918).

Education even in the narrow sense in which the word, must be started in early educational spaces; it means that, all nations try for bringing up their youth with a view to their maintaining of the national ideal to promoting the welfare of the nation as an organized ethical community (Laurie, 1893). In her 'Rights of Woman's (1792), Wollstonecraft was the first philosopher to publicly propose and systematically defend a national system of government-supported pre-primary schools, free for boys and girls of any social status to attend during the day in their localities (Botting, 2016).

An appropriate research (Gopnik, Meltzoff and Kuhl, 1999) about early education suggests that children are born with the capacity to understand a lot more than was previously thought to be the case. In 'cognitive growth' theory, Bruner (1960) suggested that the environmental and experiential factors were influence in a child's development (Smith, 2002). The neglecting about school buildings in the past quarter of a 20th century corresponds with a lack of educational research into their use. Investigation of the physical environment as a variable influencing learning outcome has been largely ignored in favor of research into pedagogical, psychological and social variables (Clark, 2002).

The users on educational building, the staffs, instructors and pupils, should be assisted and trained in understanding the possibilities which buildings can offer (OECD, 1990). It is important to maintain the interaction of users with the school environment, building and space, during periods when there are no large-scale adaptations on the horizon. So, the use of school buildings can be seen as a process of continual improvement in an educational way (OECD, 1996).

The possibility of a substantial and firmly manufactured structure as a school for children should be noticeable in any society. McMillan (1994) said that the school of tomorrow will be a garden city of youngsters; that is to state a position of many safe houses a township, maybe, have little schools worked as one group, however with each asylum sorted out as a different unit intended to address the issues of offspring of a particular age or phase of life (McMillan, M., 1994).

Researches (Cohen, Glass, & Singer, 1973; Evans et al, 1998), talk about various approaches that the natural environment affects children (Cohen, Glass, & Singer, 1973). However, there is still a noticeable gap in our knowledge of how architecture and physical aspects of the childhood environment can affect children's learning outcomes. The significant role of architecture and buildings in children's feeling, behavior and education, has been studied minimum (Liu & Lin, 2015).

1.2 The Importance of Thesis

Per Stig Moller (2011) believes children as major roles of future need special places for better growth and education. Architectural buildings have an effect on the daily lives of all children (Bishop, 2001) since children are spending their maximum daily life in kindergarten and school. The quality of space as well as activities that take place in that space are examples of architectural impact on the daily lives of children (Gehl, 2011). The fate of humans in childhood has been associated with all environments and the spaces around (Becker & Luthar 2002). Human through a long learning period that contains all childhood, learns to dominate space and environment; this learning based on their inner balance (Kolb, 2014). For this reason, the child's first experiences are crucial in this regard. The purpose of kindergarten is not only a geometric range, also active and influential space will affect the personality and protects and guarantees their privacy, security, health and many more. This space can be larger or smaller based on the age or actions of children. However, this is not all they need, expect and looking for (McLaren, 2015). The space of kindergarten should be a common environment, psychological reality, alive and dynamic for children. This space should not impose upon children, but it must be formed in accordance with their characteristics (Cook, 2004).

The majority of factors in the early years education revolve around the importance of a child's environment and their development (Essa, 2012). Children have a unique need toward adults; the needs, consciousness and even spaces for new generation have dramatically changed (Ogden, 2014). For instance, the rapid and significant growth of technology has been made different changes in use of energy sources, new communication methods, environmental connection and new interaction with objects for new generation (Shen, Ghatikar, Lei, Li, Wikler, & Martin, 2014). Therefore, it is important to look back to the philosophical approaches in early education and reinterpret the previous theories for further improvements.

1.3 Problem Statement

Children's education is one of the most significant and influential factors on future of any society. Today's children are the foundations of society since they are our future; they hold the way to change, and thus a fruitful future, in their grasp. Hence, it is society's obligation to give them a total instruction that shows them how to cooperate effectively, how to question what is before them, and how to be impetuses of progress. This instruction begins with what youngsters gain from their folks and from what they realize in the initial couple of years of their lives. This underlying training impacts whatever is left of their lives, and inalienably society's future (Gratz, J., & Kurth-Schai, R., 2006). Therefore, the architecture and buildings of their study could affect the quality of our society in the future.

Although significant social developments and technology developments in global scale, however, there are minimum studies on the advanced and updated educational space for children (Jenkins, Purushotma, Weigel, Clinton, & Robison, 2009). Still unwritten belief and rule is active; Which says convert a residential buildings and

other spaces into the kindergarten. Hence, kindergartens still design under the influences of previous criteria and traditional framework (Senda, M. 2015).

From 18th century starting by Jean Jacques Rousseau to Maria Montessori in 19th century, many philosophers have been worked on early education theories and methods in childhood. Whereas, in early childhood which children often experience the greatest environmental challenges, and it is a time when the foundations of many of their fundamental attitudes and values are first put into place (Siraj-Blatchford, J., Smith, K. C., & Samuelsson, I. P., 2010).

1.4 Objective of Thesis

This research focuses on co-relation between educational spaces (architectural factors) and children learning in order to enhance children's educational outcomes. The objectives of this thesis are described as follows:

- To study, explore and document most popular philosophies of early education and example of their implications in order to interpret them into new approaches.

- To investigate the influential architectural factors that can support and develop children's learning through architecture.

- To restructure the design framework based on studies and philosophies adapted to the new technologies and pioneer educational tools; to be used by architecture students or fresh designers.

1.5 Scope of Research

This thesis will employ a qualitative approach to explore the co-relation of educational spaces (architectural factors) and children learning needs in order to enhance children's educational outcomes. The qualitative approach of this thesis was used to construct the differences of research and quantitative synthesis to provide an indication of the effectiveness. So the general outline of the thesis is:

- Find out the realities of children needs during the changing of generation.

- Discover the high-performance school building that includes (health care, collaboration with user/client before design, research and development) and excludes the topics about energy efficiency.

- Explore the selected cases from different countries which studied by Sara Scott (2010) as a pioneer researcher in educational spaces for children. These selected cases have been investigated as a major potential kindergarten from Japan, Italy and Denmark.

- Select, study and investigate case studies that chose from high potential and different variety kindergartens in North Cyprus, according to the findings from selected cases.

Early-education is a wide term used to portray any sort of learning program that serves kids in their preschool years, before they are of legitimate age to enter kindergarten. Early-education may comprise of any number of exercises and encounters intended to help in the psychological and social advancement of preschoolers before they enter primary school.

The manner of providing the early-education could be very diverse from one state, or even one program, to the following. Early-education projects might be intended for

3, 4, or 5 years old, and they might be given in childcare centers, nursery school, pre-kindergarten, or pre-school contexts. Although, they are children in understanding level; however the same age range followed in selected cases and observed cases.

1.6 Methodology of Thesis

To the objectives defined in this thesis, a qualitative step methodology is deployed. First to reconstruct a theoretical ground for early education; philosophies of early education, the practical implication of early childhood education, school as a learning environment and effective architectural features on children learning outcome, a broad study is conducted and findings in format of classified information tabulated.

Then based on most cited researches (Council, S. B. I. 2001, Sara Scot 2010, M. Bickel 2013) which introducing Denmark, Italy and Japan as fore-runners in terms of kindergarten design based on environmental education, effective learning space, high performance principles have chosen as selected cases to be studied by means of literature findings.

On the other hand, Northern Cyprus chosen as case study to explore the reality and current position of kindergartens in the north part of the island. After visiting and studying eight kindergartens in Famagusta and Lefkoşa (most populated cities in the islans); three were found presentable for this study. It should be noted that excluded ones are mostly houses which are converted to kindergarten or very old examples with minimum refurbishment.

Meanwhile four members in Faculty of Architecture who are parents and having experience with sending their children to the kindergarten kindly accepted to

participate in interviews which took place in 2016-2017 Academic semesters. Their opinions were supportive to the study since their perspective was accompanied not only by their parental concerns but also architectural perspectives. Results of Interview finding presented parallel to the finding of selected cases and case study to provide prompt relation amongst them.

1.7 Structure of Thesis

The first chapter of this thesis has been studied about brief research background, the important of thesis, problem statement, objective of thesis, scope of research along with methodology.

In ‘Chapter Two’ extensive study on philosophies of early-education, the practical implication of early childhood education, school as a learning environment and effective architectural features on children learning outcome will described. Moreover, the discussion will present on literature findings.

In ‘Chapter Three’ the methodology accompanied by findings will be explained. Findings of each case and each observed case would be introduced in their own part. At last a discussion would be carried on based on thesis finding and literature findings.

In the last chapter, the recommendations will presented to be used as a criteria and frame work for ministry of education, fresh designers at architectural studios and the companies that work on designing educational building for children and youth. After conclusion, the future work would be introduced.

The structure of thesis is described in [Figure 1] as follow:

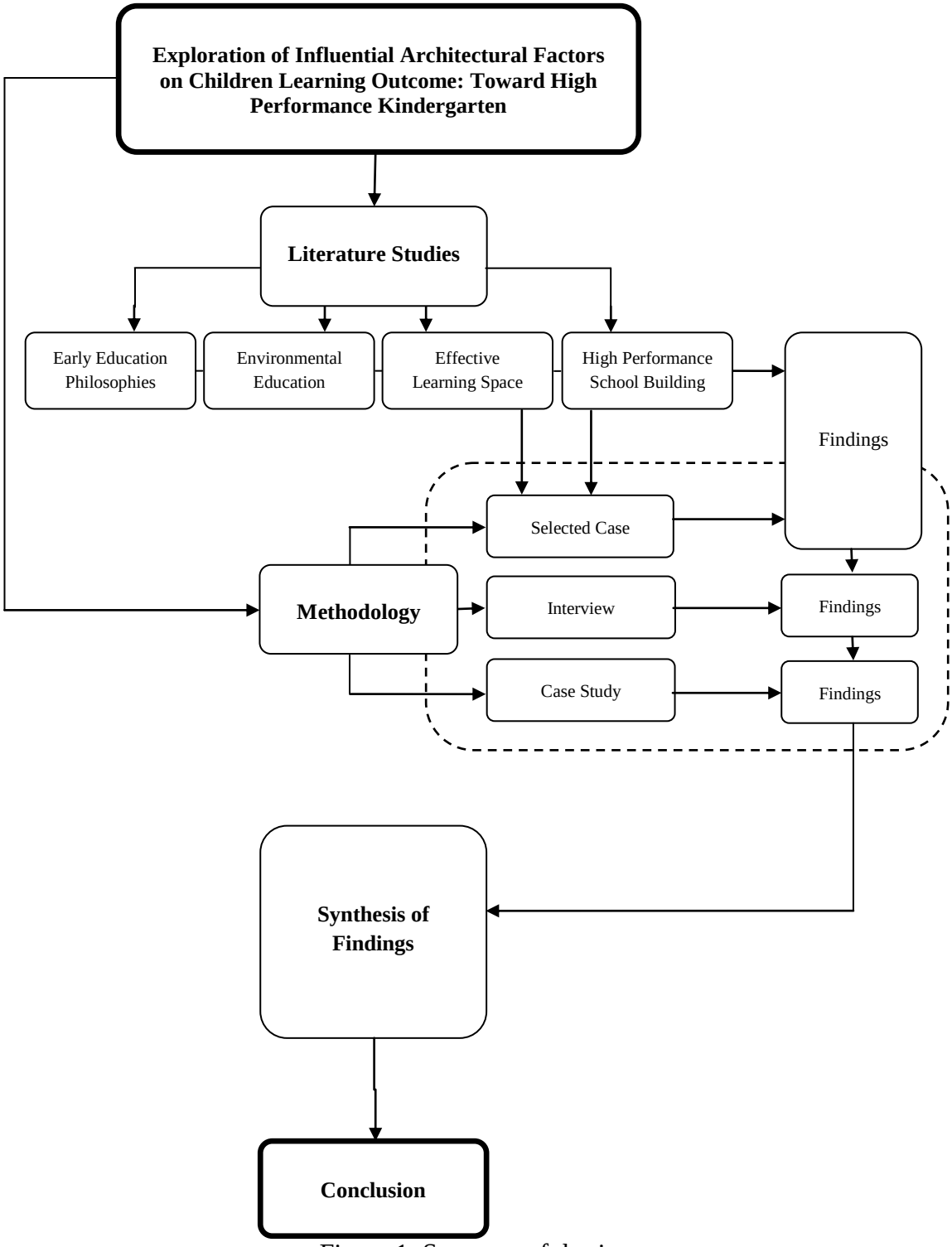

Figure 1: Structure of thesis

Chapter 2

LITERATURE ON EARLY EDUCATION

2.1 Introduction

The most rapid period of growth of the human personality is childhood. According to Benjamin Bloom (1998), about fifty percent of the intelligence growth occurs from birth to 4 years of age. 30% of this growth between 4 and 8 years old and only 20% is from 8 to 17 years old will be realized. Bloom effects of living in environments rich and poor increase and decrease in IQ score has emphasized.

Unfortunately, studies in the field of children education depend on the parroted interpretation of old theories, studies and happen empirically or influenced by the habits of native. On the other hand, changes in communications, technologies, educational methods and new findings on learning styles and teaching techniques minimally adapted to architectural design.

Therefore, there is a gap in literature which this chapter goes to making essential lists. Objects to be investigated in this chapter are as follow:

Philosophies of early education, the practical implication of early childhood education, school as a learning environment, effective architectural features on children learning outcome

2.2 The Early-Education

Early-education is a sweeping definition that utilization for depict any kind of informative arrangement that administrations kids in their pre-school years, under the watchful eye of they are in legitimate age to enter to kindergarten. Early youth preparing may include any number of encounters and exercises expected to help in the scholarly and social progression of preschoolers before they enter grade school. Early-education undertakings may be expected for 3, 4, or 5 years of age, and they may be given in childcare focuses, nursery school, pre-kindergarten, or pre-school settings.

They might be situated in center-based, locally established, or state funded school settings, and they might be part-day, entire day or even year-round. They can likewise be secretly run, worked as a neighborhood educational system, youth focuses and youngster mind accomplice location;lns, and in their own particular homes. Head Start administrations incorporate early learning, wellbeing, and family prosperity (About the work place of head begin, 2015).

The National Education Association perceives that an astounding early youth program incorporates four, basic segments:

- Provides a balanced educational programs that backings all regions of improvement

- Assesses youngsters to improve understudy learning and recognize concerns

• Employs accomplished, satisfactorily paid instructors (Liverman, Kraak, 2005)

• Addresses children wellbeing, nourishment, and family needs as a feature of a far reaching administration arrange

The Early Education for All Campaign diagrams the quality attributes of excellent early adolescence instruction educational modules and exercises:

• Balanced: The educational programs ought to give adjust of play and organized exercises, including instructor and kid started investigation.

• Well-arranged: The educational modules ought to think about ebb and flow investigate kid advancement and ought to incorporate particular learning objectives for kids (Kernan, M. 2007).

2.2.1 Pioneers of Early Childhood Education

Without doubt, for a long time there are many philosophers and educators work on theories, pedagogical approaches and educational methods of early-education, all around the world. In the following, the most effective and leading philosophers, their methods and their effects on early education will be introduced.

2.2.1.1 Jean Jacques Rousseau (1712-1778)

Rousseau was the first philosopher who wrote the novel which proclaims early educational ideas and child natural goodness in his novel. He believes that his novel Emile -ou de l'éducation- would have a far-reaching effect, and this was indeed the

case. No other book had a greater influence on early educational ideas. Its publication and the thoughts it provoked disturbed the placid stability of 18th century European education (Stewart and McCann, 1970).

The legacy of Rousseau's architectural and educational vision was a kind of decentralized rural utopia, where the notion of creativity -making by doing- would flourish, and children should explore the content of language within the context of their immediate environment. The Rousseau's school was to be at the center of rural village life. In this case, Bilauri (2016) said about the leading idea of Rousseau and his novel: "Its innovation lay in the way that it was the primary far reaching endeavor to depict an arrangement of instruction, as indicated by nature". The key thought of the book was the likelihood of protecting the first flawless nature of the youngster by methods for the watchful control of his instruction and condition, in view of an investigation of the diverse physical stages through which he go from birth to development (Bilauri, 2016).

The educational views expressed in Emile show a transformation in Rousseau's attitude towards society. He now seeks equality, both moral and political, for a man who is coming to fruition in society. He has discarded his 'noble savage' and the notion of innate knowledge for a belief in the social process and its effects on development. Rousseau was highly original in his thought and, as a political philosopher, could be described as the founder of modern democracy. His ideas on education were so radical that the theory and practice of nursery education have been influenced by them ever since. They were to be the philosophical reason for the key

educational pioneers, such as Pestalozzi, Froebel and even Montessori in the 20th century.

On the other hand, David Michael Levine (1985) argues that the pedagogical ideas of Rousseau and his disciples have been largely ignored in the development of educational theory much beyond the nursery school (Levin, 1985).

This may well be the case, as the value of ‘rote learning’ for first-school children are being advanced even today in some educational circles. However, the importance of Rousseau in the first stirrings of the kindergarten idea should not be underestimated. He originated the need to educate and thus socialize the young child in a holistic way, synthesizing the child’s bodily needs with the development of the mind. He attempted to put the theory into practice, but it was unsuccessful.

2.2.1.2 Johann Heinrich Pestalozzi (1746-1827)

Pestalozzi was surely motivated by Rousseau. He invested years composing and instructing, to discover two abrogating points: right off the bat, the possibility of social recuperation; and the second comprehend and find the way to the educative procedure. Like Rousseau, he was persuaded that training ought to be in entire amicability with the way of the tyke, and built up a youngster focused approach that acknowledged the 'free soul' yet at the same time kept up the significance of the educator's heading in the tyke's learning procedure. He couldn't help contradicting Rousseau's thought regarding kids instruction in seclusion, and included jolts, for example, drawing, composing and talking with regards to gathering learning. 'The methods for clarifying all learning picked up by sense impressions originates from number, language and shapes (Ashwin, C., 1980).

Pestalozzi (1800) opened his first educational organization for children. A teachers' training course was also proposed and separate school for poor children. Owing to inadequate financial support, Pestalozzi began to take on fee-paying children, and this was the only part that flourished, despite the school for poor children was eventually established some years later. This had always been Pestalozzi's most cherished project.

After 1805 Pestalozzi got the castle of Yverdon, a previous fortress of the Dukes of Savoy, which was owned by the municipality [Figure 2]. It was repaired, slightly adapted to his needs, and given to him rent-free for life. The new institution was furnished simply; it had many spacious halls which could be used as classrooms and for assembly, and also dormitories for boarders. The format incorporated a substantial yard, a glade, and wide roads which were to fill in as play areas.

Figure 2: Castle of Yverdon - Johann Heinrich Pestalozzi in His First Kindergarten

At Yverdon Castle, Pestalozzi's new teaching curriculum was based on three crucial elements: language, number and form. Also, the three activities of speaking, counting and measuring became the foundation of his theory of education. The theories could be summarized in three questions: what kinds of objects does the child see, what is

their appearance or form, and how might they be represented? Primarily these exercises should be enjoyable and thus natural.

William Maclure (1831), said: in Pestalozzi's educational system all pupils have pleasure in mental labor and study. In this way from an early age learning and thinking can be made a pleasure rather than a drudgery and any occupation valuable to oneself or to others, up to this point viewed as demeaning, can be changed into a delight by early propensity, these could be some advantages of educational system in Pestalozzi's theory (Maclure, 1831).

For a time Yverdon became the educational focus for the whole of Europe. Its occupants included pupils, teachers, servants and Pestalozzi's family. Numbers grew rapidly to more than 250 students, who joined from all over Europe, Russia and America.

2.2.1.3 Robert Owen (1771-1858)

The Scottish mill owner Robert Owen (l77l-l858) visited Yverdon in 1818. Like Pestalozzi, he trusted that the point of training was the improvement of kids' intelligent person, moral and sober minded sensibilities and that subsequently the expectations for everyday comforts of the entire group would rise. His techniques were like Pestalozzi's: he started training at an early age, adjusted to the tyke's level of comprehension, and energized dynamic intrigue and participation. Owen's instructive thought was basically to empower the inborn endowments and forces of the youngster.

Owen devised three schools at New Lanark, Scotland for children between the ages of two and six years attended the infant school, in which he had the most interest. Without any book, and exercises, for example, singing, moving, walking and fundamental geology had their spot. The youngsters burned through three hours a day of free play in an open play area, unless the climate was terrible, at first, the school joined nursery and newborn child exercises.. Although, architecturally primitive, it was a building purpose-made for the need of young children and perhaps the first real example of architecture for childhood [Figure 3].

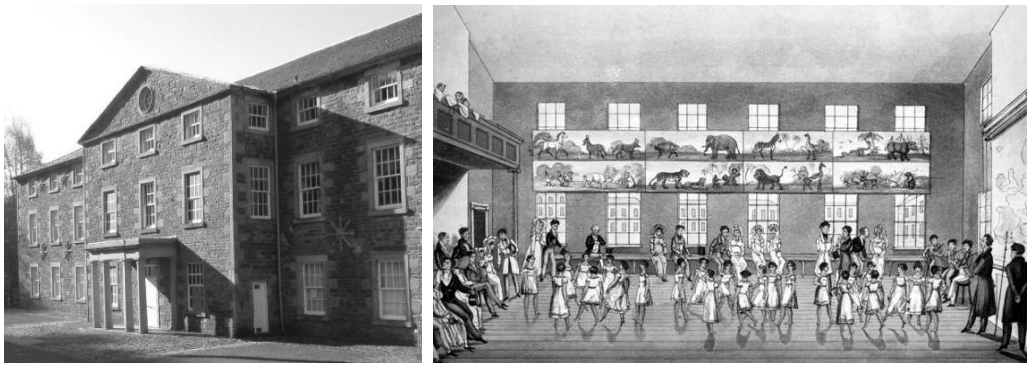

Figure 3: New Larnak School, Scotland – Indoor Prespective

Having successfully introduced the school and modified the mills management. Owen's output improved remarkably. This provided funds to expand the facilities, and he immediately began another long-considered project, the construction of a large new building to be known as ‘The Institute for the Formation of Character’. This was to accommodate schools, public halls, community rooms and, most importantly, what he called a playground or nursery school (Cole, 1953).

The approach to care was quite advanced pedagogically, using the principle of play. Children were not forced to participate in the activities, and sleep sessions occurred whenever the individual child wished. Where the Owen system differed from the

Pestalozzian approach was in the nonappearance of expressions and artworks: the accentuation was on the physical as opposed to the educational and increase emotions of the youngster.

The sound originality of Owen's curriculum has been praised, but his methods were felt to be deficient in the more imaginative aspects. Owen was not himself interested in literature; although he was emphatic about the importance of speech and reading, this would largely be without any poetic content.There were simple lessons in drawing for the top classes, but no painting or craft activities were mentioned in connection with the nursery school curriculum.

In the l820s Robert Owen started to help Maclure to establish an experimental school in New Harmony, Indiana [Figure 4]. Maclure made a large investment in this venture, which was supported by the enthusiasm of his assistant teachers from Yverdon.

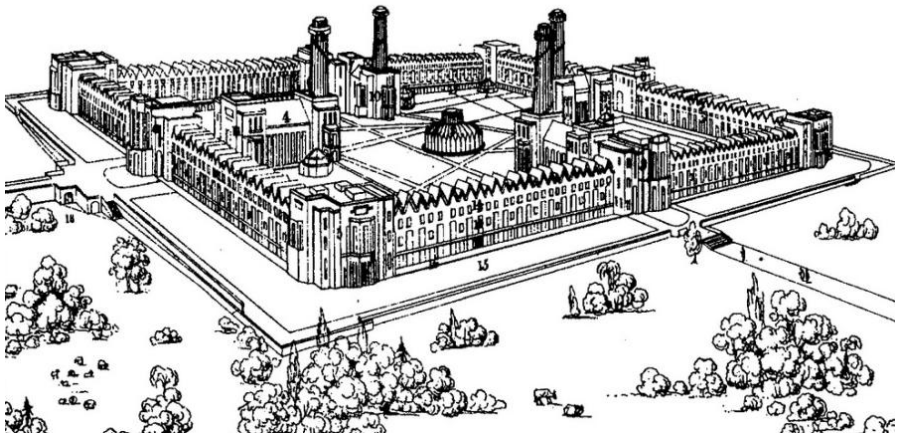

Figure 4: New Harmony School, Indiana, USA

He transferred his Philadelphia school to New Harmony, where he took control of the educational side. His wife, also trained in the Pestalozzian method took over the teaching of girls, and infants from the age of two. Although described by Kate Silber as a ‘play center’, the adoption of Pestalozzian methods in this pre-school institution enables us to define it loosely as one of the first American child centers (Silber, 1973).

2.2.1.4 Friedrich Froebel (1782-1852)

Honestly, the most influential educational theorist during the second half of the 19th century was Friedrich Froebel (1782-1852). Between 1807-1810 he worked under Pestalozzi at Yverdon. Froebel perceived the significance of innovative improvement through play rather than teach.

He started to perceive that it was so vital to develop the uniqueness and independence of every kid. He trusted that youngsters had a practically enchanted comprehension of the inborn truths of life, and that this soul could be stirred by playing amusements which had typical significance. For him, the kindergarten ought to speak to a perfect society, thus its name. This did not allude to the significance of the garden, yet rather to the aggregate condition for the kid; the garden and structures together ought to be illustrative images of the regular world. This was critical, since as indicated by his speculations youthful kids comprehended through a typical dialect which used allegory and similarity. In this regard he couldn't help contradicting Pestalozzi's techniques, and built up his own particular instructive framework that looked towards a correspondence of the solidarity of nature.

Over the span of this improvement, Froebel went to some of newborn children's schools established by the devotees of Johan Friedrich Oberlin, a spearheading educationalist who built up a baby's school in Alsace in the 1770s where youngsters were instructed, in addition to other things, singing, drawing, ethics, discourse preparing and manual assignments.

To him, these organizations gave off an impression of being close to day nurseries for the accommodation of working moms, with no instructive logic. Persuaded of the significance of better approaches to show youthful youngsters, in 1837 he established another school which he called a school for the mental preparing of little kids an arrangement of play and occupations [Figure 5].

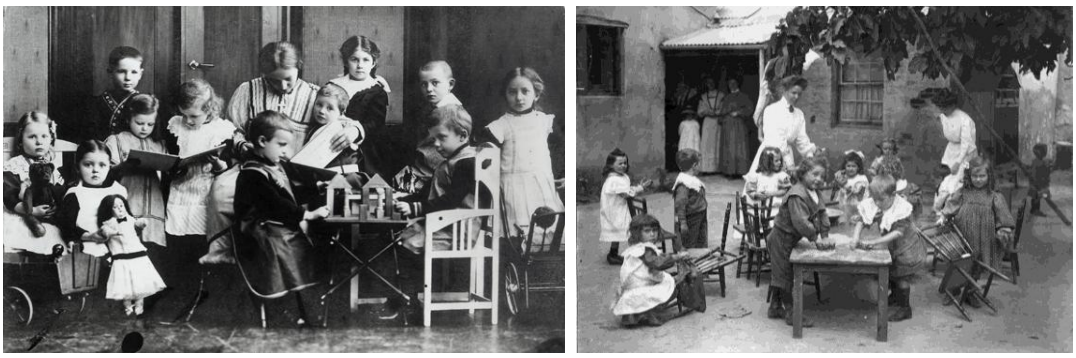

Figure 5: A Froebelian Kindergarten at the end of the nineteenth century

Lrebschner (1991) in his article ‘Foundations of Progressive Education’ had described the Froebel’s new method as follows: This new foundation was to give a domain where children felt sufficiently secure to coordinate their inward existence with the requests of the outside world, where openings existed for kids to analyze through their play in regions not yet known, but rather ambiguously induced. Such assurance and unsurprising condition was more similar to a nursery where the planter tended his plants, gave water and air and moved plants into the daylight with the goal

that they could develop and thrive. It would have been a garden for kids, a Kindergarten (Lrebschner, 1991).

In 1844 Samuel Wilderspin had before stated the significance of permitting a tyke free play in an indoor play area and initiated the Wildersprin national school [Figure6] which in view of Froebel's hypothesis; he supported the inflexible display type of classroom, which was an element of nineteenth century schools, and the arrangement of learning through repetition (Read, 1992). It was Froebel, who took Pestalozzi's thoughts on the important portrayal of ideas; with his innovation of the organized play framework he called ‘gifts and occupations’.

Figure 6: New Wildersprin national school in 1845 and 2015 (URL 1)

In this manner the physical and eager movements of kids have to be maintained and coordinated by the educator towards these formative objectives. Therefore the customary part of the dynamic instructor and the aloof class would be switched. Youngsters would be given an extensive variety of materials and 'urged to complete different sorts of imaginative and expressive handwork; self-action turned into the methods for instruction' (Read, 1992).

This was to be the premise of another instruction of specific pertinence to the most youthful kids. This was significant, since as indicated by Feroebel's speculations children comprehended through a typical dialect which used similitude and similarity. Froebel started the main kindergarten to enable youngsters to mingle while in the meantime take in the ideas required for school (Muelle, 2005).

2.2.1.5 John Dewey (1859-1952)

Dewey was the first real American influence on American education. Dewey trusted that kids were profitable and childhood was an imperative period of their lives. Such as Pestalozzi and Rousseau, Dewey felt that schools should focus on the nature of the child. By this time, children were considered of little consequence.

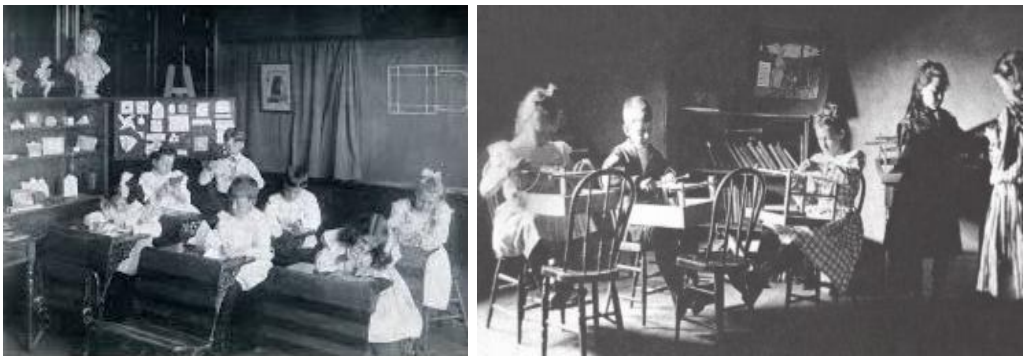

Figure 7: John Dewey's lab school involved children in activities of a practical, real-life nature, such as weaving small rugs to use in the classroom.

His passionate belief in the innate goodness of children, in the principle of mind-body unity, and in the encouragement of experimentation shaped John Dewey's ideal. A new kind of school emerged from these ideals [Figure 7]. Movable furniture replaced with table and benches.

In building the table, geometry, material science, and math were found out en route. This was a collective endeavor that urged kids to cooperate in groups, so the school

turned into a general public in small. The commitment of John Dewey to American instruction can't be thought little of.

His kid situated schools are a model of tyke care focuses and family tyke mind homes, as learning and living are indistinguishable. Dewey's beliefs about children and learning; he expressed his ideas about education in a significant document ‘My Pedagogic Creed’ that I summarized them in [Table 1] to show what they mean today.

Table 1: John Dewey Expressed his ideas about education in an important document entitled “My Pedagogic Creed.”(Nutbrown, Clough, & Atherton, 2014).

Dewey's Pedagogic Creed	**What It Means Today**
• "... I trust that exclusive genuine instruction gets through the incitement of the tyke's forces by the requests of the social circumstances in which he gets himself."	• Children figure out how to oversee themselves in gatherings, to make and share fellowship, to tackle issues, and to collaborate.
• "... The tyke's own sense and powers outfit the material and give the beginning stage for all instruction."	• Need to make a place that is tyke focused, a place that values the aptitudes and interests of every youngster and each gathering.
• "... I trust that instruction, consequently, is a procedure of living and not an arrangement for future living."	• Prepare kids for what is to stop by advancing and translating the present to them. Find instructive ramifications in ordinary encounters.
• "...I trust that ... the school life ought to become progressively out of the home life ... it is the matter of the school to develop and expand ... the tyke's feeling of the qualities bound up in his home life."	• Sets the method of reasoning for a connection amongst instructors and guardians. Values set up and made in the home ought to be improved by educating in the schools.
• "...I accept, at long last, that the educator is locked in, not just in the preparation of people, but rather in the arrangement of a legitimate social life. I trust that each educator ought to understand the pride of his calling." (Dewey, J. 1897)	• What educators do is essential and important. They show more than scholastic substance; they instruct how to live.

2.2.1.6 Rudolf Steiner (1861-1925)

Steiner, similar to Froebel before him, believed that pre-school kids expected to play instead of participate in formal instructive undertakings, all together that all their profound, scholarly and physical forces could develop unhampered. Notwithstanding, he included that this enlivening ought to occur in concordance with the regular world. Steiner went more distant than Froebel in developing a structural hypothesis which embarks to be tuned in to the mental needs of early youth. His impact affected an effective amalgamation amongst design and pre-school instruction, which was given expression in pre-school structures to a great extent by his later trains.

Steiner indicated how 'imperative of shape could be accomplished, how a sunken surface leads into an arched one, making a living bending surface. He described the different lands of wood that were being used and their intrinsic qualities. He talked about how to create a painting by identifying with the different possibilities offered by the colors.' (Klinborg, 1992) Later, Steiner's wider architectural influence was almost exclusively on kindergarten and school buildings [Figure 8].

Figure 8: Steiner with his first Goetheanum model – Steiner metamorphosed house, Duldeck

‘Metamorphosis of form’ is the quality identified in Steiner sculpture and architecture, an idea that has become a recognized architectural term. As indicated by Kenneth Bayes, it started in Goethe's examination of the plant as a 'natural picture of an otherworldly original. Growing and growing, the model being of the plant exemplifies itself through progressive transforms of frame until it achieves its full expression' - hence the term metamorphosis (Stainer, 1923).

Steiner's theory was that one inorganic shape would be included succession to another to make a framework which took after a picture of development – inadequate, bone-dry in this manner dynamic, and normal. It was this sense of spiritual metamorphosis, an embodiment of the process through which the pre-school child passed, that has made the style so appropriate for some anthroposophical architects and educationalists since the 1950s.

2.2.1.7 Maria Montessori (1870-1952)

Maria Montessori started to express her idea a century after Friedrich Froebel’s death; during that time there had been great changes to the social context of early year’s education. One might contrast Froebel’s first kindergarten located in a beautiful wooded valley in Thuringia, with Montessori's House of Children (Casa dei Bambini) in the most squalid district of urban Rome [Figure 9].

Figure 9: Maria Mentessori’s House of Children

Their differing viewpoints and preoccupations are reflected in this disparity. Froebel, in an ideal rural environment focused on the natural gifts in the development of the child. Montessori centered her attention on the immediate environment emphasizing its importance in her more pragmatic methods.

Her success with retarded children was phenomenal: she was able to teach some of her ‘backward’ children so effectively that eventually they could read and write to examination standard. She applied normal children to the education of the very young who was believed to be at the same stage of mental development as the older, retarded, children. The ‘Montessori Method’ can be best analyzed by examining the basic tenets of her training of defective children.

The main guideline is to prepare the understudy to be free of others as to the conventional practices of life; it shows up likewise to require a way to deal with the youngster's brain at a lower level than can be embraced with ordinary kids, and advance to the faculties as opposed to the insightfulness (Rusk, R.R, 1918).

In education the psychological method means that the process is tuned to the stage of the child’s mental development rather than wholly to the needs of the curriculum. In practical terms, a particular disk may be at a stage where he or she is able to fit correct weights into their sockets and identify little packets through sound or smell, but may not be ready to formulate simple words from sandpaper letters.

These stages would be recognized and respected in relation to each individual child. The freedom of a child is perfected in the psychological method and adheres strictly

to the laws of the child's natural self. Montessori recognized an interrelationship between mental and physical powers in mankind and categorized three sorts of action: the activities of commonsense life; the activities of tactile preparing; and the pedantic activities.

In the final decade of the 19th century the kindergarten idea had become increasingly institutionalized; the whole movement was rigid in its interpretation of Froebel's methods. Radical change was inevitable, as new answers to new problems were identified. Montessori took over from Froebel, utilizing many of his ideas along with those she discovered in her practice of medicine and teaching retarded children. Maria Montessori's methods in nursery and infant schools were contained in *The Montessori Method*, published in England in 1915.

Today, many hundreds of Montessori schools exist throughout the world. Their philosophy has a universal appeal as a humanistic, rational approach to the education of young children, which is very much focused on the environment (Dudek, 2000).

2.2.2 The Analysis of Early Education Philosophies

In order to strength-points about the point of view of pioneer philosophers in early childhood education [Table 2] developed. This table indicates key findings of each philosopher by means of architecture.

Table 2: Summary of Related Key Findings by Means of Architecture.

Philosopher	Key Findings
Jean Jaques Rousseau **1712-1778**	• Flourishing the creativity trough ***making by doing*** • The first comprehensive attempt to describe a ***system of education***, ***according to nature*** by an analysis of the children's different ***physical stages*** • The ***careful control of environment***, based on different physical stages through from birth to maturity
Johann Heinrich Pestalozzi **1746-1827**	• Present the basics of ***group learning.*** • Using art-craft activities for emphasis intellectual development of children ***(Making by doing)***
Robert Owen **1771 1858**	• Combine nursery and infant activities ***(Shared activities, Flexible spaces)*** • Free play in an open playground ***(Outdoor spaces, Safety)***
Friedrich Fröbel **1782 1852**	• Children should have wide range of playing materials • Look forward to the communication of the unity of nature (The architecture of building and garden together ought to be illustrative images of the common world) • Structure the new play system 'Gift and occupations' by opportunities exist for kids to test through their play in obscure regions • Suggest to sustaining the physical and restless activities of children through permitting a kid free play in an ***indoor play area*** • Reversed the ***passive class*** and traditional teacher's role ***(Active class / Learning by Playing)*** • Children's need to socialize at the same time learn the concepts needed for school
John Dewey **1859-1952**	• Education should be mixed with ***life and environment*** • Schools should focus on the ***nature*** of child (such as Pestalozzi and Rousseau theories) • ***Movable furniture*** replaced with rows of benches • Group effort and ***encourage of team-work***
Rudolf Steiner **1861-1925**	• Overemphasis on building, ***architecture and forms of kindergarten*** • Investigation between architecture and preschool education • Present three characteristics of architecture in kindergarten (movement, sculptural form, metamorphosis form)
Maria Montessori **1870-1952**	• Focus on the ***environment emphasizing*** on pragmatic methods • Success to teach retarded children • Attention to ***practical exercises***

2.3 The Practical Implication of Early Childhood Education

Children are our most valuable resources, and influencing early education development is a critically important activity. It shows its importance when the National Education put it on Goal (2000) to have all children start school ready to learn. This goal is designed to ensure access to high quality and developmentally appropriate pre-schools and programs for all children (Jones 2005, Sessa & London 2015).

Revising the history of Kindergarten education, in second half of the nineteenth century, Froebel provided a major direction in the Kindergarten curriculum (1887, 1889). Seminal theorists such as Piaget (1950, 1962, 1969), Vygotsky (1978), and Gardner (1983, 1987) studied and contributed developmental milestones for children. At the turn of the 21st century, holistic education scholars such as R. Miller (2000, 2002, 2006), J. P. Miller (2006, 2010, 2011), and P. Palmer (1993, 1998, 2004) brought insight into deepening and broadening teaching and learning practices, bringing awareness to the complexity of transformational teaching and learning practices that enrich the educational experiences of children.

According to previous brain research studies (Greenspan & Shanker, 2004; Pascal, 2009a; Shonkoff & Phillips, 2000; Mustard, 2006; Shonkoff, 2006), and educational researches (Cleveland et al., 2006; Cryan et al., 1992; ELECT, 2006; Pelletier, 2012; Sylva et al., 2004; Vanderlee, 2013), there are great benefits to early childhood education. Teachers agreed that there are benefits with the historical program as student achievement and learning are beginning to improve. A summary of key

researches implications providing quality of historical-based teaching and learning practices is important and can be based on the following features: (a) learning through play-based, experiential-based exploration; (b) making the educational experiences child-centered and authentic; (c) building on children's past experiences, nurturing self-expression and identity; (d) strengthening relationships and connections by group activities; and (e) creating stimulating environments.

A major implication of early education needs to improve the quality of new kindergartens by reducing class sizes. The children are being placed into classrooms at an early age, but to improve the quality of care, there was a consensus on the need to reduce class size, provide more support for special needs children, and provide more ongoing training for teachers. School boards can also be more aware of the needs of teachers and advocate for smaller class sizes and improved learning partnerships.

As the researches (Wane, 2010; Miller, R., 1992; J. P. Miller, 2007, 2010), have shown, play-based learning is appropriate in Kindergarten. Children learn effectively in play-based learning (Perlmutter et al., 1995; Sylva et al., 2004) experiences. All the teacher participants also confirmed the value of play-based learning as a comprehensive and integrated approach in the kindergarten years.

The child proceeds through an invariant sequence of stages, which unfold more or less independently of the teacher. Rousseau, Froebel, Deway, and Montessori (1760, 1835, 1920, 1945) are among the theorists identified by the tradition of child

development theory. Although they differ in some dimensions of theory, they tend as a group to point the environmental factors as the major influence on development.

2.4 School as a Learning Environment

Children to have their own sense of identity need to participate in group activities and group learning process to feel a sense of place and belonging within a precinct. A kindergarten as a learning environment for children, especially one with extra integrated services, is a significant consideration for the community and the community needs to ‘own’ it and identify with it, for it to be genuinely effective (Scott, 2010).

The spaces of kindergarten partitions into indoor and outside condition, through attentive and educated development of the learning condition, environment, architecture, materials, assets and characteristic components. These situations made an indoor and outdoor space that supports improved learning encounters through the promotion of a youngster's investigation, request creative energy, open finished learning capacities, various needs and play. Along these lines, through the astute creation of enriched learning spaces with emphasis on relationship, style instructional method, culture and valuable learning openings, ought to make and advancing positive learning spaces for early years learning situations that adjust and embrace nature as the 'third-educator' (Stonehouse, 2011).

In general, kindergarten has three main categories; Physical spaces, environmental spaces and services. The physical space refers to a place that children are the subjects of that space (Alvestad, 2009). It means that children are doing their most activities

in that area, such as: class, indoor playground, multi-purpose saloon, daytime rest and sleep salon, sports and rehabilitation activities' space and etc.

The environmental space includes the outdoor activities and playground. Eventually, services spaces which anticipate for providing derivative works, such as: administrative section, kitchen and dining salon, health room, toilets and etc (Nordtømme, 2012).

> "… makes chancess for children to find out about and nurture natural and social prosperity of the groups they possess and the need to interface schools with groups as a major aspect of a coordinated push to enhance understudy engagement and support. (McInerney, Smyth and Down, 2011, p.5)".

McInemy, Smyth and Down (2011) likewise contend that place-based instruction may recognize students as makers as opposed to customers of learning; furthermore, furnish them with information and experience to partake in democratic process.

2.4.1 Environmental Education

Early childhood is the most basic time for development of children. The physical and also social-enthusiastic and psychological improvement of children happens quickly amid this developmental period, with more exceptional basic moves. Truth be told, the exposures to the open air situations energize the scholarly development and intellectual realizing which is likewise connected to the more extensive experience. In this way, the ecological learning through play should be brought into the lives of all kids together with the standards and practices of common groups (Fjørtoft, 2001).

Theories of environmental education point out that concern for the environment is based on an affection that can come only from autonomous, unmediated contact with

it. The environment is an asset for inventive and agreeable play and it gives the props and stages. For instance, Moore (1989) asserted that the extravagance of physical components in the settings and their relationship to each other ought to excite interest and trigger inventive affiliations. What's more, Yerkes (1982) found that little children who play in an innovative enterprise play area demonstrated increment in visual engine mix and in addition verbal and social aptitudes, decisiveness and creative ability. Such play areas made by using the structures, surfaces, and statures and also manipulative materials, for example, cardboard boxes, toys, sand and water in the end urge them to see their advantages or afflictions. Portability and recognition in the scene fortify the youngsters' faculties and create inputs and affordances. Through development, kids see the scene through natural learning (Said, 2005).

Environmental education contains pupils, instructors and groups working all in all and justly towards the determination inquiries, problems, and issues about the nature. The environmental education is interdisciplinary and multidisciplinary. It is about qualities, states of mind, morals, and activities. It is a state of mind and a method for practice. It is a positive contribution to counteract the "doom and gloom" and the helplessness that many feel about the enormity of the environmental and social problems we are facing. The setting for school-based environmental educating and learning is school grounds or, on the other hand urban or environment close to the school. Nature can be the concentration of learning for subjects, for example, science or ecological training. It can likewise be an advantageous place without particular site-related goals.

2.4.1.1. Sustainable learning through Outdoor Spaces

There has also been an historical valuing of the outdoors for children's play and learning. Pestalozzi (1810), Froebel (1830), Montessori (1920), and Dewey (1940) valued that children' learning and improvement were extraordinarily upgraded through direct encounters with nature and regular materials. This supporting conviction that youngsters' contact with nature is essential to give a solid premise to building reasonable connections amongst individuals and nature [Figure 10]. However, current "environmental" approaches in early childhood should move beyond focusing mainly on education in the environment.

Figure 10: Children's contact and their sustainable relationship with nature (URL 2)

The knowledge through education about the environment and significant development of programs include the action orientation. Nevertheless, the already strong foundations of building caring relations between people and between people and nature that are already part of early childhood practice make for movement toward the principles of ecological and social sustainability a challenging but not too difficult task.

Instruction about the environment urges learners to see how normal frameworks function, to value their multifaceted nature and to see how these and human frameworks communicate. While reusing, fertilizing the soil and keeping night crawlers are sound practices from which to construct an advantageous natural instruction program, training about the earth requires comprehension of the biological rule that support these procedures. Kids need to comprehend the ideas related with the water cycle, the oxygen cycle, reusing matter, how plants develop, the impact of cleansers in streams, the significance of clean water for human wellbeing, to give some examples.

Education about the environment includes an all the more unmistakably political measurement that is worried with social evaluate and social activity for change. It is this type of natural training that is viewed as having the capacity to convey "the qualities change important to advance maintainable and socially just way of life decisions" (Working Party to the Queensland Board of Teacher Registration, 1993).

2.4.2 Effective Learning Spaces

Utilized the word space ordinarily in our day by day life; the idea of space is very confounded and makes it hard to characterize. Space is the crude material a draftsman uses to make Places. To a modeler, "Space" is anything that hosts 'design'. Design remains for material that characterizes the cutoff of the space. At the point when design is acquainted with a space, the space gets its very own character. At the point when this character turns out to be so emphatically fortified in the psyches of individuals, the space rises above into a 'Place'. For Heidegger (1967), space presupposes put. He stresses that "place is not located in a pre-given space, after the

manner of physical-technological space." Heidegger did not consider space as something which stays before the general population, instead of in his view, space is neither an outside nor an internal experience. Space is not something fated and settled; honestly, it is the individual territory which portrays the space (Malpas, 2012). Space and place are recognizable words signifying normal encounters. We live in space. Place is security, space is opportunity: we are connected to the one and yearn for the other (Tuan, 1977), [Table 3].

Table 3: Definition, Terms and Differences between Space and Place.

Definitions-Terms	
Space	**Place**
Abstract, infinite and conceptual. Associated with a sense of freedom and infinite extension. Primarily experienced with the mind.	Tangible and finite unit of space. Experienced through body or senses. Tied of feelings of security, in habitation, and "where of being".

Bruno Zevi (1957) considered space as the premise of architecture which design acquires its qualities in view of it. While space is an open and conceptual zone, place is not considered as a subjective and dynamic idea, it rather is an area or a piece of space which gets its specific character through the elements inside it and has a significance and esteem. Place is the base of an immediate association with the world and the human life spot and it implies past the position and birthplace (Zevi, Gendel, & Barry, 1957). The [Figure 11] below illustrates converting space into the place.

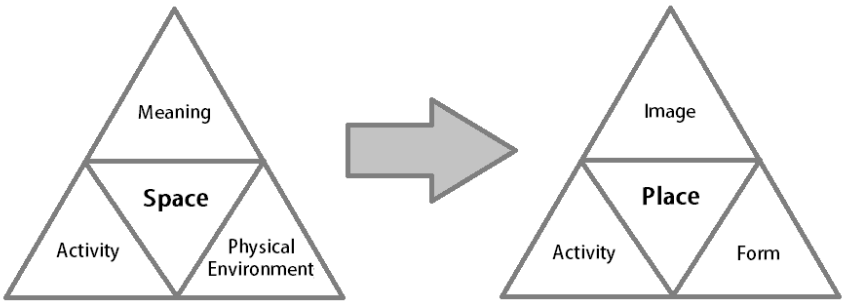

Figure 11: The process of converting space into the place (URL 3)

The most successful learning centers do not just fit in their functions. They create a dialogue with the existing local fabric and precinct character, drawing out and expressing some aspects and contrasting with others (Jamieson, 2003).

Texture, color and materials highlight the contrast between old and new, inside and out, public and private. Site relationships are reinforced by highlighting existing views, sight lines and pedestrian access and maintaining a scale and form that is in keeping with the precinct (Scott, 2010). Another important aspect of kindergarten design is the threshold between the learning center and its surroundings. It means that designers should concern about everything around and even in the spaces that they design for children.

The kindergarten needs space to different activities such as: sleep, eat, work and move. Have multi-purpose spaces are really significant, in both private and public form and some specific spaces for group activities for instants: laboratory, library, art room, and even small kitchens in child scale and etc. “Spaces that are too large and multi-purpose can lead to noise and confusion; however spaces that are too small can create heightened levels of stress and anxiety (Scott, 2010).”

The discipline of architecture is all about how we manage space as well as acoustics, color, light, scale and access to the natural environment, to create environments that are stimulating, protective, comfortable and beautiful. And a sense of great space can be achieved architecturally, with soaring lofty ceilings contrasted against smaller structures, by flooding open voids with natural light and by drawing the eye up, out and beyond, into 'borrowed' space beyond windows or openings.

Current neuroscientific thinking requires that our educational interiors emulate outdoor qualities if they are to be effective areas for learning. So perhaps the ideal is an ever-present sense of not just our immediate surroundings, but also the larger context around us, of the universe above continually contrasted against our small cave.

2.4.3 High Performance School Building

Designing the High Performance School (HPS) is not troublesome, but rather it requires a coordinated, entire building way to deal with the designing framework.

Key frameworks and advancements, the building of HPS, must be considered comprehensively, from the earliest starting point of the planning process, and enhanced their effects through productivity and comfort on the pupils and educators. The outcome will be a completed school that is a persisting advantage for its community; one that improves instructing and learning, decreases working expenses, and ensures the environment (Lyons, 2007).

It is substantial to notice and act to the key factors in designing of high performance school buildings. These key factors identified by SBIC (Sustainable Buildings Industry Council, 2001) as follow:

Environmentally Preferable; Environmentally Responsive Site Planning; Day-lighting; Renewable Energy; Safety and Security ; Thermal Comfort; Visual Comfort; Acoustic Comfort; High Performance Air Conditioning/ Heating/ Ventilating Systems; High Performance Electric Lighting, and Water Efficiency.

Design and acquiring energy and asset productive schools is conceivable right at this time. All that required is the vision, assurance, and information to make superior the standard of execution in school office plan and development [Figure 12]. This Resource and Strategy Guide gives the essential information, and is expected for those with the vision and assurance to give this learning something to do in building new schools.

Figure 12: The High-Performance Kindergarten – Manassas Park Pre-School, North Virginia, Washington, D.C./ USA (URL 4)

As SBIC (Sustainable Buildings Industry Council, 2001) mentioned, a high-performance school building has three key characteristics:

I. It is healthy and productive for students and teachers, in that it provides: Abnormal amounts of acoustic, thermal, and visual comfortable; Large measures of characteristic sunshine; Superior indoor air quality; and a safe and secure condition.

II. It is cost effective to operate and maintain, because its design employ: Energy investigation system that improve energy execution; An existence cycle cost approach that lessens the aggregate expenses of possession; and an authorizing procedure that guarantees the office will work in a way predictable with plan purpose.

III. It is sustainable, because it integrates: Energy preservation and sustainable power source procedures; High execution mechanical and lighting frameworks; naturally responsive site arranging; ecologically best materials and items; and water-proficient outline.

2.4.3.1 Benefits of High Performance School Buildings

A high-performance building supports a school's main goal by delivering at least seven key benefits:

Better student performance; increased teacher satisfaction and retention; reduced operating costs; reduced liability exposure; a positive influence on the environment; and Increased opportunities for using the facility itself as a teaching tool.

The benefits only accrue if high-performance is established as a special design goal from the first step, and if it is fought for, with perseverance and determination, throughout the course of the development process. A focus on student and teacher outcomes, coupled with concern for the environment and a commitment to cost effectiveness, will help ensure that the effort is successful.

a. Better Students Performance

A developing number of studies are affirming the connection between the physical condition of school and students' proficiency. One recent investigation (2015) of school areas in California, Washington, and Colorado emphatically demonstrates a connection between expanded day-lighting and enhanced students' performance (DuFour & Marzano, 2015). The message is so clear, and it affirms what educators, students, and families have known: a superior facility with awesome acoustics, lighting, indoor air quality, and other elite elements, will improved the student outcomes.

b. Increased Teacher Satisfaction and Retention

High-performance classrooms have designed to be effective and pleasant space to study and work. They have to be comfortable visually and thermally, minimize distraction, and provide fresh, clean and well air quality (Olson & Kellum, 2003). Such situations yield substantial outcomes as far as selecting and holding instructors, and in enhancing their general fulfillment with their positions.

c. Reduced Operating Costs

According to using life cycle costing strategies, high-performance school buildings are particularly intended to limit the long haul expenses of proprietorship. They utilize low energy usage and water efficient than standard and normal schools (Olson & Kellum, 2003).

d. Reduced Liability Exposure

In particular the high-performance schools are healthy, because they have emphasized to have premier indoor air quality. High-performance school buildings have minimized potential conflicts and they also provide good classroom acoustics.

e. Positive Impact on the Environment

The high-performance school building is consciously designed to be responsive to natural environment. They are using low energy and low water. They use durable, non-toxic materials that are high in recycled content and are themselves easily recycled. Also they use non-polluting, renewable energy to the greatest extent possible.

f. Using the Facility as a Teaching Tool

A number of the innovations and technologies used to make high-performance schools can likewise be utilized as instructing tools. Sustainable power source such as solar, solar powered electric, and wind; which are perfect for 'hands on' showings of logical standards (Godard, 2004). Moreover, day-lighting system can help pupils to comprehend the every day and yearly rotation of the sun. Although, the most school buildings can be utilized as a showing device, huge numbers of the

innovations and technologies usually found in high-performance school tools are especially reasonable for educational purposes.

2.5 Effective Architectural Features

The perfect condition manages little children and kids visit chances to figure out how to move and to learn by moving and animates a full scope of developments for body control, protest control of self in space: sitting, influencing, creeping, ricocheting, running, climbing, bouncing, getting a handle on, bowing and tossing (Olds, 1987).

While the physical activities are important, especially for toddlers and younger pre-schooled, the general perfect inside any kindergarten condition applies: Facilitating a feeling of physical and mental investigation in clear, understandable way-difficult kids all through kindergarten (Dudek, 2000). Therefore, to achieve these characteristics we have to know the fundamental requirements in kindergarten environments for children. This part describes about the requirements in kindergarten as follows:

2.5.1 The Architectural Identity of the building

At the point when discussing the idea of identity with some place in space, it is considered that sort of recognizable proof speaks to a "calculate the substructure of individual character, which in a bigger setting comprises likewise from the information of physical world in which the individual lives. Such learning comprises of recollections, thoughts, demeanor, values, inclinations, implications and ideas of practices and encounters which allude to the wide complex of physical environment and characterizes, all the live long day, presence of each human being" (Stanković, 2008).

The local architectural identity of any particular society is an important life container which reflects among different its social qualities and implications that develop after some time (Nooraddin, 2012). Engineering character and outline identity can be perceived by different ways. It can be the character of a particular compositional advancement which is for example reflected in its particular strategy for confining structures, spaces and the social life it makes. Design character of a specific neighborhood culture addresses a living scene with sound judgment of place that is made by the get-together's amassed tries after somewhere in the range of a chance to contain recommendations and lifestyle that packaging the national building personality (Vale and Lawrence 1992).In the embodiment of such connection with physical environment is the information of some structural space as the individual's past, experienced in a certain environment and atmosphere (Lawson, 2001). It is noticeable that landscape, greenery in space and even direct connection with nature makes the sense of belongings, and therefore, the building and its environment can support the sense of belonging for their audiences (Peace, Kellaher, & Holland, 2005). The [Figure 13] shows the connection of children with the environment and nature of forest kindergarten in Kimbertone, PA, USA.

Figure 13: Kimberton kindergarten, Forest, Field, and Farm Kindergarten/Kimberton, PA, USA

2.5.2 Indoor - Outdoor Space

Children spent the maximum day-life time in the interior of the kindergarten building. The space which is should design in related with children's anatomy and be suitable for their act. Safety, physical and mental comfort, legibility and sometimes flexibility as team work areas, are the most important aspect of indoor spaces in designing kindergarten.

According to the psychological researches, children mark their surroundings environment such as home and their own room in order to understand the space and create a sense of stability with a variety of symbols (Tuan, 2013).

In this case designers should be aware of designing the indoor spaces for children with various material, texture and color. Making this variety helps children to have better understanding from their surrounding space.

Figure 14: Use of suitable light, color, texture and materials for children, Courtyard Kindergarten, Japan.

Invite of natural daylight to inside the building is not only required for growing children but also help them to raise the educational outcome. The picture above

[Figure 14] is showing the suitable sample of indoor space in kindergarten. Design principles and use of suitable light, color, texture and materials for children distinguishing feature of this sample. This feature have provided with the right relationship between interior and exterior space.

On the other hand, children need the condition that located them, moves them, and gives something to them to see, to consider, to settle on decisions, to draw in their consideration, to participate in their most loved exercises and to give them the chance to meet companions. They also need the freedom to explore and to satisfy their curiosity about the world (Aziz & Said, 2012). The chance to be in the outdoor environment is essential for the advancement of children to develop their cognitive skills, relational mentalities and feelings (Gibson, 1979).

In (1997) Sack has emphasized on link between the nature, culture, and social relations in making of place, and said that some environments are richer in natural elements than others. Kemmis (1990) recommends that group connection depends on courtesies in the social spaces (Wilkinson, 1991). Eisenhauer et al. (2000) states a corresponding relation between place in nature and social-interaction (Stedman, 2003). The distinctions in outside for example, neighborhoods, parks, play areas, school grounds and common habitats can contain rich wellsprings of incitement and affordances for kids. Affordances allude to the useful properties of the conditions offering a youngster to connect effectively with the earth (Heft, 1988; Kytta, 2002, 2004). Assume has the primary part in youngsters' open air conditions. It is the basic segment through which youngsters get comfortable with nature [Figure 15]

(Matthews, 1992). Play gives youngsters sort of flexibility to broaden themselves psychologically, physically and socially (McDevitt & Ormrod, 2002).

In this part, looks toward the playground as the first element in the relationship between children and outdoor environment and the main part of ‘Learning by Playing’ theory in children’s education, having the open educational spaces such as outdoor classes and then using the natural environment and providing access to nature for children.

Figure 15: Children play in and outdoor environment

2.5.2.1 Direct Experiences with Nature

Resonating with the work of early years pioneers such as Rousseau (1750) and Froebel (1820), make interest in the potential of the outdoor environment for supporting children’s learning (DfES, 2006). This interest can be evidenced by the growing number of reports relating to, for example, the Forest Schools approach and the development of school grounds (Maynard & Waters, 2007).

Movement, through play in nature, has been known as a powerful and the most common way of learning for children (Bilton, 2002). Natural environments provide

dynamic and play that challenge motor activity in children. The topography, like slopes and rocks, afford natural obstacles that children have to cope with. The vegetation represents shelters and trees for climbing [Figure 16]. The meadows are for running and tumbling. Description of physical environments usually focuses almost exclusively on forms (Fjørtoft, 2001). Heft (1988) suggested an alternative approach to describe the environment, which focused on function rather than form. The functional approach correlates better to the children's relations into natural environment.

Figure 16: Direct experiens with natural environment improves children learning outcome

2.5.3 Privacy - Publicity

Privacy is a selective control of access to the self (Altman, 1992). Privacy is a central concept that provides a bridge between personal space, territory, and other realms of social behavior (Altman, 1984). Privacy is controlled by the self and to individuals use privacy regulation mechanisms to achieve desired level of privacy.

Privacy regulation mechanisms determine the level of interaction between the individual and the others. These mechanisms are:

- Personal space
- Territory
- Other social behaviors (verbal and nonverbal behaviors)

People try to control their openness and closeness to others; (Openness, Closeness / Available, Unavailable / Accessible, Inaccessible). Privacy mechanisms can be seen as a series of opposing forces. Cultural rules and rituals can also a determinant in the level of desired privacy. As Altman (1984) described privacy regulation mechanisms serve to help me define me. If I can control my limits and boundaries I can construct myself and my identity. The [Figure 17] illustrates the Altman's privacy mechanism.

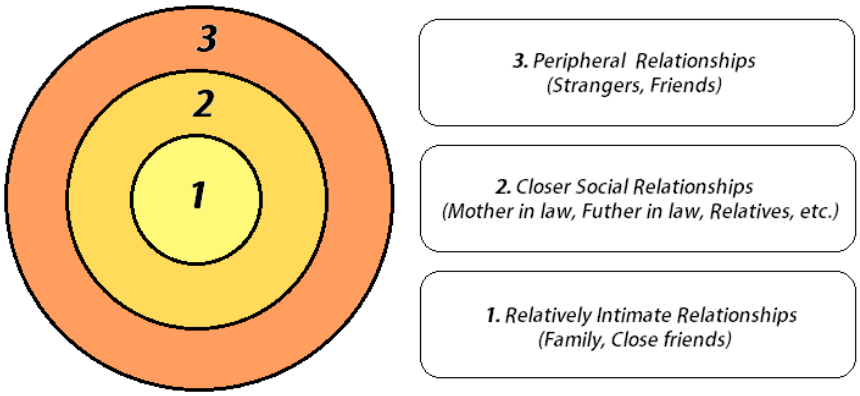

Figure 17: Altman's privacy mechanism.

I. Personal Space

Distance is one of the main determinants of personal space. By moving closer to or farther away from others, we make ourselves physically and socially more accessible or less accessible to them. We actively use distance between ourselves and others in everyday social relationships.

II. Territory

The concept of territory marks the places people possess or control (by person, small groups, larger organizations, or even countries). Territory sometimes involves 'defense' of a place. Territory is described by:

- Scale (small/large)
- Personalization of space (social/physical functions
- Control (individual/groups)
- Defense

III. Other Social Behavior

This section divided into two contrariwise parts which represent the social behavior relationships. These parts provided as follow:

- ***Verbal behaviors***; we let people know our feelings and express our feelings with talking with them. For example: "Let's talk." (A positive action +), "Can I raise an issue with you?" (A positive action +), "Sorry I am too busy now." (A negative action -)

- ***Non-verbal behaviors;*** we show our accessibility with our body expressions or behaviors. For example: to feel welcome or unwelcome somebody in our personal space use of signs such as, keep out, welcome, no disturb etc.

According to psychological aspects in children, it has been found that children prefer to be in a secret place to make the memories; these spaces give them the chance to feel the independence and strengthen the sense of curiosity. Anne Troutman (2011) as a photographer and the literature author considers hidden spaces to find her memories from her childhood. In this case she has been said: "in these long dusky hallways and cabinets with box latches that my memories of losses and loneliness of

childhood resonate". Moreover, she suggested some places such as "hall, stairs, attic and closet" which could make the memorable and comfortable feel without any fear of these places (Alberto & Troutman, 2012). "Corners, eaves, attics and areas under staircases" could be beneficent choices for children, to use them as a secret and hidden space (Miller & Schiltt, 1985, p. 71)".

In [Figure 18], the wooden structure has been made by ladders, tunnels and decks to give children the sense of curiosity and provide spaces to feel privacy. This climbing structure encourages children to have a private atmosphere and increase their sense of space.

Figure 18: Climbing play structure provides private spaces for children – Tsukushi Kindergarten / Yokohama City, Japan (Limited, Publishing, & the Graphic Image Studio Pty Ltd, 2004, p. 35)

The most educators and philosophers have pointed that the kindergarten is the next social step for children after the family. It is obvious that team work is one of the main pillars of early-education. In designing kindergarten, the required space and create a sense of security for a child who associated with their peers should be noted.

This kind of groupie activities have done in both indoor and outdoor spaces; therefore, the relation between outdoor and indoor, flexibility of space to carry out group activities, hygiene in the environment such as bathroom, kitchen and dining salon as the most common interior spaces are significantly important.

Other factors which designers have to be concern about designing public spaces in kindergarten are safety and security, because with the increase in the number of children in each space such as class and playground the exposure of children into risk of accidents increases. Therefore, the designing of public and common area should be chosen which trainers and instructors have full visual and physical control to the children and environment [Figure 19].

Figure 19: Indoor and Outdoor Group Avtivity Spaces – Kashi Nursery School / Yakasami, Japan

2.5.4 Sense of Safety

Rarely, people prefer to lose the comfort to increase the security and safety. For an instant, in designing the waiting hall for the train station, some people always stay in the cold weather next to the railway; it means that they prefer to lose their comfort but they do not want to miss the train (Lawson, 2001). Sometimes, children prefer overcome their comfort with the sense of safety. Soft materials and equipments in

children's environments are not enough to give them comfort; but it should be safe, too. The kindergarten is the first step for children to participate in society without their family and out of their home, so they have to be able to adapt to new environments. The new atmosphere should be inviting, familiar and friendly for children (Dudek, 2000). In another example, the entrance of kindergarten could play the significant role to make the sense of secure place. As Mark Dudek (2000) described, the image of the entrance should be familiar, friendly and inviting in the first glance [Figure 20]. The transparency of entrance allows children to find out the atmosphere of different space that they want to enter and they can access to have a visual view and see their friends. Therefore, instructors could present the sense of safety to children and their parents.

Figure 20: Transparent main entrance to achieve sense of safety for children before entry, double view from outside and inside of building – Hakemiya Nursery School/Japan

2.5.5 Legibility of the Space

The concept of legibility is an integration that combines visibility, connectivity, and layout complexity of buildings which is summarized by influence of different spaces in buildings (Li & Klippel, 2016). One of the most important factors in designing spaces for children that designers should care about is legibility. The space should

contain enough amounts of empty and organized elements which is supporting the eligibility of the space (Weinstein & David, 1987).

This legible factor has key role in lead children and their movements in the kindergarten space, such as: Partitions and visual elements, different objects and forms, various colors and textures for walls and use landmarks on the floor and stairs. [Figure 21] shows different elements in designing of kindergarten lobby such as using of different texture and color on the walls and floor and makes the space more legible for children.

Figure 21: Use of Various Colors and Textures for Walls and Landmarks on the Floor and Stairs to Make Legiblity. Marmoutier Preschool / Alsace, France (Left). Apple Seeds/ New York CITY, USA (Right). (Sarah Scott, Architecture for Children, 2010, p. 135)

2.5.6 Flexibility of the Space

The kindergarten environment must lend itself to manipulation and transformation by adults and children alike, and be open to different ways of use. The kindergarten should be able to change during the day and during the year, to be continuously modeled and redesigned as a result of the experimentation of children and teachers.

Where possible, the design of a school building should take into account both short and long term transformations [Table 4].

Table 4: Transformability in Short and Long terms (Ceppi, Zini, & Branzi, 1998).

<table>
<tr><th colspan="2">Transformability</th></tr>
<tr><th>In short Term</th><th>In Long Term</th></tr>
<tr><td>Partitions</td><td rowspan="2">The potential for physical modification of the spaces; i.e. technical systems (electrical, heating, plumbing) and structures that enable changes over time.</td></tr>
<tr><td>Furnishing elements that can contain other equipment and materials</td></tr>
<tr><td>Movable wall panels</td><td rowspan="2">Expandability, which means the possibility to enlarge the school, adding spaces over time (ateliers, classrooms, other spaces) and to construct the overall project by successive refinements and adjustments.</td></tr>
<tr><td>Screen for shadow play and projection</td></tr>
<tr><td>Furniture that is movable, revolving, or on wheels</td><td>Varied use of the spaces. The choice has been to value the continuity of the group over time. This means that each group of children (divided by age) keeps the same teachers throughout their infant-toddler center or school experience, but change classrooms, each year using the room set up for their age group. In this way, the spaces can have characteristics specifically dedicated to the different ages of the children.</td></tr>
</table>

In [Figure 22] the classroom has a flexible area and designed as an open space platform; therefore, the children could use the playing area to as a sleeping section during the bedtime in the classroom. Moreover, the whiteboard and screen projector is used in the same place, so it is easy to change the position of chairs and tables according to clipboard.

Figure 22: Flexibility of the classroom design helps to change inside playing area to the sleeping section just for 3 years old children

2.6 Discussion on Literature Findings

As reviewed, philosophies of early-education can augment children's learning outcome in kindergartens or day-care centers by Learning by doing, Outdoor learning, Group learning, Suitable furniture and the Form and Concept of kindergarten building.

Moreover, the implication of early-education revealed that Play-based learning, Experiential-based exploration, Child-center experiences and Self expressive learning style are main educational attempts by educators.

The role of school as a learning environment as affecting issue on children's learning is very much dependent to architectural features of the school. Environmental education, Sustainable learning and Effective learning spaces were found as most influential ones under this section.

High Performance Buildings as prevailing attempt in global scale emerges concerns related to impacts of sustainable architecture in environmentally preferable, environmentally responsive site planning, day-lighting, renewable energy, safety and

security, thermal comfort, visual comfort, acoustic comfort, high performance air conditioning/ heating/ ventilating systems, high performance electric lighting, water efficiency to be considered by designers.

Effective architectural features as another affecting factor on children's learning outcome studied. The features to be met by designer, described in six categories such as: Architectural identity, indoor-outdoor spaces, privacy and publicity, sense of safety, the legibility of the space and flexibility in multi-function spaces.

To crate common ground and witness all possibilities of achievement in a holistically manner, Table 5 developed. Key findings of each section presented in Remarks are presented as architectural manner toward achievement of those qualities, needs and expectations found in literature and presented in key findings column.

Table 5: The discusion key findings of litrature review.

Sections	Key findings	Remarks
Philosophies of early education	• Making by Doing • Outdoor Learning • Group Learning • Shared Activities • Movable Furniture • Form of Kindergarten	• Multi-function Space • Creating Stimulating Environments • Indoor/Outdoor Playgrounds • Indoor/Outdoor Classes • Child-scale Furniture
Practical Implication of early education	• Play-based Learning • Experiential-based Exploration • Child-center Experiences • Self-expression	• Multi-function Space • Indoor/Outdoor Playgrounds • Indoor/Outdoor Classes • Connection to the Nature • Creating Stimulating Environments
School as Learning Environment	• Environmental Education • Sustainable Learning • Effective Learning Space	• Outdoor Class • Connection to the Nature • Creating Stimulating Environments
High Performance School Buildings	• Environmentally Preferable • Environmentally Responsive Site Planning • Day-lighting • Safety and Security • Thermal Comfort • Visual Comfort • Acoustic Comfort	• Use vernacular material • Existing Natural Environment • Attention to site Orientation • Transparency/ Indoor, Outdoor relation • Natural Ventilation • Attention to openings • Suitable Texture, Color, Material
Effective Architectural Features	• Architectural Identity • Indoor - Outdoor Spaces • Privacy – Publicity • Sense of Safety • Legibility • Flexibility	• Connection to the Nature • Indoor/Outdoor Playgrounds • Transparency/ Indoor, Outdoor relation • Cozy/Private Space • Suitable Texture, Color, Material • Hierarchy of the space • Multi-function Space

2.7 Summary of the Chapter

Due to the investigation and analyzes from a literature review, Chapter II employs the main the identity of the architecture in children's educational environments, exploration of privacy and publicity in kindergartens, the importance of having or creating a sense of safety in kindergartens, the necessity of having or creating a sense of legibility as one of the main studies in designing and architecture for children's spaces, and providing the flexibility in childhood environments to improve and achieve the children relations in learning spaces.

Chapter 3

PROCEDURE OF EXPLORATION

3.1 Introduction

This chapter describes the general methodological approach that used for this study. The selection of qualitative methodologies was based on the type of data being sought, including selected cases, observed case and voices. The first step of this chapter provides the method and procedure of the study and analyzes strategy employed to collect data in this research. Second, result of findings from selected cases and observed cases presented accompanied by interviews data. At the end of each section a table prepared to indicate key findings and provide better understating of consistencies and inconsistencies between literature findings and real projects and lead to a more holistic and analytical rubrics as recommendations.

3.2 Method and Procedure

To carry the research and achieve the objectives, the sequences of steps targeted. However overlaps and interfaces were considered and treated accordingly. Based on general finding from chapter two (literature review) overseas cases in different countries to be studied selected. The selection of countries and cases took place after several book reviews and most cited articles recently published (Council, S. B. I. 2001, Sara Scot 2010, M. Bickel 2013). After that, an interview with four parents from department of architecture used as initial step before starting studying Cyprus cases. This selection multiplied the benefit of interview duo their special expertise.

Eight cases observed and studied and later based on interview results and analysis only 3 of them went through more intense analysis and survey. All finding of each section from literature to observed cases carried out and developed together to reach more comprehensive perception.

3.2.1 Why Qualitative Research?

The fundamental elements of qualitative research are the right decision of suitable strategies and methods: the recognition and investigation of alternate points of view; the scientists' appearance on their exploration as a major aspect of the procedure of learning creation; and the variety of methodologies and approaches (Flick, 2009). To justify the capability of qualitative research method this study utilized that, why qualitative research is specific relevance to this study?

In the previous decade, qualitative researches have become more typical in regions, for example, about learning hypotheses investigation and educational buildings, and there has been a corresponding in the announcing of qualitative research studies in education and related journals (Harding & Gantley, 1998). Researchers from other disciplines are progressively worried to comprehend qualitative method and, above all, to looks at the researchers make about the discoveries obtained from these techniques (Mays & Pope, 2000).

In qualitative methodology it is possible to find the documents and review them. This study has explored the subject (kindergarten) which usually builds and design. Although, these buildings have their own principles; but it is the unique approach to find out how possible to make and use new method for each case.

For this reason, this research has used observation, interview and photographs analysis as the qualitative method to explore and find new approaches, new solutions and new alternatives not just for compare the case studies, but also to investigate the special factors in kindergarten buildings and their effects on children learning outcomes.

3.2.2 Selected Cases

Sara Scott (2010) and M. Bickel, J. (2013), had study about kindergarten and designing process of childhood centers. In "Architecture for Children" book (2010), Sara Scott has been investigated fifty case studies from ten countries with very different approaches to children's building design. She also selected the direct observation, interview and photographs analysis for her research methodology. As Sara Scott find out in her book, *Japan* and *Denmark* are most avant-garde and pioneer countries between others.

On the other hand, Jeremy M. Bickel has been studied on ten different kindergartens in five countries in his book "Development of the YOUTH". He used the observation methodology for the cases in United States and Italy and in the conclusion of his book described that the *Italy* kindergartens have exclusive features on children adaptation into the learning spaces. He includes that the quality of space and correct organization of place are the main sources on children's learning outcome.

Due to the books and case studies which introduced above, this study chose the Japan, Italy and Denmark as the countries with the most potential kindergartens. Furthermore, this study tries to choose the kindergartens which have more detail and

had better exploration. Afterward, the case studies have been chosen, explored and described again in this chapter.

3.2.3 Observed Cases

According to the research area about the kindergartens, this study tries to find, observe and explore cases in the most populated cities of Northern Cyprus. In this case, eight different kindergartens and nursery schools were observed in Nicosia city as a capital, and the Famagusta city as a second biggest city in Northern Cyprus. The direct interview has been done by instructors of those childhood centers. Three of eight kindergartens were selected, photographs were taken, and the architectural plan was analyzed and provided in 'Chapter Three' as direct observed cases.

The first observed case is Levent Kindergarten which is located in Nicosia and it was founded in 2012. The Levent Kindergarten includes14 classes for about 400 kids between 3 to 5 years old.

The Second case is S.O.S kindergarten in Nicosia the capital city of the Cyprus which is providing childhood services for small touristic village. It was built in 1992 and started to working more than 20 years. Now, this kindergarten has about 80 children and contains four classes for pupils in the age range between 3 and 5 years old.

The last observed case is Green Island Montessori Pre-School in Famagusta. It has old building from 1980's; then in 2005 the building reused from residential house into the kindergarten and it was starting to work in 2007. The Green Island includes 6 classes for about 80 children in 3 to 6 years old.

3.3 Selected Cases

Although the new generation needs, in terms of socially, technologically, culturally and even physically have been changed and due to the literature review in 'Chapter Two' which has presented the educational spaces provide the readiness for education and learning there is a treatment needed. In this case, from the most recent studies and issued books (Council, S. B. I. 2001, Sara Scot 2010, M. Bickel 2013) which investigate exclusive features and key-finding of architecture in educational building for children some cases have been selected globally. To achieve this purpose, the Fuji kindergarten in Tokyo – Japan, Kindergarten Terenten in Southtyrol – Italy and Aarhus Steiner School in Aurhus – Denmark have been studied, analyzed and synthesized.

3.3.1 Fuji kindergarten - Tachikawa – Tokyo – Japan

a. Background Data: The biggest pre-essential offices has designed the kindergarten for more than 600 kids in Japan to giving welcome limit in a city that has a long sitting tight rundown of nursery places. The Fuji Kindergarten appears as a 200m-circuit oval-molded rooftop space. Woods of the Net, 320 cubic meters of timber individuals are utilized and there is nothing same among all the 589 individuals.

Figure 23: Fuji kindergarten – Round Shape of Building (Scott, 2010)

An oval kindergarten that looks like a donut and whose rooftop is a play area where youngsters can run in circles [Figure 23]. The kindergarten building was manufactured in the concept of the idea which, a kindergarten building is an enormous play area for kids' development, a device for encouraging children. That there are even and vertical bearings of stream for kids between the yard and the housetop help kids to construct their quality.

b. The Interior of Building: The school has been intended to permit kids to move around freely. There are no settled dividers between the classes, and children can move freely between classroom bunches. While they have an issue, approach any of the instructors for help, they could join a gathering or play alone, as their state of mind and interest manages [Figure 24].

Figure 24: Fuji kindergarten – Completely open planning inside the building, without any fixed Wall

All furniture can be effortlessly revised to oblige diverse gathering sizes and distinctive activities. In addition seats and desks in child-scale, there are numerous wooden boxes that are utilized to parcel smaller ranges or to give extra seats to seating. These containers are additionally used to collect play things, learning tools

and clothes of children. This gives extraordinary adaptability, and the inside space is every now and again reconfigured during that time [Figure 25].

Figure 25: Fuji kindergarten – Movable furniture all around the kindergarten

The recognizing highlight of Fuji kindergarten is the means by which it permits youngsters to run freely in the building. A review has uncovered that the kids in this kindergarten make numerous a greater number of strides than the kids who are in a kindergarten that fuses soccer in its day by day educational modules. A wide-circled housetop empowers youngsters move much of the time [Figure 26].

Children cherish run around the offices, which have no finishes, yet are circularly steered. This has made a domain that permits kids to play all around the working, with play area gear made of normal trees and a slide that interfaces the rooftop and the yard. At the play area, there are Zelkova trees to climb, an extensive sandbox and different components to play. Youngsters check out the entire kindergarten from the housetop, and afterward choose where to play, which cultivates their capacity to settle on their own decisions.

Figure 26: Fuji kindergarten – A wide-looped rooftop enables children to move frequently

c. The Exterior of Building: Open spaces like the break room and the cafeteria can be utilized for kid raising support, in this manner, empowering association with the neighborhood group. This plan is striking, from numerous points of view fantastic, furthermore playful. It prevails with regards to joining an unmistakable and clear frame while coordinating the included trees to the building [Figure 27]. It is a building where playing and educatiom are shrewdly supported.

Figure 27: Fuji kindergarten – Integrating the Mature Trees into the Building

d. The Great Outdoor: Have been designed to encourage play and children's advancement based on Montessori's standards, Fuji Kindergarten is a rich school. The rooftop top is inclined and in light of the fact that it is inclined, it is an immaculate space for resting and taking a seat. The rooftop beat additionally contains

sky facing windows which can be utilized to go the rooftop best. The oval-form building creates full utilization of the small urban site-plan. The outline expands the space accessible for safety; however unlimited play, with a rooftop balcony circling the whole single-story structure and an extensive encased focal yard. Three develop Zelkova trees consolidated into the building mass, projecting through the rooftop to shape a green overhang that gives suitable shading to part of the rooftop balcony in summer time [Figure 28].

Figure 28: Fuji kindergarten – Zelkova trees combine with building

The housetop balcony is an innovative playing resource. It slanted towards the interior fringe, which at the height of only 2.1m grants instructors at ground level to keep an eye out of children playing up above. Railings have been set at each edge to secure adolescents, and the spaces between the balustrades are sufficient to allow children to sit on the housetop and swing their legs over the shade of the roof.

Sky windows permit kids to gaze down into the rooms beneath. Youngsters can climb in the branches or play on the net which are set around the trees to forestall anyone falling t from to the rooms beneath [Figure 29].

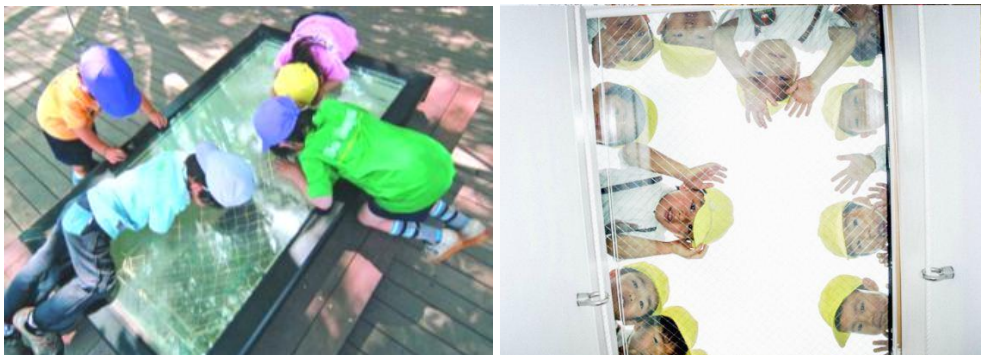

Figure 29: Fuji kindergarten – Skylights make the visual connection between roof top and interior room

The building has an agreeable situation by protecting materials and all around ventilated spaces; it is conceivable to open or close all the sliding doors to the patio and the courtyard, due to the season. Indeed, even in summer, there is a little requirement for aerating and cooling. The rooms just underneath the rooftop have a tendency to get hot in summer; however warm protection secures agreeable spaces. The Children can open and close the sliding entryway effectively and securely, with little effort. The trunks of trees go through the gaps in the kindergarten working, through which wind can pass and at which kids can feel at one with nature [Figure 30].

Figure 30: Fuji kindergarten – It’s possible to open or close all the sliding doors of the courtyard and the building

With regards to the school's instructive character of unlimited discovery and play, and there is no way settled play gear on rooftop or at the yard, except for a slide connecting the rooftop to the ground [Figure 31].

Figure 31: Fuji kindergarten – Use both rooftop and courtyard as a playing place

***e. Synthesis of the Building*:** In general, Fuji Kindergarten in both indoor and outdoor spaces provided the open area to encourage children to run and play. The oval shape is meaning the architectural identity by making social attraction for children inside the donut form.

According to the literature, free play sustains the physical activities and open planning which is selected by this kindergarten helps children to have better understanding refers to the *learning by playing* educational method. The building has made by vernacular material (wood) and furnished by child-scale furniture to render comfortable environment for children physically and mentally.

Fiji kindergarten has just the indoor classes but it tries to learn the sustainability and water efficiency to the children as a factor of high performance school buildings. The legibility has been made by integration the ground floor as a main indoor space. Also

this integration has made the flexibility for indoor space by changes the movable walls' positions. Another effect of using movable partition is inviting the natural ventilation into the building from central yard or patios.

Furthermore, the central yard with glazed facade has the important role to make the sense of safety by providing the visual connection from both indoor and outdoor spaces. As mentioned before, the Fiji kindergarten tries to give children the freedom of action during their play and study in kindergarten environment; so there is no play ground or other playing facility for children. It has just a slide which starts from roof top into the central yard.

According to the position of Fiji kindergarten in an urban area it does not any natural environment but the designers decided to protect the exiting site-plan trees and use the as a building elements. The connection between indoor and outdoor occurs only through the center interaction and because of the central hierarchy of the space.

In continue [Table 6] will describe the key characters, effective architectural features and its achievement methods of Fiji's kindergarten characteristics.

Table 6: Characteristic analysis of Fuji kindergarten - Japan, (Author, 2017)

	Effective Architectural Features	Achievement Methods
Key Characters	Architectural Identity(Achieved by form)	Form: Oval Shape
	Indoor - Outdoor Spaces	Physical, Mental Comfort / Freedom of Action
	Indoor/Outdoor Classes	Only Indoor Class
	Indoor/Outdoor Playgrounds	Outdoor Roof Top Slide
	Legibility	Integration the Indoor Spaces
	Flexibility	Use Convertible Partition
	Multi-function Spaces	Open-plan Classes
	Privacy – Publicity	N.A
	Sense of Safety	Central Yard / Visual Continuity
	Stimulating Environment	Central Yard
	Connection to the Nature	N.A
	Existing Natural Environment	Trees implanted in the building
	Attention to Site Orientation	N.A
	Transparency/ Indoor, Outdoor Relation	Movable Opening / Partition
	Use Vernacular Material	Wood
	Natural Ventilation	Movable Partition
	Suitable Texture, Color, Material	N.A
	Cozy/Private Space	N.A
	Hierarchy of Space	Central Circulation
	Child-Scale Furniture	Only Internally Achieved

3.3.2 Kindergarten Terenten - Southtyrol - Italy (Bickle, 2013)

a. Background Data: Kindergarten Terenten is an interesting project mainly because of how the surrounding topography of the site and the region are so dominate that it had to play a big influence on the design. The designers also used traditional architectural elements of the surrounding context to help tie the design into its existing built environment. The different roof planes have varying angles, which relates well with the surrounding topography of the distant hills that surround the city [Figure 32].

Figure 32: Kindergarten Terenten – Three Houses

b. The Interior of Building: The scale of this project was done in related well with the surrounding buildings and the designers also kept it in child-scale and how the children perceive the size of spaces.

From the ground level, it appears that the center is divided into three different houses that are connected by glazing, which floods the spaces with natural light [Figure 33]. These different building units have been designed in relation to the nearby primary school, while taking into account the perception of the children.

Figure 33: Kindergarten Terenten – Three Houses

The special playing rooms in second floor provide the cozy spaces for children and it increases the sense of stability and belonging to them [Figure 34]. The space includes child-scale windows and makes the private atmosphere.

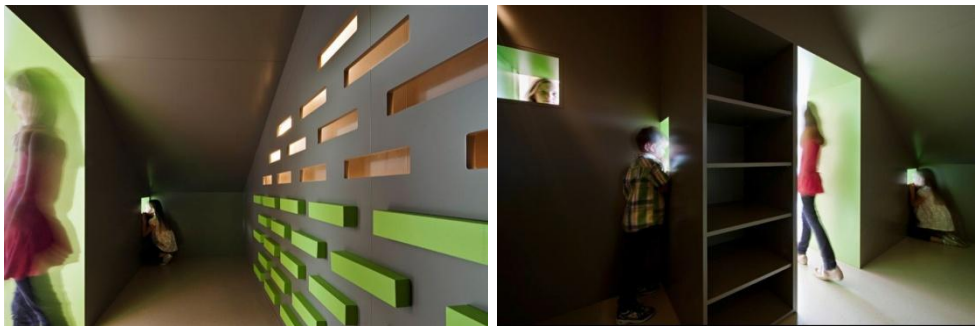

Figure 34: Kindergarten Terenten – Private Playing Rooms

The shaped “houses” help children get their bearings and understand the spatial and social organization of the center. The children feel at home in “their” respective houses. Most of the rooms are flexible; they can be used for stages of different events for the children, as well as used for quiet time or as a resting area [Figure 35].

Figure 35: Kindergarten Terenten – Flexible Interior

There are two levels that are incorporated in the classrooms that are located on the ground floor. Within this space there are connecting bridges, galleries and air space, which offer an array of spatial experiences and lines of sight [Figure 36]. There are multiple views from the windows around the building that help pull the surrounding mountainous scenery deep into the center’s spaces.

Figure 36: Kindergarten Terenten – Two Levels and Interior Connector Bridge

c. The Outdoor of Building: The designers based their material choice on a guiding principle of building something special among an everyday environment. They reinterpreted traditional elements from a contemporary perspective in order to create new aspects. "The building takes up time-honored patterns and combines them with new phenomena of global modernity." (Kindergarten, 2010)

Figure 37: Kindergarten Terenten – Interior and Exterior Spaces Flow Into Each Other

The way the design responds to the sloping terrain has made this daycare center a brilliant hybrid creation. It is clear how there is a cross between the landscape and the built structure, by having the interior and exterior spaces flow into each other made an interesting design [Figure 37].

d. The Great Outdoor: The building integrates with the surrounding landscape by having one side of the building built into the Earth and the opposite side of the building, making more open, yet private exterior spaces and gardens [Figure 38].

Figure 38: Kindergarten Terenten - Southtyrol – Italy

e. Synthesis of the Building: The Kindergarten Terenten completely based respecting to the local architecture, topography and its environment. This responsibility makes the architectural identity refer its vernacular architecture. The building has used child-scale furniture to provide comfortable environment for children's learning and education.

Kindergarten Terenten has just the indoor play room which is used as a multi-function space for daily training and physical practices. The kindergarten has some playing room in second floor which have child-scale windows and decorated by green cubic shapes. This place makes kind of private space for children. The common color and texture all around the interior space are white, green and woody which help children to have better understanding and legibility from indoor space.

The integration of indoor and outdoor space happened by using huge windows on main elevations and the glazed top corridor which has the main role of visual connection between building blocks and even interior and exterior spaces of the building. The glazed atrium helps to the natural ventilation and invites the wind to goes between spaces freely. The house shape and resection to the topography make the harmony between the kindergarten's building and local architecture which is improve the sense of safety for children by providing visual comfort.

According to the location of the Kindergarten Terenten in city neighbor and use natural existing topography the building has suitable orientation and based on linear hierarchy. In continue [Table 7] will describe the key characters, effective architectural features and its achievement methods of the Kindergarten Terenten's characteristics.

Table 7: Characteristic analysis of Kindergarten Terenten - Southtyrol - Italy, (Author, 2017)

	Effective Architectural Features	Achievement Methods
Key Characters	Architectural Identity(Achieved by character)	Traditional Local Form
	Indoor - Outdoor Spaces	Physical, Mental Comfort / Freedom of Action
	Indoor/Outdoor Classes	Only Indoor Classes
	Indoor/Outdoor Playgrounds	Only Indoor Playground
	Legibility	Open Planning
	Flexibility	Convertible Spaces
	Multi-function Spaces	Open-plan Classes
	Privacy – Publicity	House Shape / Landscape
	Sense of Safety	Scale in Relation with Surrounding
	Stimulating Environment	Use of Topography
	Connection to the Nature	Respect to the Topography
	Existing Natural Environment	Hills and Topography
	Attention to Site Orientation	Southern Openings - Atrium
	Transparency/ Indoor, Outdoor Relation	Indoor and Outdoor Flow Each-other / Cross Glass Corridor
	Use Vernacular Material	Traditional Elements for Contemporary Perspective
	Natural Ventilation	Indoor Patio
	Suitable Texture, Color, Material	Parquet Floor, Contrast in Colors
	Cozy/Private Space	Indoor Playing Room
	Hierarchy of Space	Linear - Branched
	Child-Scale Furniture	Internally / Externally Achieved

3.3.3 Aurhus Steiner School - Aurhus – Denmark (Zabezsinszlij, 2013)

a. Background Data: Strandvejen 102, Århus. Classes are spreads from preschool to 12 classes. In addition, the school affiliated with a nursery, kindergarten, after-school, club and special school. The most recent building was designed by Schmidt/ Hammer/ Lassen Architects (2009).

The building was built as a pre-manufactured structure and assembled on site in 5 months. The School includes a variety of building from a variety of times, Villas from the 1850’s, 1950’s, 70’s, 90’s and the most recent one 2009 [Figure 39].

Figure 39: Aarhus Steiner School, External view / Aurhus – Denmark

b. The Interior of Building: The ten new classrooms (2009) are all not quite the same as each other thus complex colors, sizes and shape variety. The grouping of edges gives points of view of the sea, woods and schoolyard through the windows. Within layout of the building is polygonal along these lines the classrooms are pentagonal or hexagonal making spaces without square or sharp inside corners [Figure 40]. Or maybe, the focuses are open and getting a handle on with a particular true objective to give a warm air and a sentiment having a place.

Figure 40: Aarhus Steiner School - The classroom in hexagonal shape to protect children from sharp corners

c. The Exterior of Building: The outside articulation of the building shows up powerfully calculated and secured with dark wood and radiant windows. The open and sharp edges of the exterior confronting the play area oblige social exercises and playing. Along these lines, the exterior makes regular comfortable niches, and the tenderly inclining rooftop and unpleasant wooden pillars strengthen the impression of protection [Figure 41].

Figure 41: The facade makes natural wooden nooks, the delicately slanting roof top and beams amplify the sense of privacy

d. The Great Outdoor: The landscape of the site follows and imitates natural topography [Figure 42] and offers variety of challenges (Zabezsinszlij, 2013). The building surrounded by the local forest and there is no barrier of wall between the school site and natural environment.

Figure 42: Aarhus Steiner School - The Landscape of the Site

***e. Synthesis of the Building*:** In summary, the main characteristic of designing Aurhus Steiner School is providing sense of belongings for the children. The hexagonal forms make a warm place and improve the sense of privacy. Furthermore, having long openings on the elevation surface is looking forward to create better visual comfort from the interior to the exterior of building.

Use of pre-manufactured material such as wood makes the relation between building and the nature and also increases the responsibility of the building to its surroundings; the vernacular architecture makes a common vision for children and improves the sense of safety for them.

The building surrounded by the natural environment (forest) and there is no barrier of a wall or any fences between the school site and natural environment. This potential helps the building to use existing nature and provides the stimulating environment for the pupils in this kindergarten.

In next table [Table 8] the key characters, effective architectural features and its achievement methods of the Kindergarten Terenten's characteristics will describe.

Table 8: Characteristic analysis of Waldorf Stiner School – Denmark, (Author, 2017)

	Effective Architectural Features	Achievements Methods
Key Characters	Architectural Identity	Semi-manufactured building / Local Architecture
	Indoor - Outdoor Spaces	N.A
	Indoor/Outdoor Classes	Only Indoor classes
	Indoor/Outdoor Playgrounds	Only Outdoor Playground
	Legibility	Variety of Interior Color
	Flexibility	Polygonal Classes
	Multi-function Spaces	N.A
	Privacy – Publicity	Nursery, Kindergarten, After-School, Club and Special School
	Sense of Safety	Hexagonal shape to protect children from sharp corners
	Stimulating Environment	Natural Environment
	Connection to the Nature	Access to the Forest
	Existing Natural Environment	Surrounding Forest
	Attention to Site Orientation	N.A
	Transparency/ Indoor, Outdoor Relation	Big Size of Opening
	Use Vernacular Material	Wood
	Natural Ventilation	N.A
	Suitable Texture, Color, Material	Colorful Interior
	Cozy/Private Space	Hexagonal Facade Form
	Hierarchy of Space	Linear
	Child-Scale Furniture	Only Internally Achieved

3.4 Observed Cases

Various kindergartens selected for observation and analyzed according to the architectural elements, equipment and the spaces regard to open areas and the possibility of outdoor learning of these kindergartens all around the North Cyprus; especially in the most populated cities such as Nicosia as a capital, and the Famagusta as a second biggest city in Northern Cyprus.

3.4.1 LEVENT Kindergarten

The Levent Kindergarten is located in Nicosia, the capital city of Cyprus. It was started to work on 2012 and it is completely designed as a professional kindergarten according to the European kindergartens [Figure 43]. The LEVENT Kindergarten has approximately 400 children as pupils between 3 to 5 years old, who has allocated eight classes for each 4, and 5 years old children and six classes for 3 years old children. Plus, about 50 instructors and in total, 120 people were working there as personals.

Figure 43: LEVENT Kindergarten, Nicosia – Cyprus (Direct Observation on 23/02/2016)

As mentioned the Levent Kindergarten has 6 classes for 3 years old children, 8 classes for 4 years old and 8 classes for 5 years old kids. Also, it has 6 public classes in the second level, which designed as an extra cube from basic form for extra-curricular classes such as laboratory and PE room [Figure 44].

The corridors arranged in the linear form and without curving and twisting to achieve ease of navigation and circulation and move up the sense of legibility, which are getting natural light from one side at least and sometimes from both sides.

Figure 44: Extra cubes in second level provide the extra-curricular class space, LEVENT Kindergarten (Direct Observation on 23/02/2016)

Along the corridors, there are some playing facilities hanging on the wall at the available height for children that are increasing the sense of comfort and ownership of the space for children. The spaces under stair cases of the public classes are the suitable place for making the cozy area to improve the sense of comfort in the kindergarten [Figure 45].

Figure 45: Playing equipments and cozy places in corridors, LEVENT Kindergarten (Direct Observation on 23/02/2016)

The classes have located in the area which the most of them get the natural light from the south side and for the public classes from both the north and south together. The classes have designed with the open planning that the children could move and change the position of the furniture and use the space in the class as a multipurpose

class. For an instant, in the 3 years olds class they could use the play area for short time sleeping during the day. Each class has its own walking closet and storage for children and all furniture designed in child-scale [Figure 46].

Figure 46: Open planning class with child-scale furniture improve children's comfort in the space, LEVENT Kindergarten (Direct Observation on 23/02/2016)

In general and due to the site elongation this kindergarten formed as a linear shape which is after enter into the main lobby, it continues in two different arms in the east-west direction. This along contains the 3 years old section from one side and 4 and 5 years section from the other side. The twist of the corridors and the location of the classes have made the special opening areas for both sections as central yards, which are used for the open playgrounds separately [Figure 47].

Figure 47: Central yard, which is using as the open playground, LEVENT Kindergarten (Direct Observation on 23/02/2016)

Despite proper exposure during the day, the open yards have the lack of sufficient space for children and they shaped the linear form of the building. Unfortunately, despite the designers' priority on the indoors, significant difference between the quality of interior spaces and public buildings have been seen against to the outdoor spaces; so that outdoor spaces devoid of vegetation and natural environment [Figure 48].

Figure 48: Lack of the vegetation and greenery in the play-yard, LEVENT Kindergarten (Direct Observation on 23/02/2016)

The central massing of the building has made in two levels, which the first floor contains the entrance and lobby, dinning saloon, amphitheater, public administrative offices, the manager's office and the access to the PE (Physical Exercises) classes.

The second floor designed for the private offices of the instructors, the conference room, administrative service spaces and the main entrance of the amphitheater with the special view into the void, the lobby and circular staircase and the separate access to the second level of PE room. Swing and fractures in plan would increase the sense of curiosity and diversity in the children [Figure 49].

Figure 49: The entrance, main lobby, entrance of the amphitheater and PE room, LEVENT Kindergarten (Direct Observation on 23/02/2016)

Windows in all spaces are in the child-scale and suitable height and according to the usage of them, that has the protection and other safety measures to prevent accident. Thus, just for visual communication (without opening) or by protection behind the windows for improving the safety. The entrance of each class has the small round window beside its door. The location, suitable height, diverse forms and the colorful frame of the window are the wisest choice of the designers for ma king the visual connection and decrease the stress of children by seeing inside the classroom before entry into the classroom [Figure 50].

Figure 50: Small round window beside its door, making the visual connection and decrease the stress of children, LEVENT Kindergarten (Direct Observation on 23/02/2016)

Each class has the private balcony with small croft which are using to teach the children about the vegetation, sustainability and the environmental learning. Each class has its own storage and the connected bath between the two classes; therefore, it has increased the sense of comfort and the sense of safety for children [Figure 51].

Figure 51: Private balcony behind the classes with small croft which use to teach the children about the vegetation, sustainability and the environmental learning, LEVENT Kindergarten (Direct Observation on 23/02/2016)

It should be noted, all photographs in this part about the Levent Kindergarten has taken from direct observation on 23/02/2016; and the related information was collected from the director of the Levent Kindergarten.

• **Synthesis of the Building:** The modern shape and boxes form of Levent kindergarten tries to make it close to the daily architecture and provides the identity of building. Despite the designing divided balcony and separate open area for each class the Levent kindergarten has the noticeable lack of outdoor environment.

In the first view the classes has a complete standard furniture and enough space beside an open area behind each class, but unfortunately even the small craft in open space of classes became incompetent and leaved without any vegetation. Divided

classes and learning areas refer to the children's age range helps them to find better legibility of indoor space. The main entrance and lobby provide the best connection between public spaces such as PE room (Physical Exercise), amphitheater and back yards.

Although, the kindergarten has three different PE room for each age rang but there is no indoor playground inside the building and they provide just the pre-assembled playing facilities at the middle of back yard. As mentioned before the kindergarten denied any greenery and just the mass of building causes to create the small outdoors yards backside the building. In this case, it is noticeable that the building has the linear hierarchy and built along the site-plan.

Furthermore, the central yard with glazed facade has the important role to make the visual connection between indoor and outdoor spaces; but it just happened between corridors and back yards. Making a small but useful spaces under stair cases helps to include cozy place for children along the corridors.

In continue [Table 9] will describe the key characters, effective architectural features and its achievement methods of Levent kindergarten characteristics.

Table 9: Characteristic analysis of Levent kindergarten – Cyprus, (Author, 2017)

	Effective Architectural Features	Achievements Methods
Key Characters	Architectural Identity	Form: Use of Color Boxes / Modern Architecture
	Indoor - Outdoor Spaces	Limited
	Indoor/Outdoor Classes	Open Planning Classes / Separate Balcony
	Indoor/Outdoor Playgrounds	N.A / Outdoor Playground
	Legibility	Divide each Section by Children Ages and Colors
	Flexibility	Open Planning Classes
	Multi-function Spaces	Laboratory / PE Room / Amphitheater
	Privacy – Publicity	Separate Balcony / PE Room
	Sense of Safety	Divide each Educational Section by Children Ages
	Stimulating Environment	Laboratories,
	Connection to the Nature	N.A
	Existing Natural Environment	N.A
	Attention to Site Orientation	Form: Along Site-Plan
	Transparency/ Indoor, Outdoor Relation	Big Size of Opening / Access to Balcony
	Use Vernacular Material	N.A
	Natural Ventilation	Separate Balcony and Opening
	Suitable Texture, Color, Material	Divide each Section by Colors and Coded Names
	Cozy/Private Space	Under Stair-Cases in Corridors
	Hierarchy of Space	Linear
	Child-Scale Furniture	Internally / Externally

3.4.2 S.O.S Kindergarten

The S.O.S kindergarten located in the Nicosia the capital city of the Cyprus in the small village. the manager of the kindergarten emphasized, the kindergarten has built in 1992 and it's past more than two decades when it was starting to work. Now, this kindergarten has about 80 children and contains four classes for pupils in the age range between 3 and 5 years old [Figure 52]. Moreover, it is including one music class and multipurpose space, one educational classroom as a laboratory, the

manager and instructors' offices, a dining saloon and the kitchen to making fresh foods every day, one sleeping room for 3 years old children and the nursery that is not working these days.

Figure 52: S.O.S Kindergarten, Nicosia – Cyprus

The general shaping of the building has been designed coherently with the central circulation. Therefore, the classes located round the central atrium which is used as an indoor playground. The lighting of the central space has been supplied from the huge glassed pyramid ceiling which is movable and it could be open in the hot seasons and invite the natural ventilation inside the building [Figure 53].

Figure 53: Central atrium use as an indoor playground - S.O.S Kindergarten (Direct Observation on 22/02/2016)

As mentioned before, the classes located around the central open space; this case makes the difference between the lighting of classes. Thus, some classes catch the daylight from the south and west and some of them get the justified daylight from the north and east. All classes designed as an open-plan class by using the movable furniture to achieve more space for group activities [Figure 54].

Figure 54: Open plan classroom - S.O.S Kindergarten (Direct Observation on 22/02/2016)

Each two adjacent classes use the joint bathroom, which is including the shower room, toilet and lavatory and access to the open area between the two classes separately [Figure 55]. In the gap of the bathroom until backside of the atrium's wall there is a long walk-in closet as daily storage and has a different access from each class; this space makes the children's comfort and prevents them to carry the unnecessary belongings every day.

The midday sleeping area for 3 years old children has been designed discrete from the classes and in contact with the main atrium.

Figure 55: Shared bathroom between two classes, contains shower, toilet and lavatory - S.O.S Kindergarten (Direct Observation on 22/02/2016)

In this case, one of S.O.S kindergarten staff emphasis that: "The vast majority of learning about identification proof with certain environment proposes that abiding in the environment that children join wonderful emotions to, causes diminished uneasiness and helps them in every day social relations when certain mental stresses ought to be maintained and when a kid needs an assistance in self-safeguarding".

The building mass has been designed as a central consistent volume that surrounded by the open area and the grass yard [Figure 56]. This case supplies the access of classes to the outdoor space equally.

The open playground is located in the northern side and there is a medium size canopy beside that in order to hold up the outdoor classes and the group activities [Figure 57]. In general there is no restriction to use the outdoor space; both in terms of access and in terms of outdoor learning environment.

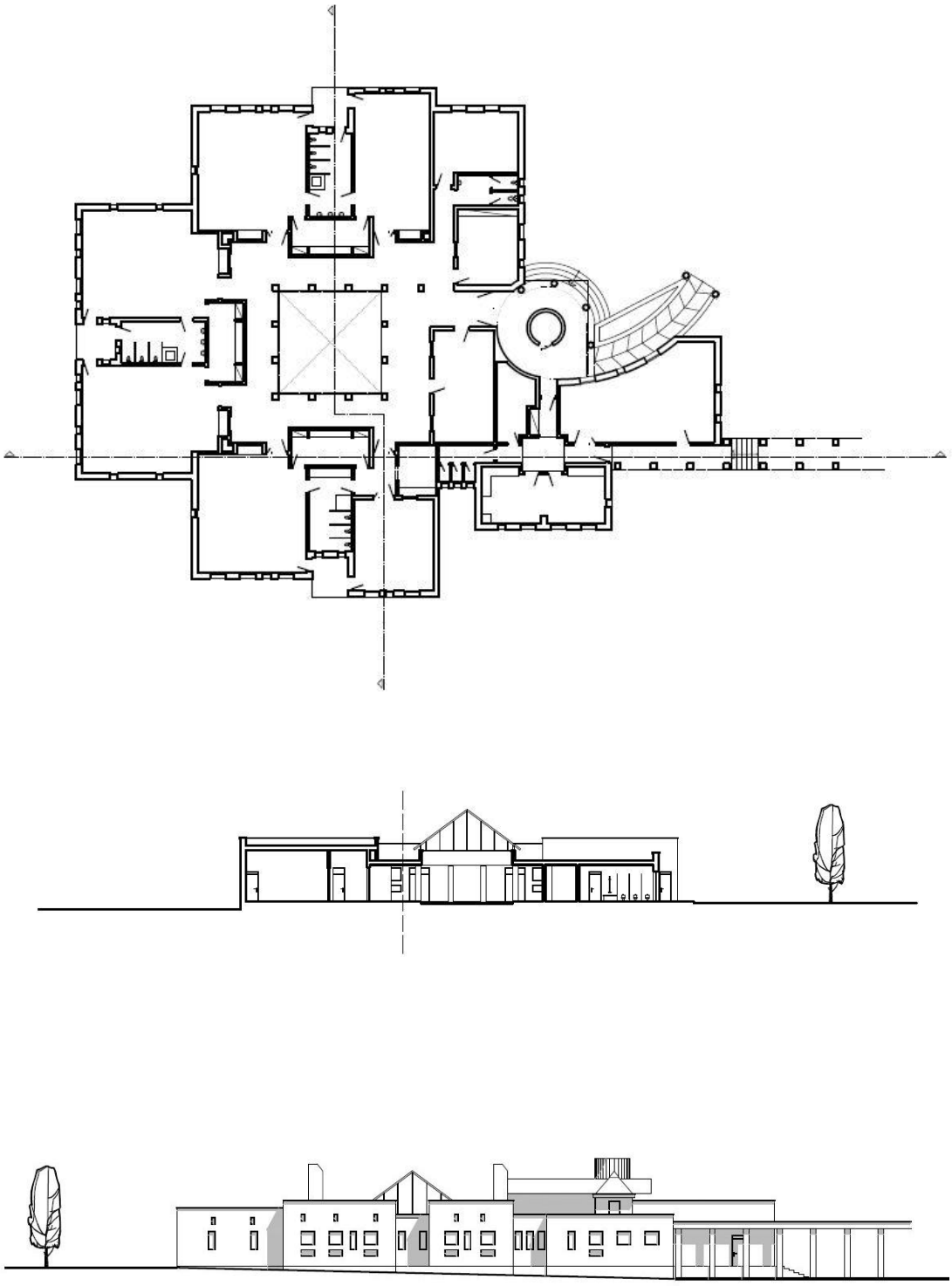

Figure 56: The Architectural Documents of S.O.S Kindergarten. In order from top to bottom: Fround Floor Plan, Longitudinal Section, Southern Elevation (Author-2016).

Figure 57: The open playground is located in the northern side and there is a medium size canopy use as the outdoor classes and the group activities - S.O.S Kindergarten (Direct Observation on 22/02/2016)

The simplification in the building design as a modular concept increases the legibility of the space for children. So that after the main entrance, which is specified by the vertical element they enter into the semi-covered space as an atrium and all classes and also the manager office has been located around it. The dining saloon and the kitchen divided by some filters and corridors, but they connected to the main building from the southeast side [Figure 58].

Figure 58: The simplifying in the building design as a modular concept increases the legibility of the space for children - S.O.S Kindergarten (Direct Observation on 22/02/2016)

The small windows beside the entrance of each class and being the small podium next to the door make the visual connection between the classroom and the atrium; it has the key role in decreasing the child's stress and make the sense of comfort and control against the space for them [Figure 59].

This visual connection is happening between the interior of classes to the outside of the building with the small modular windows all around the building surfaces. These windows are in the proper position against the children's height.

Figure 59: The open playground is located in the northern side and there is a medium size canopy use as the outdoor classes and the group activities - S.O.S Kindergarten (Direct Observation on 22/02/2016)

The modular windows at suitable height for children have not any opening system to provide maximum safety and protect children from the accident. To achieve to the natural ventilation in the class area upper windows in adult height has an opening ability. Each class has an extra door to make physical connection to the shared balcony between two classes which children could use them to go out of the class under control of their instructor [Figure 60].

Figure 60: Modular windows in child-scaled height, upper windows for natural ventilation and extra access to the balcony from classroom - S.O.S Kindergarten (Direct Observation on 22/02/2016)

• **Synthesis of the Building:** The concept of building form designed through the local architecture; although, it has combination of different cube which located around an atrium. In this case, the form of building shaped to create the concept of architectural identity. According to the central semi-open space (the atrium) inside the mass, the building is surrounded by an open area which provides the suitable environment around the kindergarten. Beside the surround yard and access to the small balconies from classes, an open planning of classes make the best characteristic for flexibility. Also the balconies and the pergola in the green yard create the separate privacy and publicity as children learning spaces.

The kindergarten has three playgrounds which have shown the attention of architects to the '*Learning by Playing'* theory for children, the manager of kindergarten said in face to face interview. One of these playgrounds located in the middle of building mass under the central atrium and the others are placed between the greenery of surround yard.

Refer to the central hierarchy of the building, the legibility has achieved in cohesive way. Beside the suitable circulation of indoor space the variety of colors helps this feature as well.

The kindergarten includes child-scale furniture and the large number of child-scale openings all around the building to make the visual comfort from inside to the outside and provide the natural ventilation by this reason. In next table [Table 10] the key characters, effective architectural features and its achievement methods of the Kindergarten Terenten's characteristics will describe.

Table 10: Characteristic analysis of S.O.S kindergarten – Cyprus, (Author, 2017)

	Effective Architectural Features	**Achievements Methods**
Key Characters	Architectural Identity (Achieved by character)	Local Architecture
	Indoor - Outdoor Spaces	Central Atrium / Surrounding Yards
	Indoor/Outdoor Classes	Indoor / Outdoor Pergola
	Indoor/Outdoor Playgrounds	Indoor / Outdoor
	Legibility	Central Hierarchy / Central Atrium
	Flexibility	Open Classes
	Multi-function Spaces	Music Room
	Privacy – Publicity	Separate Balconies / Pergola
	Sense of Safety	Indoor Playground Lack of Visual Continuty
	Stimulating Environment	Surrounding Open Area
	Connection to the Nature	N.A
	Existing Natural Environment	N.A
	Attention to Site Orientation	N.A
	Transparency/ Indoor, Outdoor Relation	Access to Balcony
	Use Vernacular Material	N.A
	Natural Ventilation	Large Number of Openings / Movable Atrium Ceiling
	Suitable Texture, Color, Material	Colorful Interior / Exterior
	Cozy/Private Space	Indoor Podium
	Hierarchy of Space	Central
	Child-Scale Furniture	Internally / Externally

3.4.3 Green Island Montessori Pre-School

Another Kindergarten that has been studied in this research is Green Island Montessori Pre-School which is located in Famagusta as the second biggest city after the capital (Nicosia) in North Cyprus [Figure 61].

Figure 61: Green Island Kindergarten - Famagusta, Cyprus (Direct Observation on 11/01/2016)

The Green Island kindergarten was starting to work on 2007; and now it has 85 children in range of 3 to 6 years old. The main difference between Green Island kindergarten and other case studies that analyzed before is the first function of the building. It means that, the other cases have been designed as a kindergarten at the beginning of their work, but the green Island was a residential house in the urban area and in 2005 reused and converted into the kindergarten [Figure 62]. This converting makes some advantages and disadvantages which have mentioned in following.

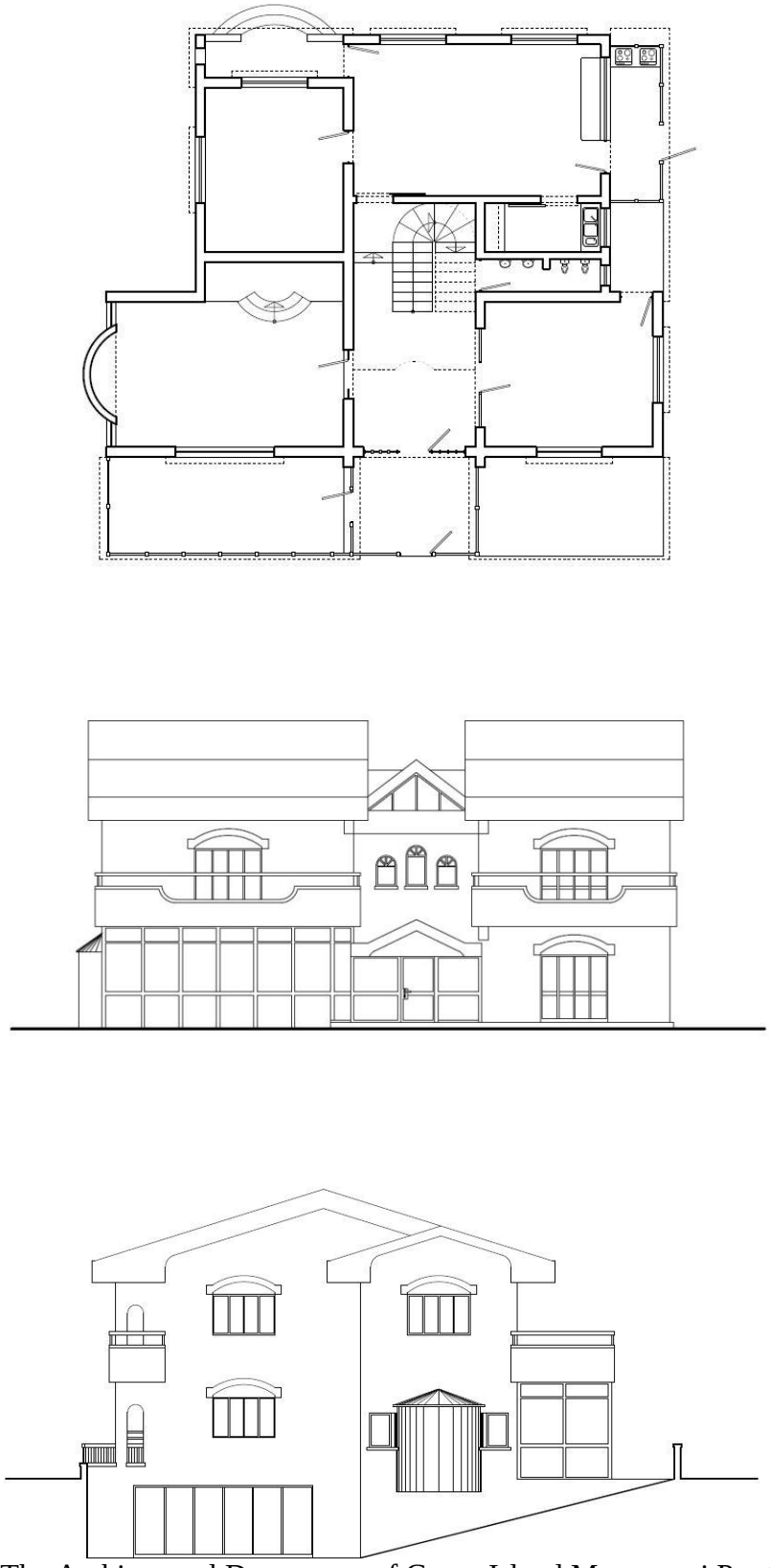

Figure 62: The Architectural Documents of Green Island Montessori Pre-School. In order from top to bottom: Ground Floor Plan, Longitudinal Section, Southern Elevation (Author-2016).

Figure 63: The suitable classroom space and standard furniture for - Green Island Kindergarten (Direct Observation on 11/01/2016)

As mentioned before, this kindergarten reused from a house; so it has not very specific circulation and organization of the spaces. The designers just change the function of each space as a classroom or other spaces which is needed. Now it has 6 classrooms, 3 in ground floor and 3 in the first level of the building [Figure 63]; a ballet saloon that is use as a sleeping area and multipurpose spaces in the basement [Figure 64]; manager office in the entrance area; a kitchen and dining room in ground floor to prepare fresh daily foods [Figure 65]; and two separated toilets in both levels.

Figure 64: The ballet saloon that is use as a sleeping area and multipurpose spaces in the basement - Green Island Kindergarten (Direct Observation on 11/01/2016)

Figure 65: The kitchen and dining room in ground floor to prepare fresh daily foods - Green Island Kindergarten (Direct Observation on 11/01/2016)

Although, the Green Island is located in the urban areas, but it has the great open spaces and court yard against the other cases that studied before. The main yard contains a small garden with fruits trees and vegetation section which is secured by wooden railings [Figure 66], as a sustainable learning and program in children's curriculum. A playground and sand box placed to achieve a connection with nature but obviously it could not be meaningful as a communication with nature. The special advantage that two other case studies have not got is providing a place for training the small pets such as rabbit and chickens.

Figure 66: Fruits trees and vegetation section as a sustainable learning and program in children's curriculum – Green Island Kindergarten (Direct Observation on 11/01/2016)

The director of the Green Island Kindergarten interpreted some benefits of this kindergarten in the face to face interview that has been done on 11/01/2016 as follow: “According to the limitations of the green Island Pre-School about its size and location, it is not expected to have standard assets about children’s needs. However, the Green Island personals try to prepare the best facilities and most of children needs in compact area. For instant, the kindergarten has a canopy as an outdoor classroom to employ the environmental education to their children even in small scale”; [Figure 67]. The kindergarten provides standard child-scaled furniture, high quality toys and equipments, and beside facilities it presents the wide range of educational curriculum and extra-curricular classes to encourage and improve the children skills in the least possible spaces.

Figure 67: The canopy as an outdoor classroom to employ the environmental education to their children – Green Island Kindergarten (Direct Observation on 11/01/2016)

• **Synthesis of the Building:** The Green Island Kindergarten is located in urban environment and converted from the house building into the child-care center. Due to this situation it could not define the architectural identity as children learning building. Unfortunately, because of this reused the indoor spaces has faced to the

lack of quality, standards, cohesive legibility and suitable visual connection between indoor and outdoor spaces. The kindergarten just provides the child-scale furniture, small garden and pergola as an outdoor class to cover the limitations and lack of connection with the nature. Although, three levels of Green Island kindergarten make more problem for children movements inside the buildings and between the levels.

On the other hand the kindergarten used the basement as multi-function space for sleeping time or some after school programs such as ballet class. In continue [Table11] describes the key characters, effective architectural features and its achievement methods of the Kindergarten Terenten's characteristics.

Table 11: Characteristic analysis of Green Island Montessori Pre-School – Cyprus, (Author, 2017)

	Effective Architectural Features	**Achievements Methods**
Key Characters	Architectural Identity	N.A
	Indoor - Outdoor Spaces	Only Small Outdoor
	Privacy – Publicity	N.A
	Sense of Safety	N.A
	Legibility	N.A
	Flexibility	Multi-Function Basement
	Multi-function Spaces	Ballet Salon / Sleeping Area
	Indoor/Outdoor Classes	Indoor / Outdoor Pergola
	Indoor/Outdoor Playgrounds	Outdoor Playground
	Stimulating Environment	N.A
	Connection to the Nature	Training small Pets
	Exiting Natural Environment	N.A
	Attention to Site Orientation	Southern Openings
	Transparency/ Indoor, Outdoor Relation	N.A
	Use Vernacular Material	N.A
	Natural Ventilation	N.A
	Suitable Texture, Color, Material	Colorful Interior
	Cozy/Private Space	N.A
	Hierarchy of Space	N.A: Reused House
	Child-Scale Furniture	Internally / Externally

3.5 Discussion on Findings

After comprehensive studies about the theories and theoretical approaches in educational methods and environments for children and also survey and provide the selected cases and direct observation cases in ‘Chapter Three’, this section will present the findings about the topics which mentioned before in ‘Chapter Two’. At the end to achieve the correct result, the discussion part will compare the consequences of all tables in two comparable tables.

According to the findings of a literature review, this study had synthesized the selected cases and direct observation cases about their benefits and characteristics; then presented the information in [Table12] and [Table 13] to be comparable easily.

As the synthesis between tables has shown, it is noticeable that the concept and form of the educational building for children and its connection to the vernacular or local architecture has direct relation in achievement of architectural identity. It means that the consequence of having architectural identity has notified in acceptance of space and building by children and then making the sense of safety for them.

Use of natural environment and its connection with architecture of educational building for children is another significant parameter. As synthesis has shown, the buildings which have the relation with nature or even respect to the environment are making the stimulating environment for children; also, connection to the nature could increase creating the open learning spaces, outdoor classes and direct experiences to the nature for children and clearly improve the children learning outcome.

According to the syntheses of selected cases and observed cases it has characterized that for achievement to legibility in space just circulation and hierarchy of space are not important, but also the use of suitable color, texture and even form of interior and of course, the relationship between indoor and outdoor spaces are most substantial factors in making the space more legible.

These findings have been shown that all observed cases have main criteria of designing process. The differences between them and selected cases is that the selected cases have the logic of designing, based on generation needs, new findings of technology, teaching methods, learning styles and manner of communication but the observed cases just covered the prerequisites. The observed cases based on standards of spaces and requirements for kindergartens and they did not look forward to the features which can improve the children learning outcome in kindergarten atmosphere.

Due to the final results it seems clearly that, there is a specific gap in lack of outdoor learning, use of natural materials and especially in the new architectural approaches in the most observed kindergartens which have been studied before. Therefore, architects, designers and all those who have responsibility in early education must have enough consideration to solve this problem for next generation and future.

To achieve the best results in the investigation, extra cases selected from the architectural internet source (URL 5) and listed in appendix (A). Also, the finding of the internet selected cases have been studied as tables and provided in the appendices section (B - K).

Table 12: Characteristic analysis of selected cases, (Author, 2017)

		Fiji Kindergarten	Kindergarten Terenten	Aurhus Pre-School
	Effective Architectural Features	**Achievements Methods**		
Key Characters	Architectural Identity(Achieved by form, character)	Form: Oval Shape	Traditional Local Form	Semi-manufactured building / Local Architecture
	Indoor - Outdoor Spaces	Physical, Mental Comfort / Freedom of Action	Physical, Mental Comfort / Freedom of Action	N.A
	Indoor/Outdoor Classes	Only Indoor Class	Only Indoor Classes	Only Indoor classes
	Indoor/Outdoor Playgrounds	Outdoor Roof Top Slide	Only Indoor Playground	Only Outdoor Playground
	Legibility	Integration the Indoor Spaces	Open Planning	Variety of Interior Color
	Flexibility	Use Convertible Partition	Convertible Spaces	Polygonal Classes
	Multi-function Spaces	Open-plan Classes	Open-plan Classes	N.A
	Privacy – Publicity	N.A	House Shape / Landscape	Nursery, Kindergarten, After-School, Club and Special School
	Sense of Safety	Central Yard / Visual Continuity	Scale in Relation with Surrounding	Hexagonal shape to protect children from sharp corners
	Stimulating Environment	Central Yard	Use of Topography	Natural Environment
	Connection to the Nature	N.A	Respect to the Topography	Access to the Forest
	Existing Natural Environment	Trees implanted in the building	Hills and Topography	Surrounding Forest
	Attention to Site Orientation	N.A	Southern Openings - Atrium	N.A
	Transparency/ Indoor, Outdoor Relation	Movable Opening / Partition	Indoor and Outdoor Flow Each-other / Cross Glass Corridor	Big Size of Opening
	Use Vernacular Material	Wood	Traditional Elements for Contemporary Perspective	Wood
	Natural Ventilation	Movable Partition	Indoor Patio	N.A
	Suitable Texture, Color, Material	N.A	Parquet Floor, Contrast in Colors	Colorful Interior
	Cozy/Private Space	N.A	Indoor Playing Room	Hexagonal Facade Form
	Hierarchy of Space	Central Circulation	Linear - Branched	Linear
	Child-Scale Furniture	Only Internally Achieved	Internally / Externally Achieved	Only Internally Achieved

Table 13: Characteristic analysis of direct observed cases, (Author, 2017)

		LEVENT Kindergarten	S.O.S Kindergarten	Green Island Pre-School
	Effective Architectural Features	**Achievements Methods**		
Key Characters	Architectural Identity(Achieved by form, character)	Form: Use of Color Boxes / Modern Architecture	Local Architecture	N.A
	Indoor - Outdoor Spaces	Limited	Central Atrium/ Surrounding Yards	Only Small Outdoor
	Indoor/Outdoor Classes	Open Planning Classes / Separate Balcony	Indoor / Outdoor	N.A
	Indoor/Outdoor Playgrounds	N.A / Outdoor Playground	Indoor / Outdoor	N.A
	Legibility	Divide each Section by Children Ages and Colors	Central Hierarchy / Central Atrium	N.A
	Flexibility	Open Planning Classes	Open Classes	Multi-Function Basement
	Multi-function Spaces	Laboratory / PE Room / Amphitheater	Music Room / Sleeping Room	Ballet Salon / Sleeping Area
	Privacy – Publicity	Separate Balcony / PE Room	Separate Balconies / Pergola	Indoor / Outdoor Pergola
	Sense of Safety	Divide each Educational Section by Children Ages	Indoor Playground Lack of Visual Continuty	Outdoor Playground
	Stimulating Environment	Laboratories,	Surrounding Open Area	N.A
	Connection to the Nature	N.A	N.A	Training small Pets
	Existing Natural Environment	N.A	N.A	N.A
	Attention to Site Orientation	Form: Along Site-Plan	N.A	Southern Openings
	Transparency/ Indoor, Outdoor Relation	Big Size of Opening / Access to Balcony	Access to Balcony	N.A
	Use Vernacular Material	N.A	N.A	N.A
	Natural Ventilation	Separate Balcony and Opening	Large Number of Openings / Movable Atrium Ceiling	N.A
	Suitable Texture, Color, Material	Divide each Section by Colors and Coded Names	Colorful Interior / Exterior	Colorful Interior
	Cozy/Private Space	Under Stair-Cases in Corridors	Indoor Podium	N.A
	Hierarchy of Space	Linear	Central	N.A: Reused House
	Child-Scale Furniture	Internally / Externally	Internally / Externally	Internally / Externally

Chapter 4

RECOMMENDATION AND CONCLUSION

4.1 Recommendation

Early education has the most substantial subject in children's life. Beside the educational methods and attention to the educational curriculum, the architecture should be concern about the changes and children need in new generation. In addition to standard design process and criteria these consideration should be noted:

- Teachers need to comprehend the significance of physical space, materials and quality and assortment in sources.

- The consideration regarding both the indoor and open air spaces at a school could mean greater interest in outside environment in educational buildings and to support more environmental education projects.

- Attention on function rather than form; it means that functional approach makes better relations between children and natural environment.

- Beside the attention on orientation of building, the connection with nature in any context such as urban, forest, hill and topography and etc. should not be missed.

- Use of special forms and inspiration of local architecture to create the architecture identically.

- Usage of color in indoors and out appearance to create unity and touch the psychological expectations. Color should not be used as a demarcation tool in facade.

- Usage of various materials to making the different level in spaces helps the legibility.

- It is possible to use different circulation and hierarchy of spaces, but it is significant to be promising to legibility criteria of space.

- Beside the attention to use daylight, having the suitable opening to achieve natural ventilation and creating the visual continuity between indoor and outdoor is needed.

- Beside designing common spaces and making publicity, need of private and cozy spaces are certainly necessary.

- According to children's needs and to achievement the children's connection with natural environment making suitable open spaces is substantial to use as an outdoor classes.

- Having the multi-function spaces increases the children relation and improves the group activities.

- Kindergarten needs special treatment and consideration, therefore the idea of converting other functional buildings to them would not be helpful to children educational outcomes sense of comfort, safety and the like. Even sometimes it can be destructive.

The parameters which have described in this section beside the standards of designing process could increase the quality of educational spaces for children, but also improve the children learning outcome.

4.2 Conclusion

Education is one of the basic needs of any society and early-education easily reveals its special effect on future generation. Apart from educational methods to be used by teachers in a correct spatial such infrastructure. Although, find its roots in basic theories adapted to the century/generation needs, cultural, social and technological progress. Unfortunately, these adaptations are met barely in under-developing countries.

Architects affect an important role in promoting the quality of learning environment. In this case, designing the spaces such as nursery, kindergarten and school will be very much crucial and heavy burden on architects shoulder. Therefore, having the right attitude to design of learning environment will be significant.

This thesis had explored on what are the gist of old and active theories and now to be adapted and updated on basis of needs, new findings of technology, teaching methods, learning styles and manner of communication. Furthermore, this research wants to identify areas of intersecting points amongst them which can be carried out by designers through design decisions.

This study achieved to increase and make more suitable adaptation and created fertile ground for the upcoming progress of design opportunities of any kindergarten around the region. For instance, the thesis fined that the scattered and decentralized steps happened in parallel way of designing kindergarten and educational theories due to the today needs.

The creative architectural and most logical decisions have been provided by different architects; therefore, the findings of this study are not criteria in designing process but they are the kind of motive force and ideology in a wide domain of architectural designing decision. These are not the secondary or fake tools; hence they will followed by the original roots in whole of designing process. The alignment of development aspects will never be understood, if the educational space fined its scale and location just for transition.

4.3 Future Work

As next step of research, this study can be enriched with more comparative based cases to reach a guideline to be used by architects. Moreover, effect of culture can be taken into account to have more comprehensive findings and conclusion.

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APPENDICES

Appendix A: List of Extra Selected Cases from Internet with their information about designers and locations (URL 4).

No	Title	Designer	Location
1	Farming Kindergarten	Vo Trong Nghia Architects	Dong-Nai, Vietnam.
2	Flower Kindergarten	Jungmin Nam and his studio	Seoul, South Korea
3	Hakemiya Nursery School	Studios Rhythm and Case-Real	Kumamoto, Japan
4	Le Roc Canteen	D'Houndt+Bajart	Tourcoing, France
5	DS Nursery	Studios Hibino Sekkei and Youji no Shiro	Ibaraki, Japan
6	Soichi Yamasaki's Japanese nursery	Soichi Yamasaki	Kashiwa, Japan
7	Swiss kindergarten	Pierre-Alain Dupraz	Crèche, Switzerland
8	Parisian nursery	A+ Samuel Delmas	Asnières sur Seine, France
9	Kleinkindhaus nursery	Mattes Sekiguchi Partner Architekten	Heilbronn, Germany
10	Hakusui Nursery School	Tokyo studio Yamazaki Kentaro	Sakura, Japan

Appendix B: Farming Kindergarten by Vo Trong Nghia Architects - Dong-Nai, Vietnam.

General Information

Architectural Documents

Ground Floor

Cross Section & Elevation

Summary of Characteristics

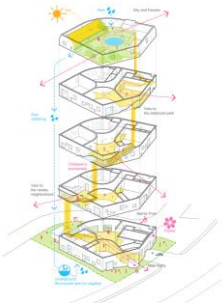
Architecture				Indoor						Outdoor				Sustainable	
Functionality	Identity	Safety	Legibility	Scale	Health	Privacy	Control	Comfort	Flexibility	Learning by Playing	Natural Material	Outdoor Class	Use of Nature	Energy Efficiency	Recycling Program
●	●	●			●	●		●	●	●	●	●	●	●	●

Appendix C: Flower Kindergarten by Jungmin Nam and his studio - Seoul, South Korea.

General Information

Architectural Documents

Ground Floor



Energy Diagram

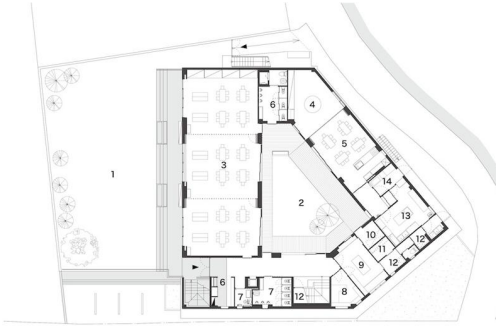
Summary of Characteristics

Architecture				Indoor						Outdoor				Sustainable	
Functionality	Identity	Safety	Legibility	Scale	Health	Privacy	Control	Comfort	Flexibility	Learning by Playing	Natural Material	Outdoor Class	Use of Nature	Energy Efficiency	Recycling Program
●	●	●	●	●	●	●	●	●	●	●			●	●	●

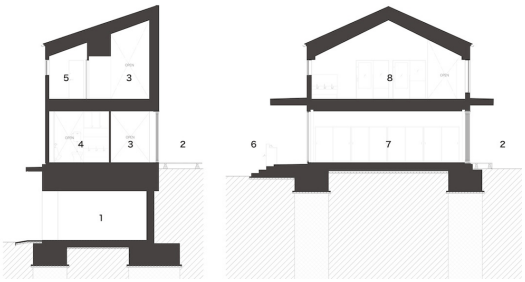
Appendix D: Hakemiya Nursery School by Studios Rhythm and Case-Real - Kumamoto, Japan.

General Information

Architectural Documents



Ground Floor



Cross Sections

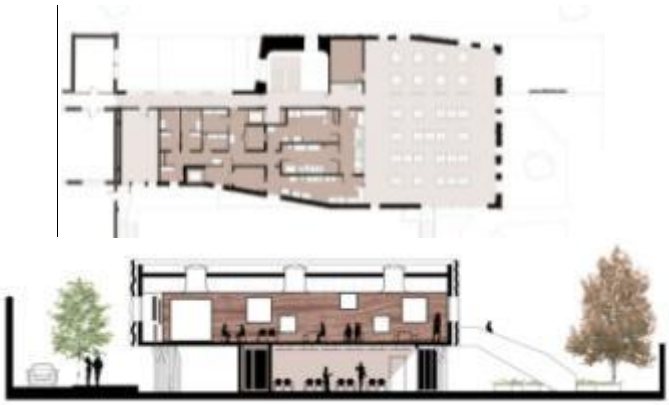
Summary of Characteristics

Architecture				Indoor						Outdoor				Sustainable	
Functionality	Identity	Safety	Legibility	Scale	Health	Privacy	Control	Comfort	Flexibility	Learning by Playing	Natural Material	Outdoor Class	Use of Nature	Energy Efficiency	Recycling Program
●	●	●	●	●	●	●	●	●	●	●		●	●	●	

Appendix E: Le Roc Canteen by D'Houndt+Bajart - Tourcoing, France.

General Information

Architectural Documents



Ground Floor & Cross Section

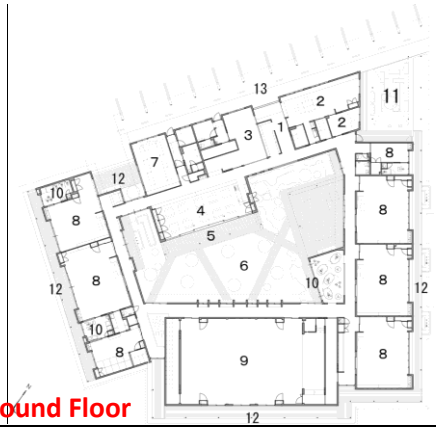
Summary of Characteristics

Architecture				Indoor						Outdoor				Sustainable	
Functionality	Identity	Safety	Legibility	Scale	Health	Privacy	Control	Comfort	Flexibility	Learning by Playing	Natural Material	Outdoor Class	Use of Nature	Energy Efficiency	Recycling Program
●	●	●	●	●	●	●	●		●	●					

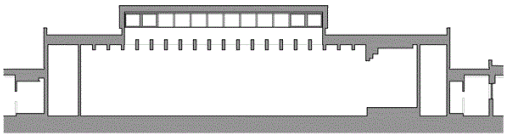
Appendix F: DS Nursery by Studios Hibino Sekkei and Youji no Shiro - Ibaraki, Japan.

General Information

Architectural Documents



Ground Floor



Cross Section from Playing Room

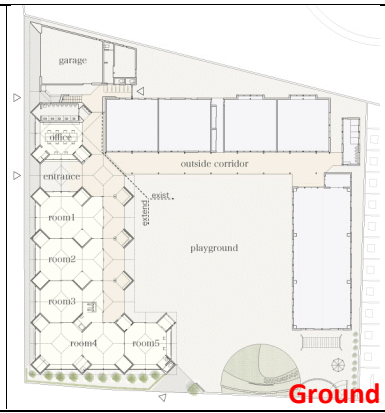
Summary of Characteristics

Architecture				Indoor						Outdoor				Sustainable	
Functionality	Identity	Safety	Legibility	Scale	Health	Privacy	Control	Comfort	Flexibility	Learning by Playing	Natural Material	Outdoor Class	Use of Nature	Energy Efficiency	Recycling Program
●	●	●	●	●	●	●	●	●	●	●	●	●			

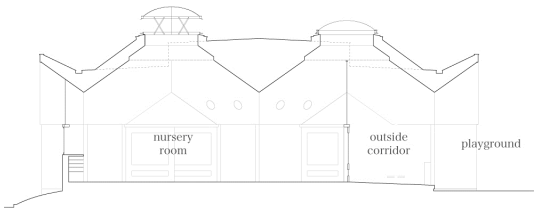
Appendix G: Soichi Yamasaki's Japanese nursery by Soichi Yamasaki - Kashiwa, Japan.

General Information

Architectural Documents



Ground Floor



Cross Section & Ceiling Detail

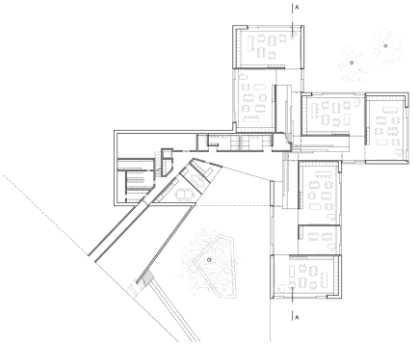
Summary of Characteristics

Architecture				Indoor						Outdoor				Sustainable	
Functionality	Identity	Safety	Legibility	Scale	Health	Privacy	Control	Comfort	Flexibility	Learning by Playing	Natural Material	Outdoor Class	Use of Nature	Energy Efficiency	Recycling Program
●	●	●	●	●	●	●	●	●	●		●			●	

Appendix H: Swiss kindergarten by Pierre-Alain Dupraz - Crèche, Switzerland.

General Information

Architectural Documents



Ground Floor

Site Plan

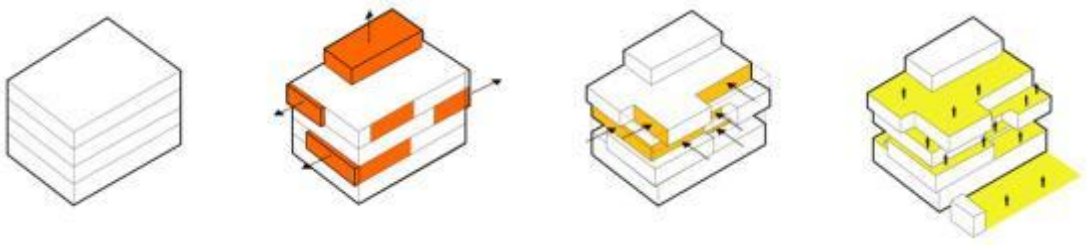
Summary of Characteristics

Architecture				Indoor						Outdoor				Sustainable	
Functionality	Identity	Safety	Legibility	Scale	Health	Privacy	Control	Comfort	Flexibility	Learning by Playing	Natural Material	Outdoor Class	Use of Nature	Energy Efficiency	Recycling Program
●	●	●		●	●	●			●			●			

Appendix I: Parisian nursery by A+ Samuel Delmas - Asnières Sur Seine, Paris, France.

General Information

Architectural Documents



Architectural Ideogram

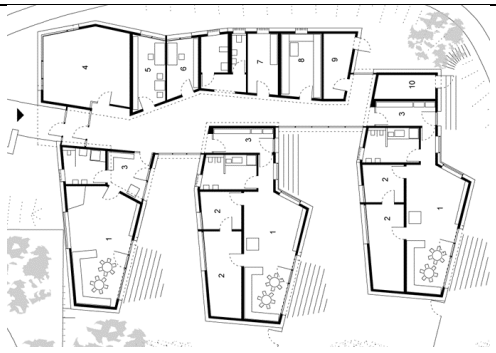
Summary of Characteristics

Architecture				Indoor						Outdoor				Sustainable	
Functionality	Identity	Safety	Legibility	Scale	Health	Privacy	Control	Comfort	Flexibility	Learning by Playing	Natural Material	Outdoor Class	Use of Nature	Energy Efficiency	Recycling Program
●		●	●	●	●	●	●	●	●	●					

Appendix J: Kleinkindhaus nursery by Mattes Sekiguchi Partner Architekten - Heilbronn, Germany.

General Information

Architectural Documents



Ground Floor

Cross Section & Elevation

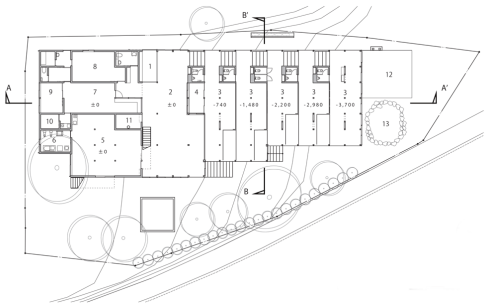
Summary of Characteristics

Architecture				Indoor						Outdoor				Sustainable	
Functionality	Identity	Safety	Legibility	Scale	Health	Privacy	Control	Comfort	Flexibility	Learning by Playing	Natural Material	Outdoor Class	Use of Nature	Energy Efficiency	Recycling Program
●	●	●	●	●	●	●	●	●	●	●	●	●	●		●

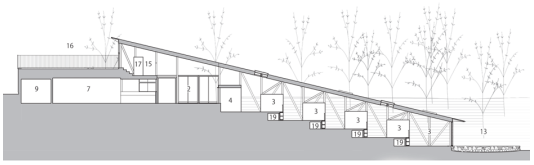
Appendix K: Hakusui Nursery School by Tokyo studio Yamazaki Kentaro - Sakura, Japan.

General Information

Architectural Documents



Ground Floor



Cross Section

Summary of Characteristics

Architecture				Indoor						Outdoor				Sustainable	
Functionality	Identity	Safety	Legibility	Scale	Health	Privacy	Control	Comfort	Flexibility	Learning by Playing	Natural Material	Outdoor Class	Use of Nature	Energy Efficiency	Recycling Program
●	●	●	●	●	●	●	●	●	●	●	●	●	●		●