Investigating Visual Quality of Toddler Recreation Spaces

Ersun Eruz

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Prof. Dr. Ali Hakan Ulusoy
Director

I certify that this thesis satisfies all the requirements as a thesis for the degree of Master of Science in Interior Architecture.

Assoc. Prof. Dr. Zehra Öngül
Chair, Department of Interior Architecture

We certify that we have read this thesis and that in our opinion it is fully adequate in scope and quality as a thesis for the degree of Master of Science in Interior Architecture.

Prof. Dr. Nil Paşaoğluları Şahin
Supervisor

Examining Committee

1. Prof. Dr. Nil Paşaoğluları Şahin _____

2. Assoc. Prof. Dr. Payam Mahasti Shotorbani _____

3. Asst. Prof. Dr. Kamil Güley _____

ABSTRACT

Visual quality of the recreation spaces is important for every individual but particularly for infants, toddler and children since they learn through play. It has been observed that recreation spaces are not designed specifically for a toddler. Several visual element weaknesses have been observed in toddler recreational areas such as improper visual elements, arbitrary choices of form, color, light, material, and texture. This study aimed to investigate the use of visual quality elements as an important factor that plays a vital role on the formation of visual quality of toddler recreation spaces. In this thesis study, a theoretical framework is developed as a result of reviewing literature on the visual quality elements and their role on visual quality formation. 10 case study areas were then selected as a result of a systematic filtering method and framework was implemented in order to investigate use and role of visual quality elements on the formation of visual quality of toddler recreation areas. This qualitative method has evaluated the use and role of five visual quality elements (VQE) that are: form, color, light, material, and texture. Particular use of each element was determined and then their role on the formation of visual quality of toddler recreation spaces was discussed. This thesis study concludes with a list of recommendations for a betterment of toddler recreation spaces indoor visual quality. The findings suggest proper penetration of natural light into recreation spaces rather than over-use of artificial light, use of natural materials and textures besides creating sub spaces with rectilinear forms for different functions in order to improve visual quality of the indoor recreation spaces for this particular user group.

Keywords: Visual quality elements, visual quality, toddlers' recreation centers, toddler recreation indoor spaces.

ÖZ

Bebekler, yeni yürümeye başlayan çocuklar ve çocuklar oyun yoluyla öğrendikleri için oyun mekanlarının görsel kalitesi onların gelişiminde önemli rol oynamaktadır. Bu tür mekanların özellikle yeni yürümeye başlayan çocukların gereksinimleri dikkate alınmadan tasarlandığı gözlemlenmiştir. Bu kullanıcı grubuna ait rekreasyon alanlarının görsel unsurlarında; uygun olmayan görsel öğeler, biçim, renk, ışık, malzeme ve doku seçimi açısından rastgele ve uygun olmayan uygulamalar olduğu saptanmıştır. Bu bağlamda bu çalışma, yeni yürümeye başlayan çocukların rekreasyon alanlarında kullanılan görsel öğelerin mekanın görsel kalitesini nasıl etkilediğini araştırmayı amaçlamaktadır. Araştırma görsel kalite elemanları ve iç mekanın görsel kalite oluşum sürecindeki rollerinin incelendiği literatür taraması sonucunda bir kuramsal analiz çerçevesinin geliştirilmesi ile başlar. Geliştirilen çerçeve ile sistematik filtreleme yöntemi sonucunda belirlenen 10 adet yeni yürümeye başlayan çocuklar için tasarlanmış rekreasyon alanının, iç mekan görsel kalitesinde etkili rol oynayan görsel kalite elemanları saptanmıştır. Belirlenen nitel araştırma yöntemi ile analiz edilen iç mekanların görsel kalitesinin oluşumunda etkili rol oynayan 5 görsel eleman: biçim, renk, ışık, malzeme ve doku'ya ilişkin tespitler yapılmıştır. Her bir elemanın rolüne ilişkin bulgular sonucunda bu tür rekreasyon alanlarının iç mekanlarında görsel kalitenin iyileştirilmesine yönelik öneriler geliştirilmiştir. Bu bağlamda bu tür iç mekanlarda yoğun doğal ışık entegrasyonunun önemi; doğal malzeme kullanımı ve bu tür malzemelerin yüzey kalitesi ile oluşan dokunun mekana olumlu etkisi ve mekandaki çeşitli işlevlerin yalın biçimlerin kullanılması ile mekan içinde yaratılan alt mekanlarla tanımlanmasına ilişkin önerilerin bu grup kullanıcı üzerinde olumlu etkisi olacağı vurgulanmaktadır.

Anahtar Kelimeler: Görsel kalite elemanları, görsel kalite, küçük çocuklar için rekreasyon merkezleri, çocuk rekreasyon iç mekanları.

TO MY BELOVED DAUGHTER

FOR HER UNCONDITIONAL LOVE

This work is dedicated to my daughter "*Mehlika*"
You have made me stronger, better, and more fulfilled than I could have ever imagined. I love you to the moon and back.

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Chapter 1

INTRODUCTION

"Children need the freedom to play
Play is not a luxury
Play is a necessity"
Kay Ren field Jamieson

This research will contribute to the field of study as one of the significant tools which will assist personal development of a toddler by the help of its results on the play environments' enhancement that need to be designed appropriately as it affects both an individual's physical and psychological well-being. Spatial quality, including both spatial organization and physical and visual quality is effective in this regard. The visual quality is thus the atmospheric or aesthetic qualities of the space that is formed by the help of proper organization of the visual elements. The unconscious attachment or use of these elements can cause both physical and psychological discomfort in spaces.

As a result of the first observations in the current context; it is observed that these areas are arranged arbitrarily, regardless of the direct impact of the visual elements on the various users of these areas. There are several users who spend a lot of time in these areas, and the effect of the visual elements on various users may differ depending on the duration of use however it must be noted that its effect on toddlers as a particular user group must be set apart and need to be handled specifically.

Therefore, the necessity of exploring which visual quality elements is effective on the formation of visual quality of these spaces and their relativity with the stated specific user group has been identified as the main driving factor of this research. This introduction includes the background of the study first and then problem statement as well as aim and objectives of the study that are followed with the research questions, limitations of the study, research methodology, thesis structure and the significance of the study.

1.1 Background to the study

Play is very significant for a toddler during the early childhood years. Therefore, both spatial and visual quality of recreation spaces is very important as infants, toddlers and children learn through play. Play allows the child to express himself, realize his talents, use his creative potential, language, mind, social, emotional and body. It is an important opportunity to develop their motor skills (Dinç, 1993).

The child's interaction with space depends on the opportunities that space offers to the child. Many sociologists, psychologists, and environmental designers have shown areas where the child can explore, test, and stimulate his learning abilities and senses to positively influence his/her behaviours. Play affects all areas of development; it provides children with the opportunity to learn about the self, others, and the physical environment (Catron and Allen, 2007).

According to Pallasma's study "The eyes of the skin: Architecture and the senses" in (2012), significance of colour as it improves the children's sense of touch indicated as one of the concerns. Sight is one of the most important senses that connect us to the world. Like all human beings; children are physical and physiological intellectual

beings (Bell, A. 2013). According to Jaglarz (2011), “This sense is particularly significant because it is used to understand spatial connection and detail for most tasks”.

The first years of human life are called critical years by educators and attention is drawn to the importance of this period. During this period, the process of starting to recognize and adapt to the outside world begins and develops with play. Play, which has an important role in the development and education of children in preschool period, is an indispensable occupation of the child. Although the game is perceived in different ways for adults, play is the most serious task for the child. Therefore, it is very important to prepare a suitable and rich play environment in which the child can move freely and safely (Rose, 2006; Aydin, 2009; Ozgur, 2012).

It has been found that places in the present context are not designed appropriately for this age group based on the first observations. A number of shortcomings have been observed in the recreation space in toddler group such as: ergonomics, materials, furniture, color and space components etc.

1.2 Aim & Objective of study

Accordingly, this study aims to investigate which features play a primary role in the formation of spatial and visual quality of toddler recreation spaces and to investigate effectiveness of the determined features on the visual quality of these interior spaces. One of the objectives of the aimed investigation is to assist the recommendation of quality principles in order to achieve better improved spatial and visual quality of recreation spaces of toddlers. This will enable this research to investigate both

strengths and weaknesses, thereby making recommendations to improve weaknesses in terms of visual quality and use of visual elements.

1.3 Research Questions

Accordingly, in line with the above stated aim and objectives of the research this study therefore answers the questions stated below:

Main research question:

"How toddler indoor recreation spaces' visual and spatial quality is formed in order to enhance their development through play?"

Sub-questions are:

- What are the criteria for the betterment of visual quality of toddler indoor recreation spaces?
- Which factors affect the quality of Toddler indoor recreation spaces?

1.4 Limitations of the study

This study is limited to the investigation of the spatial and visual quality of toddler's recreation areas that were determined as a result of a systematic filtration over 'Archdaily website'. Accordingly, 10 cases from 9 different countries were analysed in order to achieve the stated aim and objectives. Toddler recreation spaces which are sub-functions of another main function were excluded from the study.

Role of furniture's' fixtures and accessories were excluded due to the analysis method. Accordingly; it is decided that analysis over photos and drawings will limit the proper investigation of how furniture, fixtures and accessories affects formation of the visual quality and they were excluded.

1.5 Research Methodology

This research employs a Qualitative research method. Literature review and analysis of multiple cases were the main data collection techniques. Literature review provides a background for the determination of the key concepts concerning visual elements and their articulation for the visual quality formation. As a result of the literature review a unique framework is developed as a result of tabulating visual quality elements and their role on the formation of the visual quality. Framework assisted objective analysis of 10 Toddler Recreation Areas in order to investigate the factors effective on the formation of visual quality. Furthermore, there is a comparison and evaluative research based on the qualitative research methodology.

1.6 Thesis Structure

In the 1st Chapter, the background of the study, the aim and objectives of the study, methodology, limitations and importance of the study are given in detail.

Chapter 2 is the literature review about the visual quality of the indoor space. Accordingly, definition of visual quality, significance of indoor spaces', role of visual quality elements on the formation of visual quality at indoor spaces was revealed and ends up with the framework development.

Chapter 3 is the literature review about the Toddler Recreation Space. Therefore, it contains definition and importance of recreation at first and then explores various types of recreation in generic terms and toddler recreation spaces in particular. And in the last part of this chapter; toddler environments and their characteristic features was revealed.

Chapter 4 comprises investigating visual quality of toddler recreation spaces through multiple case studies. Accordingly, it first states the method of case selection and then continues with the description of evaluation / investigation methodology and lastly with stating investigation results and discussion / evaluation of the findings.

Chapter 5 is the conclusion of the thesis.

1.7 Significance of Study

It is believed that this research will provide a bottom-up approach in developing recommendations while shaping / forming the visual quality of such important areas hence play is very significant matter for a toddler during the early childhood years. Therefore, due to the significance of recreation spaces in a child's life, it must be noted that it is very important to develop guiding principles in order to achieve better and appropriate visual quality of recreation spaces for toddlers.

Chapter 2

VISUAL QUALITY OF THE INDOOR SPACE

"First, we shape structures and then the structures shape us"
Churchill

2.1 Introduction

This chapter consists of the review of literature in terms of visual quality in indoor spaces. This part of this thesis is divided into two main sections. The first part focuses on the definition of indoor space's visual quality and the importance/significance of visual quality in indoor spaces; second part states the factors affecting/playing a role in the formation of the visual quality in indoor spaces. Lastly, spatial-visual quality elements and visual components such as form, color, light, and material/texture are stated in-depth. At the end of this chapter, the aim is to develop a framework (as a result of documenting and reviewing the related literature) that could be employed to investigate indoor spaces' visual quality.

2.2 Visual Quality

"The brain responds only to certain selected visual features. No doubt in primitive brains these features were significant, and so were highly selected while unimportant features were ignored" (Richard Gregory, 1980, p.185). Nowadays, the quality of several different public indoor spaces such as cafés, bars, restaurants, hotels, or indoor recreation areas has become a significant concern for their users. Especially with the interior design discipline's effect, designers started to shape these spaces and bring new life into them due to the internal design process. Notably, it has been noticed that recreation areas were designed following the proper articulation of visual quality

elements that is significant for various users. Still, there is a particular concern on the other hand when their users are children. Human beings tend to find and create space for themselves since ancient times. Nature's efforts toward human needs have been either positive or negative. The concept of space stands out as a subject covered in many disciplines, and hence people have created spaces to meet their various needs (Ching & Binggeli, 2017).

One of the most significant architectural ideologists of the current century; Francis Ching (1996, p.92), have stated that:

> "Space constantly embraces our being, moves along the spatial volume, sees shapes and objects, hears sounds, feels the breeze and smells the flowers that bloom in the garden. Space is a material substance such as wood and stone. However, it is shapeless. Its visual form, light quality, dimensions, and scale depend entirely on the total form elements' boundaries. As space is grasped and surrounded, and it is put into a mould and arranged by formal elements, architecture gains existence. Hence, visual quality of the space is embraced as a result of bringing its visual elements into a being through diversified compositions."

2.3 Significance of Indoor Spaces' Visual Quality

According to Ching (2012), the enclosure, furniture, lighting, and accessory elements of the interior spaces generally consist of a mixture of shapes, dimensions, colors, and textures. Therefore, the organization of these elements is a response to functional needs and aesthetic desires. Simultaneously, these elements should be arranged to create a visual balance, and the visual forces reflected by the elements will provide a balance between them accordingly. The positive or negative effects of a space on people determine the quality of that space. Nasar and Augustin (2007) admit that places' perceived visual quality substantially impacts human experiences. They worked to contribute to the general well-being of people and mental consumer behavior besides worker productivity. Accordingly, these studies show that visual quality is positively

related to people. Nasar and Augustin (2007) suggest that many people attach more importance to visual quality and other aspects of their environment, and people escape from a place where the physical appearance is inconsistent with the desired image (cited in Perolini, 2011). Eventually, Alozie (2017) highlights that interior decoration is the dual art of planning and producing the interior of structures on an essential function, comfort, convenience, and aesthetic appeal (cited in Ford et al., 2000).

Butterworth (2000) argues that space, place, and buildings are not just a prop in people's lives. They are both personally and culturally internal. At the same time, he argues that they express culturally personal histories, their mutual relationships with people, and the sense of human values. It matters a place that is not devoid of aesthetically constructed forms, and as defined. At the same time, the aesthetic and visual qualities of a space reinforce that space's experience. Also, to ensure the well-being of the people, a place must give its residents the feeling of belonging and identity, a place for both privacy and social interaction (Butterworth,2000). Art, science, and technology help to improve the quality of a person's life and interior design in practice is a combination that manipulates space, form, color, light and material / texture. In due course, the interior architect who works with the form, lighting, color, material, and accessories, which are the elements of visual quality, plans and arranges the interiors accordingly (Kilmer & Kilmer, 2014). Thus, the professional interior designer becomes competent through education, experience, and examination to improve the function and quality of interior spaces to improve the quality of life, increase productivity, and most importantly, protect the health, safety, and well-being of the population (Kilmer & Kilmer, 2014). The visual quality elements of interior space (color, texture, and material, including all of the quality elements)

included in the interior should also be the result of a design understanding that was made by considering the identity of the space.

2.4 Role of Visual Quality Elements (VEM)1 on the Formation of Visual Quality at Indoor Spaces

Visual quality elements (VQE) are significant features used by the designer during interior design of spaces. These qualities are noticeable and used to describe or express the designers' idea. Visual quality elements consist of form, color, light and material/texture. This section describes visual quality elements in-depth and their various ways of expression during interior design process and hence the formation of the visual quality. Nebraske (1997) states that, various visual quality elements such as material, color, light or texture shape our environment. Accordingly, architectural forms, colors, materials, lighting and textures infuse space into quality (Ching, 2007).

2.4.1 Form

Many elements create different functions; the totality of the space that exists with its user constitutes the concept of space. In this regard, the interior; corresponding to the inner form, are closed volumes that can meet the necessary functions and are limited to masses with architectural formations. The form, the mass and space are put forward in a complementary relationship. In the space design, the interior space (the space) and the shell (outer mass) that reflects it are not opposed to each other yet have a complementary quality. An interior space is both a mass and a part of the outer form. Its user also belongs to that place. Accordingly, to convert the inner space into a living space, the individual/individuals who are the users must be in that space and bring the motion to the space. Depending on the elements' functions, space organization can

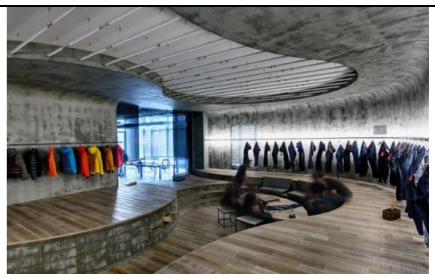
[1] VEM is the abbreviation of Visual Quality Elements and will be used in the entire text in its abbreviated version.

also be effective in human behavior. This created space setup enables the space to be shaped by making the space meaningful and more understandable with the functionality conceptualized by the designer (Turgay, and Altuncu, 2011).

Therefore, the emerging design results from a setup based on space relations, construction, environmental factors, content, and tectonic values before anything else. The selection and application of color, texture and material of all items, including the reinforcement elements in the interior, should result from a holistic design approach made by considering space identity (Turgay, and Altuncu, 2011).

“Forms are three-dimensional shapes that express length, width, and depth. Balls, cylinders, boxes, and pyramids are forms. Space is the emptiness between and around objects. The entire space around all objects is often called the negative space; the negative field has a shape and hence space can also indicate a sense of depth” (Shamsuddin, Islam & Islam, 2013). Furthermore, our perception of the objects' forms in the space depends on the light quality, the ratio and the dimensional relationship between the interior components, and how all the elements that make up the space come together (Aslan, Aslan, & Atik, 2015).

Table 2.1: Curvilinear, Straight and Angular Line in Indoor Space Formation

	Form	**Example**	**Effect**
1	Curvilinear	 (URL 1)	Evoke concepts such as perceptual continuity, comfort and joy and in contrast.
2	Straight and hard Line	 (URL 2)	Provides clearer and simpler spatial effect
3	Angular Shapes	 (URL 3)	Provides a harder effect on the space.

Accordingly, form is a concept that the designer places importance on in terms of the effect he wants to achieve while constructing space components. In interior design, straight lines and angular shapes give a more problematic impact on the space, while curved lines and circular forms give a softer effect to the space [see Table 2.1]. Moreover, it can be stated that curvilinear lines evoke concepts such as perceptual continuity, comfort and joy and in contrast, straight and hard lines create a clearer and simpler spatial effect (Aslan, Aslan, & Atik, 2015), [see Table 2.1].

As Ching (2007) puts it, the designer's task is to combine design elements to create a design suitable for indoor or outdoor use. Forms are born naturally. They surrounded people, and they can withdraw by analyzing nature and society (Ching, 2007). Accordingly, the designer should find them and communicate through them. The result of choosing the most appropriate form advocates the satisfaction of users' perceptions (Ching, 2007). Bacon (1974) argued that in architecture, form is the source of space, length, structure (architectural surfaces, textures, fabrics, light and shadow modulation, color) that build spaces with a specific quality or sense. Bacon emphasized that the architect's ability to integrate all elements of the interior spaces and surroundings should be evaluated.

2.4.2 Color

Colors is the effect of light on the eye, depending on its nature or how it is emitted by different objects (Şekerci, Özgen, & Dündar, 2016). The color is also defined as the visualization of the rays formed by reflecting from the objects. It is the sense that occurs in the person as a result of perception. Light and color are factors that must be evaluated together. When there is no light, objects cannot be visually perceived, so we cannot speak of the existence of color. Also, it is one of the most prominent physical properties of the place where they are used. Colors are directly useful in space perception and definition (Şekerci, Özgen, & Dündar, 2016). Color and its formations have been defined according to many viewpoints. Accordingly, physicists can explain that color is not the property of objects, surfaces, or spaces, but also the emotions brought about by light types perceived by the brain and interpreted according to these perceptions (Ching, 1987).

Furthermore, the relationship between color and other senses has been demonstrated through various studies. It was proved that color effects the sense of smell and taste; and some other researcher's states that it is the determinant of human reactions (Kalia,2013; O'Connor et al., 2009; Vyzula et al., 2008; Vanwagner, 2009; Birren,1988). Coles and House (2007), refers to the use color quality and strength of light sources as natural or artificial, which has a considerable effect on the way we perceive colors.

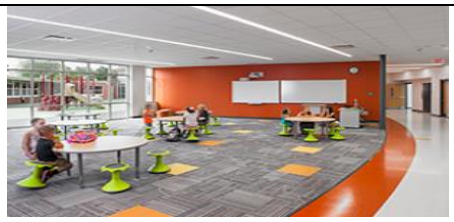
Color is a contentious issue in interior architecture, not least because it is personal to us and is seen in relation not only to our ability to perceive it. There is no easy way of being sure that others see colors in the same way that we do but is heavily weighted by the values and resonance particular to us and current fashion (Coles& House, 2007). Colors are the first things humans come into contact with and, because of that, they cannot be left. This is not just a cosmetic problem but it is a physiological issue and mostly a cognitive need. The designer must consider colors and how to best use them (Haydaroğlu, 2006).

Bayık (2001) stated that the definition of color could be changed from one person to another according to their profession. Accordingly, he defines color as a pigment however, for a physicist it can be a function of radiant energy of light. From the psychologist's point of view, it can be a means of perception, which forms out in mind. Furthermore, according to a person who experiences objects in daily life, color is a property of the substances and light sources.

For instance, according to an architect, despite changing the definition from one to another, color generally means a design concept, which affects the perceptual experiences of the architectural end-product. Architects as designers mostly benefit from the natural tectonics of the materials while creating architectural objects to apply color to the façades. From the architectural point of view, the color is a design concept that is actively involved in the architecture's language for the expression of thought (Bayık, 2001 cited in Guley, 2014). Colors are fundamental elements of the visual perception and environmental experience; they are the substance of how people experience the environment. People encounter and are surrounded by color whenever they open their eyes (Meerweinet al, 2007).

Accordingly, the use of warm colors gives a dynamic effect to the space, while cold colors create a more stable effect in the space. However, the density of different colors and shades in the space creates a sense of diversity [Table 2.2]. When the object's color is detected together with the color of the environment it is in, it becomes effective in terms of size. If the object has a contrasting color from the background, it is perceived as three-dimensional; otherwise, it leaves a two-dimensional effect (Şekerci, Özgen, & Dündar, 2016). Dark colors give heavier and narrower, light colors give a lighter and wider effect. With this aspect, color also affects the shape and proportion in space (Şekerci, Özgen, & Dündar, 2016). Color world refers to human sensation. Designers give codes by using variety of colors. Color differences or ‘intonation’ makes a kind of hierarchy and lead the human brain. The philosophy of color is not making humans happy. However, it exists to help man adapt to his environment (Bierren, 1988 cited by Hayatdawood, 2014).

Table 2.2: Effect of Use of Colors at Indoor Spaces

	Use Color	Example	Effect
1	Use of Warm Colors 	 Use of tints of red, orange and yellow; URL 4	Gives Dynamic Effect
2	Use of Cold Colors 	 Use of tints of blue, orange and grey; URL 5	Creates a more stable effect in the space and to create a calming and relaxing effect.
3	Use of Similar Colors 	 Use of achromatic colors, URL 6	Creating in the space heavier and narrower
4	Use of different colors and shades	 Density of different colors and shades (complementary of tints of orange and blue) URL 7	Creates in the space a sense of diversity
5	Use of object's color is detected together with the color of the environment	 Use of warm analogous color scheme; URL 8	It becomes effective in terms of size.
6	Use of colored object has a contrasting effect from the	 Use of violet and yellow (contrast)URL 9	Perceived as three-dimensional; otherwise, it leaves a two-dimensional

	background.		effect
7	Use of dark color (shades)	 Use of tiny rooms in shades of blue, URL 10	Gives heavier and narrower effect
8	Use Of Light color	 Use of white and wood, URL 11	Give a lighter and wider effect.

> "Color in architecture is quite unlike that in painting; first of all, it is color in three dimensions. It is also subjected to changing sunlight and most importantly; it requires the careful use of materials with necessary consideration to their aging and weathering properties" (Pelli and Vision, p.27 1996).

2.4.3 Light

> "Light is one of the most powerful formgivers available to the designer".
> (Lam and Ripman, 1992)

Light is defined as the physical energy that causes the objects to be seen better and the colors in the spaces to be understood (Demirel, 2013). Without light, objects are not visible and spaces are accented with light. At the same time, light is one of the features of an area that allows and separates the users' experiences (Mania et al., 2005).

Light is the common natural element in every substance whether it's spiritual or material. Light is the basic form of a sense. The more it is lightened, the more it is real (Eco, 1998). Light is an important element for a space to be understandable and to give

meaning to space. It also helps a place to be seen and perceived better. Light significantly adds a changing dimension to the space (Baturlar, 2011).

An architect or artist can add the desired effect to a space and work of art with the help of design elements such as material, light, and color. Light has a great role in gaining meaning and expression in the architectural space (Göker, 2010; Ünal, 2013). Accordingly, lighting, like other elements in space quality setup, has an important place in space setup. Lighting is an important design factor that helps to perceive the three-dimensional space in the space by providing the visual comfort conditions at the best level and that exhibits the features of the design accessories used in the best way. In addition, lighting can also be defined as a design element that adds aesthetic value to the interior as well as functionality (Turgay and Altuncu 2011).

2.4.3.1 Types of Lighting

Lighting in the interior is the system that allows us to see the spaces in their real size and colors. Lighting is classified as natural and artificial lighting. These lightings also allow us to create quite different atmospheres in spaces. Appropriately illuminated spaces create positive emotions in terms of visual quality. If the lighting in a place is insufficient, it decreases the visual quality. It can lead to incompatibilities depending on the architectural features. Accordingly, in order to obtain a quality image in lighting designs, certain aesthetic and architectural rules must be followed (Okutan, 2008). Lighting in interior designs is an important element designed together with other elements applied after the formation of the form and material. Therefore, light is one of the most effective conditions used indoors. It also reveals exactly how important the lighting is, the main elements that make up the space such as forms and material colors are affected by lighting (Göler, 2009).

Table 2.3: Examples of Lighting Types

	Light Types	**Example**	**Example**
1		 Lamp83(Three-dimensional forms) URL 12	 General lighting (Göler, 2009)
2		 Artificial lighting (Göler, 2009)	 Natural lighting (Göler, 2009)
3		 Direct lighting (Göler, 2009)	 Indirect lighting (Göler, 2009)
4			 Regional lighting (Göler, 2009)

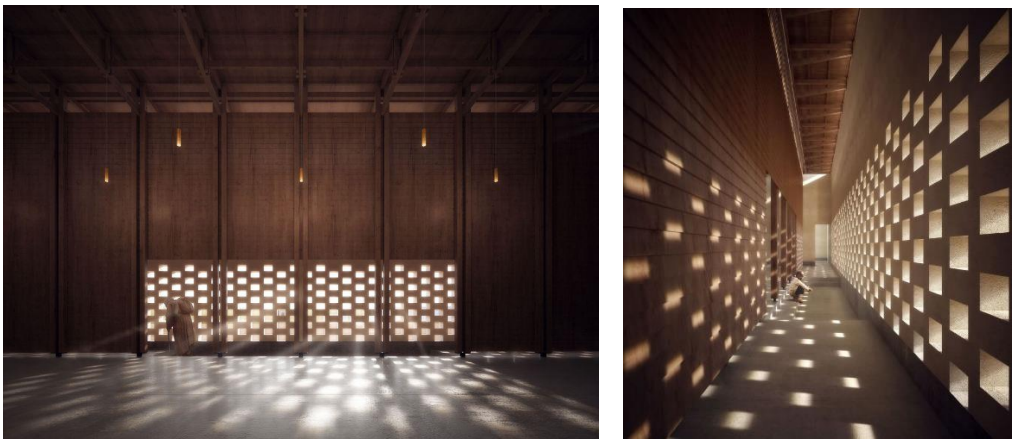


Figure 2.1: Light / shadow effect (Peace Pavilion) URL 13

As seen in [Figure 2.1] especially in interior architecture, with the shadow effect of light, visual effects are formed such as dimensional differences. Therefore, reaching these effects correctly means creating the desired visual effects in the space and reaching a plastic understanding with a visual difference as well as artistic (Göler, 2000). Examples of lighting types in [Table 2.3 and 2.4] have been given and expression changes that could be achieved in three-dimensional forms can be seen.

According to Ching (1987), the most important factor that provides the interior with vitality is light. Without light, no color, form, texture, or existing interior can be seen. Hence, the first purpose of lighting design is; to illuminate and make visible the shapes and spaces inside and within the room, allowing the users of the room to carry out their activities in the space at speed they need and easily (cited in Emel Elcioglu, 2006, p.126).

Adequately designed and well-distributed lighting gives comfort to the eye and provides more efficient production. In particular, lighting is one of the most crucial interior design elements for a comfortable and romantic interaction to create a good atmosphere in spaces. In interior design, lighting types have four different properties that may affect the quality and mood of interior space. These are color, brightness, density, and contrast (Flynn, 1977).

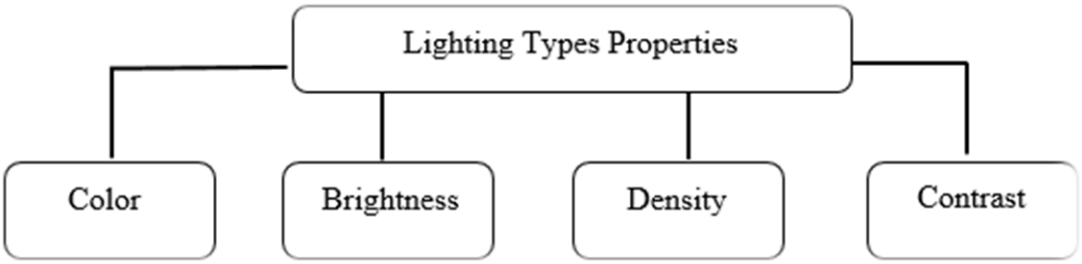
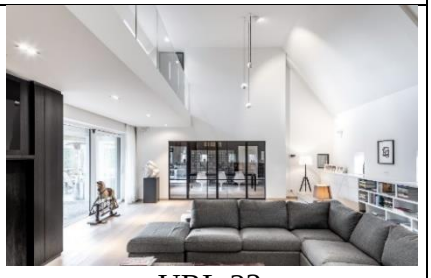


Figure 2.2: Lighting types Properties at interior space (Flynn 1977)

Le Corbusier describes; a pioneer of modern architecture, stated; *"A house is both a container receiving light and heat, and a living machine"* (Corbusier, L.p.151, 2007). With this phrase, Le Corbusier states that the light used would add an emotional experience to modern architecture. Therefore, one could see that both physically and psychologically, the light that exists in nature and it has special effects (Niesewand, 1999). John Pecham (1220-1292) describes this as "*Nothing can be seen without light* " in the work entitled "Perspektiva Communis," in which light and optics are addressed (cited in Altuncu, 2007).

Table 2.4: Types of Light Properties

	Types of Properties	**Example of Artificial Light**	**Example of Day light**
1	Color	 URL 14	 URL 15
2	Brightness	 URL 16	 URL 17
3	Density	 URL 18	 URL 19
4	Contrast Direct/Indirect Light	 URL 20	 URL 21
5	Contrast Dim /Bright Light	 URL 22	 URL 23

Lighting is very important for a healthy life as well as for obtaining high efficiency and living in safety Dobbin et al., 2001). Indoor lighting can use both natural and artificial light solutions. Of course, the sun's light plays a big role in health. Especially, the best choice to create an ecological interior is to use daylight in spaces. However, it is just as important to improve the quality of artificial lighting in times of no sunshine at night and catch daylight indoors (Potter, 1856). There are two kinds of light sources that are mostly used in indoor spaces:

- **Natural lighting by Daylight**

Sunlight and sky light come together and this creates natural light. Changes in the atmosphere cause even this natural light to change. For example, it depends on the conditions of the day, the cloudiness, the condition of the terrain, the seasons, and the time of day. Accordingly, architecturally, the idea of providing space integration should be created (Demirel, 2013).

Natural lighting; depends on different proportions of sun and skylight entering into a space. It often constantly varies depending on the seasons, the temperatures, and the time of day. Its variable and non-monotonous structure is the most important feature which distinguishes daylight from artificial light. While even during the day, the strength of daylight and the colors it shows give an infinite variety; an infinite variety of lighting exists in the interior despite the seasonal variations observed throughout the year. Accordingly, daylight reveals a vibrant and active nature with these elements. This is a feature that fits human nature very well (Kocu, 2009) [Figure2.3].

Figure 2.3: Example of interior space illuminated with proper daylight integration URL 24

The volume is the most practical benefit of natural lighting as exemplified in Figure 2.3. It offers user the most regular and natural way of seeing and perceiving objects, colors and textures. People's desire for light and the discovery of daylight's thermal benefits are essential components that initiate natural lighting creation. Having rooms spacious and safe was an ideal dream for people and an attempt to understand it. In this sense, it makes it possible to take in the light and increase the framework's openings. In this manner, it allows the light to be taken in and the system's gaps to increase (Kocu, 2008) [Figure 2.4]. According to Brogan, the light was used as an integral part of a structure and as a historical implication and an amenity and worshipful environment. The light seen on the chapel in Ronchamp shown in Figure 4 is one of the best examples.

Figure 2.4: Example of Daylight integration into interior space-Ronchamp Chapel (Photo by S. Gill, 2005)

As seen in Figure 2.5 natural light has been used in architectural designs as an aesthetic attribute, one of the components of visual quality and demonstrating the nature of architecture. Light is effective for recognizing and perceiving the form, color, and texture characteristics of spaces with light, and also realizing that spatial quality and architectural expression can be created with natural light (Kocu, 2008).

As it was stated by Louis Kahn (2011) "Using natural light is a kind of invention, artificial light is an inert light; Natural light argues depending on the situation" (Louis Kahn ,2011). Window coverings are beneficial at giving adequate lighting power. For rooms that may lack direct daylight. In rooms with minimal natural lighting, indoor designers consider using sheer curtains and window coverings to regulate light. Additionally, they suggest using mirrors to reflect natural light (Phillips, 2004).

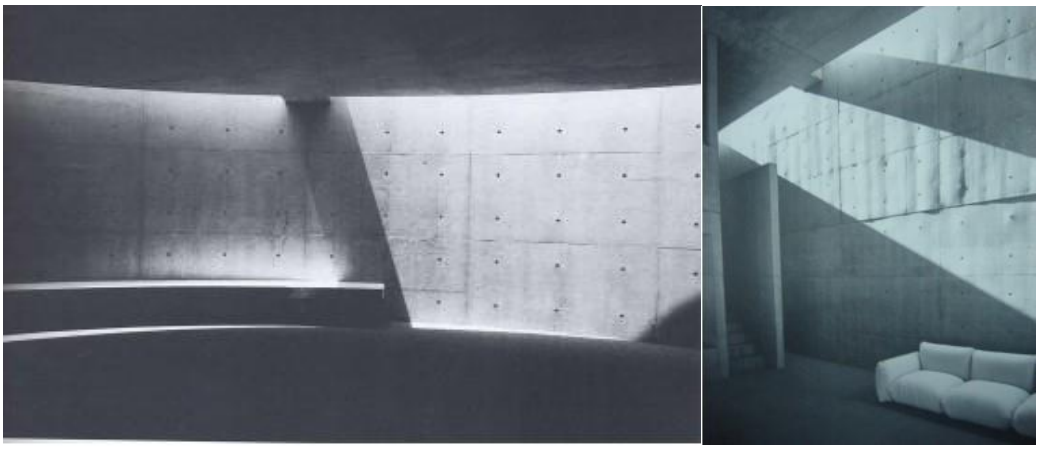


Figure 2.5: Example of Daylight- Koshino house interior view (Tadao Ando) URL 25

As shown in Figure 2.6 below, the light, the bright light source behind the Altar, provided the most important emphasis, while indirect and diffused lighting helped to create a strong focus. Only due to the presence of a direct natural light source, the light and shadow pattern is free from any ambiguity (Gill, 2005).

Lighting is an important design element that allows the perception of three dimensions in space by providing conditions of visual quality and showing the features of the design accessories used. Furthermore, the lighting also contributes to the interior and can also be described as an element of design that adds aesthetic value (Önen and Koç, 2011).

Figure 2.6: Example of Daylight- Interior view of the chapel (Photo by S. Gill, 2005)

- **Artificial Light**

Artificial lighting is a form of lighting created by consuming energy when there is not enough daylight. It has emerged that people need to see and work everywhere, every time of the day. Artificial illumination is, therefore, provided by various artificial lighting sources. It is obtained with the lamp's light to be used at the desired location, the desired order, the desired quality, and selected. Artificial light is also an optional light produced instead of natural light within the structure (Göker, 2002, s.63) [Figure 2.7].

Figure 2.7: Example of Artificial light (Photo by S. Gill, 2005)

Artificial light allows the designer to bring light to specific areas for functional needs or visual aesthetic effects in the space. At the same time, it can create different moods alone or with natural light compliment. Of course, artificial light is a must for a venue to also work at night. Accordingly, each type of light source produces light with different chromatic aberrations, as previously described when looking at color (Coles, J., & House, N. (2007).

2.4.4 Material

- **Definition and the Importance**

Materials are classified as primary building materials for engineers, architects, and interior designers. At the same time, they are used in innovation and offer form, shape, diversity, and distinction to interior space and its various components. Researchers have pointed out that these materials typically translate the physical and psychological form of space and the structure, finishing, and content used by man to convey a comprehensive functional and esthetic framework representing solutions for the interior climate (Pile, 2005).

Kang and Gueri (2009) noted that the designer works through these materials and uses them to achieve functional quality and provide aesthetics for the human senses. Materials are considered one of the most important elements involved in creating a functional and esthetic system for interior spaces within this context. Despite the simplicity expressed in the usage of the word by many practitioners of the field of interior design, a deeper understanding of the concept, as part of the design process, reflects whether or not space has been able to perform its role for some of the materials to become, as stated by Kilmer & Kilmer, an integral part of the structure of the building, while others are used as materials (R. Kilmer and W. O. Kilmer, 1992).

Material is known as the object for which it should be used, or artifacts. Due to the material diversity, all the elements that affect the interior are made of material (Göler, 2009). The key materials used in interior spaces are natural and artificial stone, terracotta, natural and artificial wood, metal, plastic and glass, each of which has various effects due to its presence in space. The use of several materials together in any form of space takes place with the suitability of the place used due to the materials'

properties. The variety and significance of each material's visual effect is determined by the combined use of many materials to be generated in the interior (Göler, 2009).

Characteristics and Source of Materials [Table 2.5]:

- The material can be classified into three categories:
- Natural Materials: that is, substances to stay in their conditions as they are unless the product needs to be changed to use it, such as "stone, wood."
- Conversion of natural materials to transformed materials, including the burned bricks or tiles.
- Artificial Materials: These materials are processed by procedures that do not occur in nature, such as "glass, plastic" (Pile, 2005).

Table 2.5: Characteristics and Source of Materials

Material		
Natural Material	**Converted Material**	**Artificial Material**
		
Wood : Ceiling -Floor Stone : Wall -Fire Place URL 26	Brick: Wall URL 27	Glass: Partitions URL 28
		
Stone : Colocun Cladding URL 29	Bricks Titles: Floor URL 30	Plastic cladding: wall Furniture made of PVC URL 31

According to Dodsworth (2009), the material's look or feel can convey mood and emotion in a particular manner. There could be more than two materials that can be used equally successfully, so you have the chance to work on different options and decide which material will create the best aesthetic impression. The selection of a diverse but harmonious material that expresses its natural features beautifully argues that in some cases it provides richness to the scheme, which eliminates the need for unnecessary decoration (Dodsworth, 2009). Materials contribute to the appearance of a house, and so are part of the building's look [Table 2.6]. This interaction is noticeable in allowing the user to be well aware of the operational meanings and his/her flexibility in the interior spaces. With positive contact with the material elements found in these spaces, varying from furniture, walls, and lighting, which is supposed to shape the overall aesthetic, a framework where materials are organized by integrating their texture, color, and distribution (Soliman,2013).

Many research studies have discussed the general criteria in choosing which materials to consider diving it into three groups:

- The materials’ suitability is measured through the purpose it was built for, its reliability for the intended purpose, its ease of maintenance, its resistance to damage and sabotage, its protection, and its acoustic efficiency.
- Reflected in aesthetic standards related mainly to aesthetic style, color, texture, drawings, and patterns (appearance should complement the intended use).
- With regard to economic parameters, initial and continuing costs on the one hand, and upkeep, cleaning, and repair costs on the other (Pile, 2005).

Table 2.6: Different material but with harmony

	Form	Examples	Effect
1	Diverse but harmonious material	 URL 32  URL 33	That expresses its natural features beautifully argues that in some cases it provides a richness to the scheme, which eliminates the need for unnecessary decoration.

The possibilities for interior spaces' construction include an extraordinarily diverse range of materials, finishes and products. By recognizing how we respond to these things, we can employ that response in interiors' design. The international dimension to these issues in modern interior architecture means that the designer needs an awareness of local and global cultural perceptions and traditions (Coles, J., & House, N. 2007, p:98). As individuals, we are able, both consciously and unconsciously, to appreciate the qualities of space [Table 2.7]. Still, it is the materials, textures, and colors used in that space to which we ultimately relate (Coles, J., & House, N. 2007, p:136).

Table 2.7: Use of diverse materials, finishes and products.

	Form	Example	Effect
2	Diverse of materials, finishes and products.	 Used smooth and hard material URL 34	The materials, textures, and colors used both consciously and unconsciously to appreciate the qualities of the space, but ultimately in the area we relate to, are all in one.

Unique and Challenging-The Helsinki Central Library Project (use of diverse materials, finishes and products. Part of this is a visual relationship, but often this relationship is a product of a sense of recognition: of previous experiences of those materials and finishes, the contexts in which they were encountered and of their tactile, acoustic, and light-modifying qualities.

> "These associations provide the designer with an opportunity to offer visual and tactile cues about the building, its quality, and purpose while simultaneously providing the chance to subvert expectations and to create intrigue and excitement by employing materials and finishes in unexpected ways and in unusual combinations" (Coles, J., & House, N. 2007, p:136).

Table 2.8: Use Tactile material, Acoustic and light-modifying

	Form	Example	Effect
3	Tactile,	 The sculptural timber lobby at Hotel- winner of World Interior of the Year -- in Canberra, Australia was designed by March Studio. More than 5000 wood offcuts are fixed to the walls. URL 35	Visual relationship with environments. sense of recognition: of previous experiences of those materials and finishes,
4	Acoustic and light-modifying	 Acoustic panel with integrated light modifying URL 36	visual and tactile cues about the building, its quality and purpose while simultaneously providing the chance to subvert expectations and to create intrigue and excitement by employing materials and finishes in unexpected ways and in unusual combinations

Documenting the types, use, role, and importance of visual quality elements in interiors as a result of the literature review is summarized in the framework at the end of (see chapter 2) for a framework that can be used as a useful tool during research. Use of material in various ways can create texture on surfaces. Bringing different materials together, repeating the same material on a surface, or different tints/shades of a material on a surface create texture [Table 2.8]. “Material and texture can create or ruin a design” (Gagg, 2012). Therefore, there are various possibilities of using of material and texture during interior design. However, “the proper use of them will

make a place more dramatic and the subtlest of effects. The designs' quality depends on the architect's skill in using the interior space elements and the space outside the house" (Ching, 2007).

2.4.5 Texture

Texture is one of the visual quality elements. Accordingly, in the following section texture as a visual element of interior space is in-depth in line with the main scope. Texture is an effective feature. It significantly plays an effective role on the visual (perceptive) quality of the indoor space, making it an essential element that must be considered in the design. Gagg, (2012) states that: "*Materials and texture that they either inherently possess or that can be applied to them will often define the essential qualities of a space*" (p.8). Well-chosen materials increase the quality of space and make suitable textures (Coles, & House2007). There is a considerable need to achieve visual and sensuous effects of impact in the interior areas by creating patterns and textures on the external surface and finishes developed using numerous natural or artificial materials in eye-captivating designs**.**

2.4.5.1 Definition of Texture

Texture as a term has various meanings; such as its description "…the taste of different foods in the mouth such as creamy, crunchy or meaty defined as texture" (Longman Dictionary of Contemporary English, 2009). Additionally, the texture is determined by Longman Dictionary of Contemporary English as "the way surface or materials feels when you touch it, spatially how smooth or rough it is" (2009, p. 1823). Furthermore, Concise Oxford English dictionary defines texture as tactile surface quality and also expresses that texture is "the character of a textile fabric as determined by its threads", besides, it is also defined as "Art representation of the tactile quality of surface" (2006, p. 1491).

However, even though texture is described as the movements or noises on the surfaces, there is a common description made by Dodsworth (2009) as "the feeling when touching or seeing surfaces is their texture, as it was stated" (p.116). "Texture can be found in different manners; it can be found through the roughness of a piece of chenille fabric or the natural unfinished timber. It could also be through the luster or brushed steel or the combination of reflectivity and transparency chaptered by a wall of glass" (Dodsworth, 2009, p.116). [see Figure 2.8]. "The texture by itself is not enough since the variety of texture is more significant in stimulating interest in a scheme" (Dodsworth, 2009, p.116).

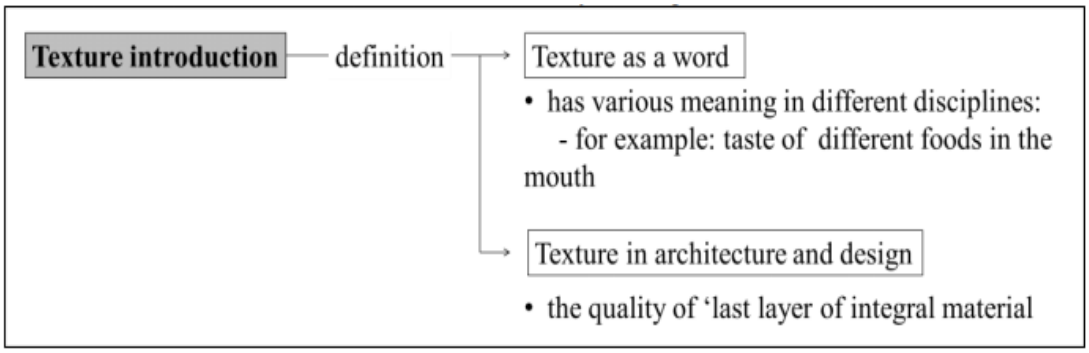


Figure 2.8: Texture introductory through its definition (Maurya, 2008)

Especially in interiors, smooth textures indicate that space is colder. The rough textures give the feeling of being in a warm environment where many people feel more comfortable [see Figure 2.9 and 2.10]. The existing floors, shaggy carpets, and rough curtains make the room look colder than it is in many styles of stone and brick textures (Bervin, 1984; Yazıcıoğlu & Meral, 2011).

Figure 2.9: Texture effect on the floor and walls with the use of different colors, forms and repetitions (URL 37)

Figure 2.10: Texture 3-D effect on the floor and walls (URL 38)

Texture can do a lot; it is everywhere and on everything; each object has its texture no matter smooth or rough. It can be “soft or solid, smooth or coarse, lose or dense, light or heavy (Oei & Dekegel, 2002, p. 25) [see Figure 2.11]. Texture is an intrinsic property of each and everything” (Oei & Dekegel, 2002, p. 25). “The Metapolise Dictionary of Advance Architecture (2003, p.622) introduces texture as the quality of ‘last layer of integral material’” (cited in Kamalzadeh, 2014).

Figure 2.11: Tissue effect caused by unit repetition URL 39

Natural or Artificial: Texture could exist both in nature or can be man-made. Nature inhabits various range of texture, it exists worldwide and everywhere, such as on various plants, flowers, on the soil, up into the sky, on various sea creatures or animates, living things such as butterflies and all-nature related things around the globe have their unique texture [see Figure 2.12]. On the other hand, there is also the man-made texture made by use of different equipment for molding materials in different ways (Maurya, 2014).

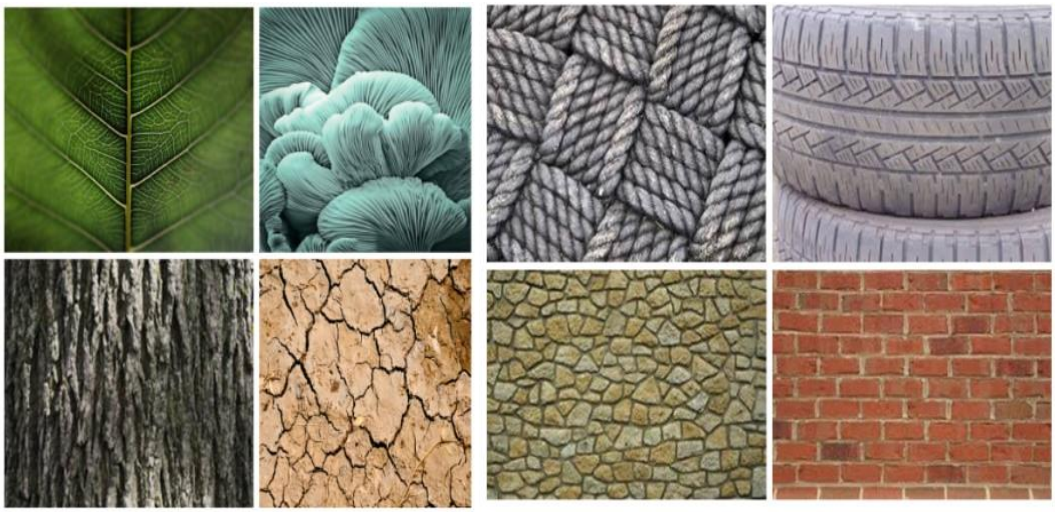


Figure 2.12: Natural and Artificial textures URL 40

Smooth or rough*:* The Surfaces' shape or forms are called texture. All shapes have surface and all surfaces have their own certain character; it may be 'smooth or rough, plane or decorated, matt or glossy, soft or hard' (Maurya, 2014) [see Figure 2.13 and 2.14].

Figure 2.13: Smooth and Rough textures URL 41

Figure 2.14: Smooth and Rough textures URL 42

2.2.3 Visual and Tactile: Visual texture strictly refers to two-dimensional surface qualities, and it can be seen just by eyes. Tactile texture emerges above the surface of a two- dimensional design and approaches a three- dimensional relief". Whenever a surface is touched, tactile texture has existed there (Maurya, 2014) [see Figure 2.15 and 2.16].

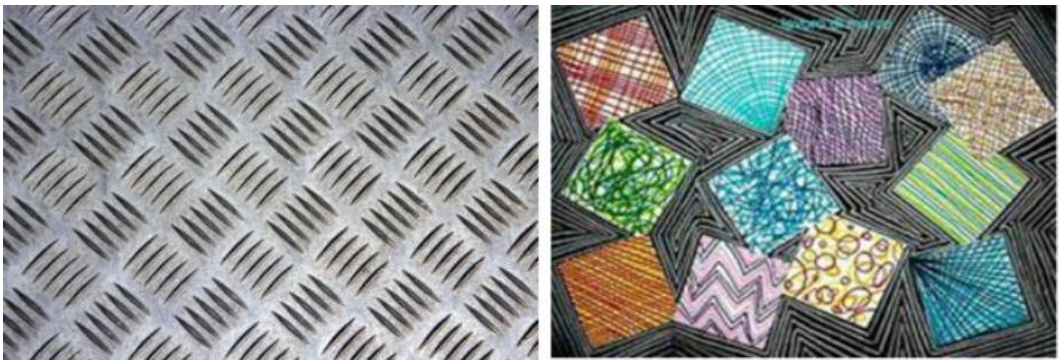


Figure 2.15: Visual and Tactile textures URL 43

Figure 2.16: Visual and Tactile textures URL 44

Nebraske (1997) argues that there are two types of texture; The first is by direct touch, and the second is by sight. As Nebraske (1997) said, tactile textures, especially the visual ones, could consider as texture impressions since the tactile texture and visual texture are usually referred to them as patterns" [see Figure 2.17 and 2.18].

Figure 2.17: Visual texture URL 45

Figure 2.18: Tactile Texture(real) URL 46

According to Coates (2011), there is a feeling that the texture evokes in each object: rough, smooth, soft, or hard. At the same time, texture can be used to define a space 's character and characteristics. The texture of a space can be manipulated by the materials or objects used, specific cultural references or references to certain ideas (p. 70). Figure 2.12 provides examples of the natural texture (Coates, 2011).

Table 2.9: Textures on everywhere and on everything.

	Texture	Example	Example
1	Smooth or Rough	 Smooth Texture on walls URL 47	 Rough Texture Floor URL 48
2	Soft or Solid	 Soft Texture on walls URL 49	 Solid Texture Panel URL 50
3	Smooth or Coarse	 Smooth Texture on wall and ground URL 51	 Coarse Texture on wall URL 52
4	Loose Or Dense	 Loose Texture used on wall and floor URL 53	 Dense Texture on ceiling URL 54
5	Light Or Heavy	 Day Light Texture on the wall URL 55	 Heavy texture of the wall's URL 56

In Table 2.9, exemplifies various articulations of texture as a significant element of visual quality of indoor spaces. As a result of the literature review, a theoretical framework is developed by tabulating the stated diverse role and articulation of visual quality elements on the formation of indoor visual quality which has act as quiding statements for the analysis of the cases [see Table 2.10].

Table 2.10: The Proposed Theoretical Framework for Investigating Visual Quality Indoor Spaces for Toddlers Recreation Space

Framework for Investigating Visual Quality of Indoor Spaces			
Visual Quality Elements	**Criteria of Investigation**	**Visual Quality Elements**	**Criteria of Investigation**
Form	1. Forms are created with various elements for different functions.	**Light**	1. Use of light causes both color and objects to be recognized.
	2. Forms are the existence of closed volumes.		2. Entire Space / Sub Spaces are highlighted with light.
	3. Architectural form was created with different/similar masses		3. Use of Light makes space understandable and meaningful
	4. Forms consist of three-dimensional shapes that make subspaces within the entire space.		4. The way Lighting articulated is one of the most important elements of space quality.
	5. Sense of depth is created with the illusion of a vacuum		5. Light creates visual comfort and provides 3-dimensional perception of spaces
	6. Form perception depends on light quality. a-) Low perception due to improper lighting quality b-) Proper perception due to proper lighting quality		6. Use of Light is the effective factor that displays the important features of design
			7. Light adds aesthetic value to the space.
			8. Natural/ Artificial Light is used in the space
			9. Use of different / similar lighting solutions creates different atmospheres in the space.
	7. The form created in the space provides soft / hard effect on the space.		10. Use of Light creates positive emotions in the visual quality of the space.
			11. Use of insufficient light decreases the visual quality of the interior space.
	8. Forms created by curvilinear lines provide comfort and joy.		12. Use of daylighting is more than artificial lighting.
	9. Forms created by straight and hard lines create a clear and simple spatial effect.	**Material**	1. Spiritual feeling is conveyed with the use and appearance of similar / different materials.
	10. Forms created by a combination of various / similar design elements.		2. Use of two or three materials in harmony created aesthetically
Color	1. Colors create ‘the definition’ of the space.		3. Use of harmonious material removes the need for unnecessary decoration and provides wealth
	2. The color of the space is created as a result of using natural or artificial lights.		4.Materials were combined in the best way to capture the visual and tactile quality of the space.
	3. Color is the main effective element on the perceptual experience.	**Texture**	1. Visual / tactile texture is created in the interior space.
	4. Cold/cool colors create a more stable effect in the space.		2. 2D /3D texture is created in the space
	5. Warm colors create a dynamic effect in the space.		3. Texture articulated in the space is rough / smooth.
	6. The intensity of different color tones creates a sense of diversity		4. Texture created in the space as the artistic representation of the tactile quality of the surface
	7. Object's color affects the perception of the medium's color: Object has a contrasting color from the background that is detected in three dimensions.		5. The texture is created by the roughness of a chenille fabric piece or natural fluctuations of an unfinished wood.
	8. Use of dark colors affects perception of interior space as heavier and narrower		6. The texture is created by gloss or a combination of reflection and transparency partitioned by brushed steel or a sheet of glass
	9. Use of light colors create a light and wide effect in the interior space		7. Objects in the interior space have a texture.
	10. Use of color affects the shape and proportion of the interior space.		8. Texture in the space is/are soft or solid, smooth or rough, loose or dense, light or heavy
	11. Color utilized as the most important visual element of the interior design.		9. Texture created in the space is the unique feature of everything.

Chapter 3

TODDLER RECREATION SPACE

3.1 Introduction

Due to the intensity of urbanization, the existence of children's play area, which is an integral part of the recreational areas that disappear in time, has become increasingly important in the rapid growth process. Recreation is a significant phenomenon for the quality of life for each individual. Especially for children, recreation areas are very significant to discover the social, material, and imaginary worlds surrounding them while experiencing the game and through the visual relationship's children are establishing with these worlds. While playing, the child learns to integrate with his/her society where he/she lives and grows. Therefore, it is significant not only to understand but also to be aware of how these spaces were shaped / articulated and which factors affect the formation of visual quality at the Toddler Recreation Spaces (TRS[2]). In this section, the definition of recreation, examples of recreation type, toddler, and their play types were reviewed and examined in the literature to understand TRS from an inclusive perspective.

3.2 Definition and importance of Recreation

Recreation, which comes from the Latin word *recreatio*, generally means renewal or reconstruction. It is defined as a leisure time assessment. Accordingly, it means relaxing and entertaining activities that individuals or societies do voluntarily at leisure

[2] TRS is the abbreviation of Toddler Recreation Spaces and will be used in the entire text for this term.

times. (Kraus, 1985, p. 32). Recreation is “activities” in which people participate actively or passively with their own will and will (Lu and Hu, 2005 117 cited in Can, 2015).

According to O’Sullivan (2012), recreation refers to realizing leisure, physical and spiritual activities, both active and passive. On the other hand, according to Tütüncü (2012), recreation is a highly disciplined working place. He states that it is a voluntary activity to increase an individual's quality of life without harming nature in both free and leisure times. The person is renewed with the behaviours he gained from these activities to spend his leisure time participating in activities in a different environment.

The inconvenience caused by a single level and routine working environment in human life can often be overcome by creating a change and interest in recreational activities. It seems to be a necessity in a sense for the increasingly complicated lives of people today (Jenny, 1956; Sayiner, 1973). Torksildsen (2011) states that recreation, which is defined as the activities in which people participate in leisure time, has become a common approach. This activity should satisfy the individuals in some ways.

According to Glikson (1971), recreation means reviving human life, no matter how it is. Recreation, which is used to restore the human beings' biotic and physical environment, consists of two mutual functions: revitalization and revival. Seraslan and Bakir (1988); self-actualization is the primary use of recreation. Recreation is generally considered the evaluation of leisure time with various activities of which a participant chooses voluntarily and spends in his free time (Serarslan and Bakır, 1988; p.28).

From the middle of the 20th century to the present day, it has experienced change and development in social, cultural, economic, and technological fields. According to this change and development, there have been many positive or negative effects on people of different ages. As technology develops, factors such as reduced working hours, increased per capita income, and improved transportation and communication systems have led people to seek various ways of spending leisure time.

Recreation is an essential factor for every individual. People need to be connected to life. Knowledge and habits enable us to use every moment of life efficiently and play a primary role in the person's success (Canan, 1997). Especially for toddlers, the play and activities in recreation are of great importance. It has been revealed as a result of many research types that; the play has essential effects on children. In the Maltese declaration of children's play rights for the World Children's Year in 1977, the vital importance of play for toddlers, especially in recreational areas, nutrition, health, shelter, and education, as well as the development potential of children, were emphasized (Heseltine & Holborn, 1987).

According to Fanuscu (1998), play is ultimately a universal definition. It has no national or cultural restrictions, yet it appeals to all racial and age groups. At the same time, it is important to achieve physical and psychological development. Play is a concept beyond the culture as much as it plays a role in changing a culture. "Play" can be defined as an activity with no specific goal, bringing happiness and coming out spontaneously. Every individual who is healthy, productive, able to think and produce good results in social and individual terms, which can quickly adapt to social life, has been affected by every period of their life, especially from childhood. Family, school,

and play direct each individual's mental and physical development during childhood (Fanuscu, 1998).

Play is a very significant opportunity that helps every child develop their language, mind, social, emotional and body (motor) skills in the best way possible while realizing themselves and their skills (Dinç, 1993). Studies have shown that many different meaningful/practical issues child confronted in the early childhood setting. It is a place where children can discover and learn by the staff's proper supervision and support an environment suitable for young children. Thus, it is essential to determine proper design criteria as early as possible and include them in the physical space planning and design process both for toddlers and preschool children. They should be organized as places where children can move freely from one activity to another on their own or make noise freely while playing without disturbing the children in the other activities (Rolnick & Grunewald, 2003).

3.2.1 Types of Recreation

According to Getz (2008), recreation activities are divided into four main groups. These are;

1. Cultural celebrations, political and official events, arts and entertainment
2. Business and commerce, education and science
3. Sports competitions and entertainment
4. Special events

Table 3.1: Recreation Types and their examples (Getz, 2008, p.406)

Recreation Types	Example
Cultural Handles	Festivals, Carnivals, Commemorate ceremony or Religious Event
Political and Official Events	Summit, Official Trainers, Political Events or VIP visits
Arts and Entertainment	Concerts, Award Ceremonies
Business and Trade	Thopped, Treaties, Meetings, Agreements, Consumer and commercial displays, Fairs, and markets events
Education and Science	Conferences, Seminars, Congresses
Sports Competitions	Amator / Professional, Audience / Participant
Entertainment	Recreational Sports Events
Special Events	Weddings, Parties, Social (special events, anniversaries, family gatherings)

Recreation is classified into many different areas or many genres. The items shown below represent how it can be categorized for each individual, group, or leader planning these recreation programs in Table 3.1 (Jackson, 2005).

Table 3.2: Recreation Activity Type (Larry Jackson, 2005)

Recreation Activity Types	Example
Physical activities	Sports, games, fitness, etc.
Social activities	parties, banquets, picnics, etc.
Camping and outdoor activities	day camps, resident camps, resident, camps, backpacking, float trips, etc.
Arts and crafts activities	painting, scrapbooking, ceramics, woodworking, etc.
Dramatic activities	plays, puppetry, skits, etc.
Musical activities	singing, bands, etc.
Cultural activities	art appreciation, music appreciation, panels, discussion groups, etc.
Service activities	fun in doing things for others

Recreation also involves programs for all age groups (children, elderly, etc.) and different special populations (physically handicapped, mentally disabled, etc.). However, most participants in these communities will still be active in many of the types of activities mentioned in Table 3.2 (Jackson, 2005).

According to Hacıoglu (2003), recreational activities can be performed actively or passively, such as sports, cultural events, evaluation of nature and human history, leisure, entertainment, and informal education (Hacıoglu, 2003). In connection with the definitions of recreation, it turns out that recreation activities should bring participants happiness, satisfaction, creativity, spiritual balance, character, competitiveness, spiritual capacity, freedom, physical and spiritual condition, and a broader world view (Hacığlu 2003; p30).

Consequently, Gunter (1987) mentioned eight recreation features (cited in Emel Can, 2015):

1- Leaving or breaking in a sense from daily life
2- The person can choose the activities freely
3- Enjoying or having the event enjoyable
4- Being spontaneous
5- The existence of time
6- Creative imagination,
7- Adventure and discovery
8- Self-realization.

Toddlers, children, adolescents, adults, and older generations should also be intertwined with games, entertainment, recreation, and similar activities to move away

from existing behaviours and be more productive and peaceful for a new day. Significantly, the need for play and entertainment of toddlers in continuous development commences from their birth due to their different behaviours in the development process (Cetin, 2003). The concept of recreation can be the indoor playground environment, allowing children to develop socially, emotionally, conceptually and physically, and provide educational activities. There are various recreation activities for different age groups. But recreation is exclusively crucial for toddlers (Cetin, 2003). Hence, in line with the scope and purpose, the next section focuses on the toddler recreation spaces with a total perspective.

3.3 Toddler Recreation Spaces (TRS)

3.3.1 Definition of Toddler

As the term implies, a toddler is generally defined by the Merriam-Webster dictionary as a child who is just learning to walk or one who toddles. This is often around 1 year of age. Toddlers may be considered as the children when their ages range from 1 year to 4 years, though others may have different definitions of these terms. There's no official definition of the upper limit of toddlerhood. However, most people consider the end of the toddler age to be around when a child is ready to transition into preschool. Toddler is a young child, especially the one who is learning or has recently learned to walk (1-3 year old)(Gurevich, 2019).

Çukur & Delice, (2011), in their study, has focused on the *child's physical, cognitive, motor, language, emotional and social development*. As they highlight it, there is an interaction between all areas of development. The period from 12-36 months was defined as a so-called autonomy period (Sovereignty period) and followed by the play period (3-6 years) as a Toddler (Cukur & Delice, 2011) [see Table 3.3]. According to

the theory of Piaget (1971); the *child's sensory and cognitive development* is divided into four periods. The first period is the sensory-motor period (0-2 years), the second period is the pre-operational period (2-7 years), the third period is the concrete operational period (7-11 years), and the fourth period is the abstract operations period (11-18 years). Within the scope of this thesis, the age group that is named as *Toddler* considers the children of the "first period (0-2 years) and the second period (2-7 years)" according to Piaget's classification (Piaget, 1971).

Table 3.3: Exemplifying Toddler from the Period of Autonomy and Play Periods URL 57

	Age	**Example**	**Example**
1	Autonomy Period (12-36) month		
			
2	Play Period (3-6) years		
			

3.3.2 Toddler Environments and Their Characteristic Features

The features of the interior equipment that play an active role in the design of children's spaces could briefly be listed as follows: 1) indoor equipment that should be robust and durable, useful, and changeable; 2) waterproof that should be produced from healthy materials expanding their imaginations, as Tavşan,1995 discussed. The author added that these materials should be varied, modular, multi-functional, and easy to clean at the same time.

Moreover, Tavşan argued that it is essential to furnish both functional, multi-purpose, and appropriate equipment such as providing the proper size of furnishing in line with the ages of various children using that space all life criteria for all children. For instance, Figure 3.1 exemplifies the difference between a three-year-old and six-year-old kid and their different requirements while organizing spaces (cited in Doğan & Baksi, 2019).

Preschool is the learning days of a Toddler; playing and the physical environments that they spend time while socially interacting with each other and with the environment could contribute significantly to their developmental growth. Accordingly, research related to brain development demonstrates that the first three years of life are rapid cognitive and physical development. Understanding the developmental behaviour of toddlers and the programmatic and operational needs of early childhood is crucial to the design, development, and financing of sustainable facilities that could also support the quality (Siegel, 2010).

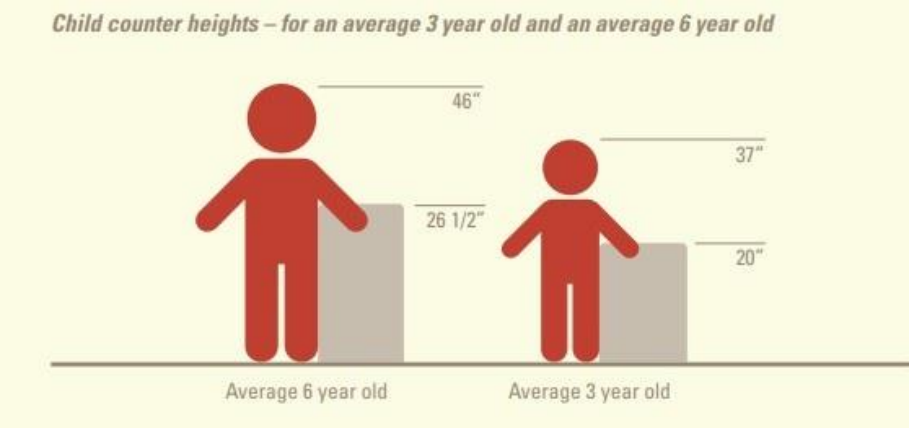


Figure 3.1: Child counter heights, (Siegel,2010)

It is frequently emphasized that the physical environment is suitable for children's sizes (ergonomics). For example, it has been suggested that ceiling heights could be adapted to the child scale to provide a sense of security among children and increase their self-esteem (Moore et al., 1979 cited in Weinstein, 1987; Read et al., 1999) [see Figure 3.2].


Figure 3.2: Example of Toddler playing and their physical environments URL 58

Furthermore, Wardle (2007) argues that one of the most important things for younger children is that "They need to feel important," and functional possibilities within the spaces should respond to this matter. For example, in the past, children were

responsible for watering the garden, doing farm work, and taking care of young children. He argues that children should feel that what they are doing is meaningful for someone else. The toddler can practice locomotor skills, body management skills, and object control skills in the garden (Wardle, 2007) [see Figures 3.3, 3.4 & 3.5].

Figure 3.3: Example of Toddler watering the garden. (Kittie Butcher, 2017)

Figure 3.4: Example of Toddler doing garden work (Catherine Holecko, 2020)

Toddlers need a space to experiment with a variety of toys and equipment. Therefore, the room's spaces and layouts should be designed to encourage and support their independence while strengthening their social skills. Spaces should be arranged to allow children to move around the room without preventing other children from playing. Materials and developmentally appropriate toys should be easily accessible

to children on open shelves (Wardle, 2007). The furniture should be of the proper size for the age group (see Figure 3.5 as the instance).

Figure 3.5: Toddler Recreation Area, (Siegel, 2010)

Siegel (2010) lists requirements in the form of a checklist for the Toddler room activity area, as illustrated in [Figure 3.6]. The author categorizes the activity area into four different sections Entry, Active Area, Quiet Area, and Creative Area. Siegel also describes the features that must be provided in each one of these areas.

Toddler Room Activity Area Checklist

Entry *(linoleum or wood flooring)*

- One cubby for each child's personal belongings (backpack, extra clothes, coat, blanket, lunch bag, art work, etc.)
- Parent information board and sign-in sheet

Active Area *(carpet flooring)*

- Dramatic play: dress-up clothes and costumes, housekeeping furniture and toys, mirrors, baby dolls
- Gross motor: loft, ramp/slide, shallow steps, foam shapes, balls, tunnel, push and pull toys, rocking and riding toys
- Music and movement: simple rhythm instruments, space for dancing

Quiet Area *(carpet flooring)*

- Reading: bookshelf; low, soft seating; pillows
- Listening to stories or soft music
- Resting, hanging out
- Manipulatives: blocks, puzzles, toys and games
- Napping: cots and mats are usually placed around the room (appropriate storage for sleeping cots/mats must be provided in the classroom – cots 40"x23"x6")

Creative Play Area *(linoleum or wood flooring)*

- Table and chairs: meals and snacks, cooking projects, art activities, play dough
- Sensory table: water and sand play
- Painting: floor easels

Figure 3.6: Example of Toddler Recreation Room Activities (Siegel,2010)

Moreover, form, color, light, and material / texture, which are the interior's stimuli factors, should be designed according to children's cognitive and physical characteristics in all age groups. Using space stimuli with the right design criteria will positively affect the child's physical and mental development in general and toddler in particular. Children have different perceptual and physical structures than adults. Accordingly, they should be explicitly treated in each area. For the child, who is continually developing, the perception mechanism also develops in direct proportion. Human perception of the environment occurs as a result of the structuring of physical and mental processes.

According to Gür, human intelligence is the mechanism of information and behaviour. The act of obtaining information occurs due to perceiving the environment through senses, informatics, interpretation, memory referencing, and sensing action. It is the organism's action to respond to the environment through movement and other reactions in line with behaviour, goals, and motives (Gür, 1996; Öztürk, 2009) [see Figure 3.7].

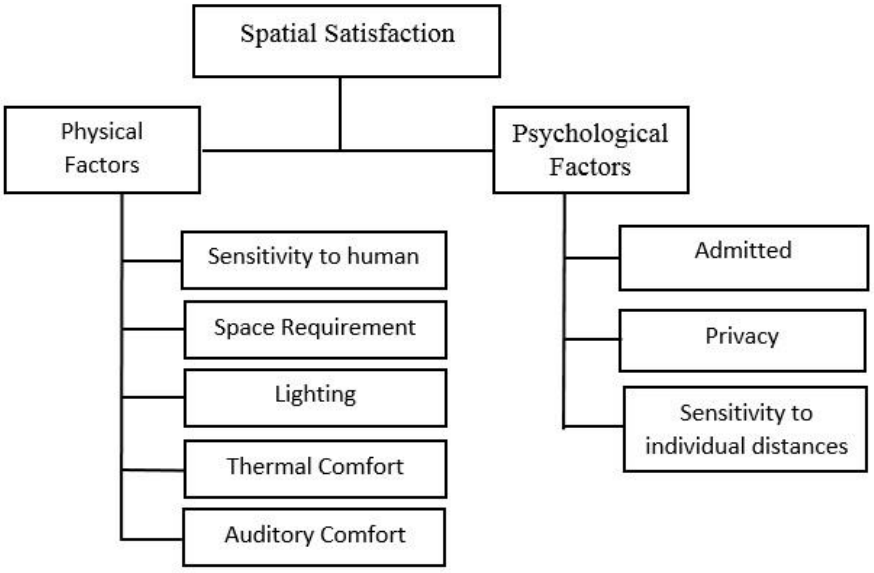


Figure 3.7: Factors affecting spatial satisfaction (Barker, 1968; Erniş, 2012, p.34 cited in Doğan & Baksi, 2019)

Colour is one of the most significant characteristic features affecting the perception of indoor spaces, and its proper articulation at children spaces is of great significance. Colour possesses physiological effects that bind physical effects with biological impacts. A certain colour's incitement is accompanied by a kind of response in human-being, muscular tension, and brain waves. And other functions of the nervous system. It certainly excites particular feelings and individual reactions (Porter, 1997). One of the most significant elements of the design is colour. Thus, it is understood that to make an interior space visually attractive. It is necessary to examine the aspect of

colour thoughtfully, one of the main factors determining interior space quality elements. Children, like adults, are very well familiar with the aspect of color.

Colour psychologists have related colour to brain development and its diversified effects on different matters such as reducing absenteeism, increasing productivity (Mahnke, 1996). The table below lists the role of color on the ‘kids’ spaces particularly. [see Table 3.4] As Mahnke (1993) explains, color just for coloring accomplishes little importance; desolate environments achieve little of significance either. School executives should consider the significance of the school's physical plan and its impact on the research circumstance. Color coordination is important for protecting eyesight, creating an environment conducive to study, and supporting physical and mental health. Many instances and irritability of nervousness, loss of attention, and behavioral issues may be related to inappropriate ambient factors with improperly planned light and color (Mahnke, 1993).

Table 3.4: Physiologic effect of color used in interior spaces on the kids (Curcic et al., 2019; Olesen, 2020).

	Blue	Enhances creativity and stimulates a calm and relaxing environment. It should not be used in excess as it can also depress or invoke feelings of sorrow.
	Red	Red is the color of passion and intense feelings of threat, love, or excess stimulus. In school rooms, it can be used in combination with other colours to help in detail-oriented or repetitive tasks.
	Green	The color of abundance can relax and contribute to better health in kids.
	Yellow	This is indeed the colour of happiness and sunshine for children. Yellow stimulates intelligence and is ideal for use in kids' rooms, study rooms and play areas. It should not be overdone as it can make children feel stressed.
	Pink	This is a calming colour. It can lower heart rate.
	Purple	This colour ideal for kids as it is attention grabbing.
	Orange	Many educational institutes use this colour as it enhances critical thinking and memory.

While the psychologists argue that the light received by the visual receptors is a perceptual experience that emerges as a limited feature function, the expense part is also defined as the psychological experience based on the physical basis from our natural perception experience in the visualized world (Saleh, 1982). Accordingly, color which is one of the significant visual elements can be defined with the basic components known as the psychological features of the color (Saleh, 1982).

Consequently, toddler recreation environments need to be adequately articulated, as highlighted in the section above. They must have a proper layout, while their spatial arrangement needs to be functional and robust. The equipment must be durable and changeable and provide a diversity that could enhance the toddler's locomotor skill. However, in addition to the stated matters, these spaces' visual quality needs to be proper since it has a significant role in human perception. Visual quality is the interior stimuli that are effective on the cognitive and perceptual structure and development of

the toddler. Therefore, this matter is dealt with in-depth in the next chapter over the analytical reading of several existing toddler recreation spaces.

Chapter 4

INVESTIGATING VISUAL QUALITY OF TODDLER RECREATION SPACES THROUGH MULTIPLE CASE STUDIES

4.1 Introduction

This chapter aims to investigate the use/role of visual quality elements on the visual quality formation of toddler recreation areas. To achieve the stated aim; an analysis / investigation of the selected toddler recreation cases was revealed. Accordingly, this chapter is divided into three main sections. Therefore, consecutively at first, the case selection method and cases determined for investigation were accomplished. Secondly, the method of evaluation is stated and thirdly investigation / evaluation is carried out in line with the developed method.

4.2 Selection of Cases

Cases of the study were selected as a result of systematic filtering. In due course, the first step of case determination was initiated by determining the main source of case selection that is *Archdaily.com* [the world's most visited architecture website (URL 59). Step by step filtering method has been carried out in the determination of cases. As the first step of filtering, 'Toddler and Preschool Children's Recreation space' and then 'Toddler play and day-care area' keywords were searched under Archdaily.com's 'Projects'- interior projects sub-category.

As a result of the first step, 1032 projects were identified. These were then reduced by filtering this number according to the rationale set for case selection. Second step of filtering were carried out by excluding cases from the study that were listed under 'Nursery' and 'Playground' categories, even if they included indoor recreation. As a result of the second step, after examining 1032 cases and excluding cases that are recreation spaces in another main function such as pre-school children indoor areas recreation areas or recreation spaces in child day-care spaces; the number of cases was reduced to 39.

In the filtering phase, 39 toddler recreation areas were examined and as a result of this stage independent recreation areas; places which were designed especially for this purpose were determined during this filtering phase. For example; certain brands of fast-food areas, schools, recreation areas in shopping centres, children's museum and children's hospitals were excluded as the cases of this research. Summarily; as a result of the successive steps of the systematic filtration, 10 indoor toddler’s recreation spaces were determined as the cases of this research for an in-depth investigation (see Figure 3.8).

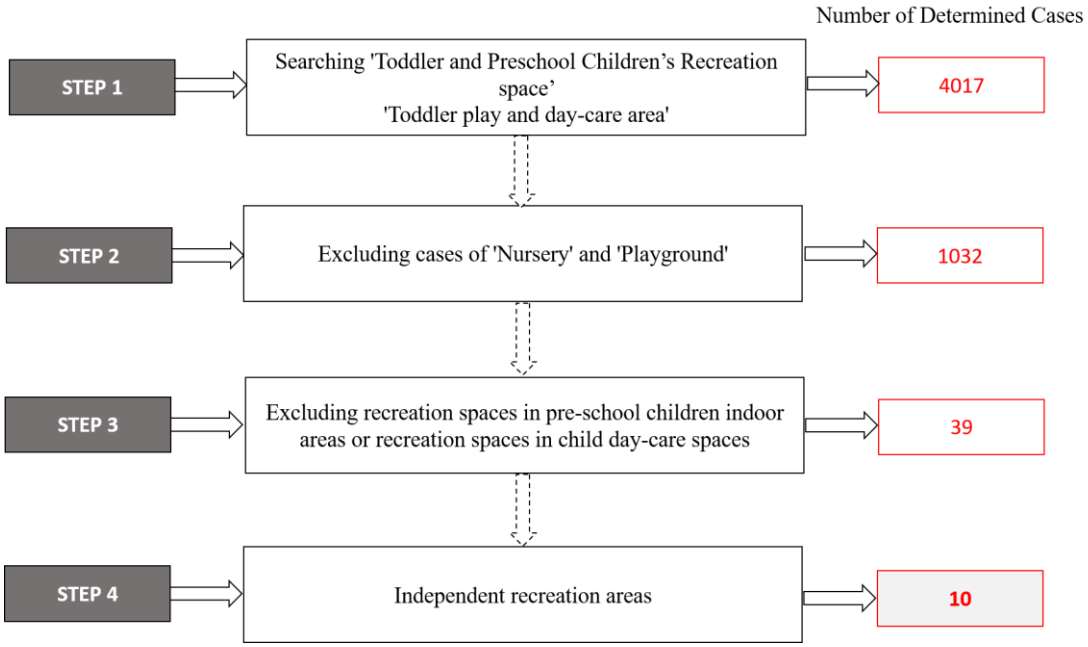


Figure 3.8: Cases Systematic Filtering

Accordingly, the determined 10 cases for investigation are listed as follows;

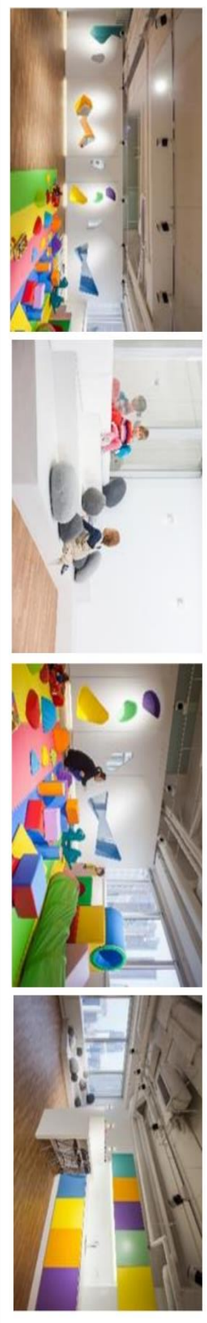
1. Jaures Recreation Center (France)
2. Ledeer Day Care (China)
3. PlayVille Day Care (Bangkok, Thailand)
4. Child Care Centre (Brussels, Belgium)
5. Child Development Support Center Kitos (Hamura, Japan)
6. Baby Steps Interior (Hong Kong)
7. Kalorias-Children's Space (Lisbon, Portugal)
8. Beiersdorf Children's Day Care Center (Hamburg, Germany)
9. Children's Recreation Centre (Pierrelaye, France)
10. House of Children in Saunalahti (Espoo, Finland),

Table 4.1 and 4.2 collects general and visual information of the determined 10 Toddler Recreation Areas.

Table 4.1: Collation of determined cases as a result of systematic filtering URL (60 – 64)

CASE ANALYSIS OF DATA							
RAW	**CASE**	**LOCATION**	**ARCHITECT**	**CONSTRUCTION DATE**	**AREA**	**STYLE**	**GENERAL VIEW**
1	Jaures Recreation Centre	Athis-Mons, France	Graal	2019	610 M^2	Pre-School Recreation	   
2	Ledeer Day Care	China	Credohus	2019	280 M^2	Pre-School Recreation	   
3	Play Ville Day Care	Bangkok, Thailand	Nitaprow	2018	266 M^2		   
4	Child Day Care Centre	Brussel, Belgium	Burobill, Zampone	2015	1407 M^2		   
5	Child Development Support Center Kiitos Hamura	Hamura, Japan	Fukushiken, Hibinosekkei, Youji No Shiro	2017	108 M^2		   

Table 4.2: Collation of determined cases as a result of systematic filtering URL (65 - 69)

CASE ANALYSIS OF DATA						
RAW	**6**	**7**	**8**	**9**	**10**	GENERAL VIEW
CASE	Baby steps Interior	Kalorias - Children's Space	Beiersdorf Children’ s Day Care Centre	Children’ s Recreation Centre	House of Children in Saunalahti	
LOCATION	Honkong (Sar)	Portugal	Hamburg, Germany	Pierrelaye, France	Espoo, Finland	
ARCHITECT	Atelier Blur/Georges Hung Architecte D.P.L.G.,	Estúdio Amatam	Kadawittfeld	Air / Cyrille Hanappe & Olivier Leclercq	Jkmm Architects	
CONSTRUCTION DATE	2014	2013	2013	2008	2011	
AREA	160 M²	410 M²	1750 M²	5250 M²	1750 M²	
STYLE						
					

4.3 Evaluation / Investigation Method

The method of investigation that is determined in order to achieve the main aim of this study is stated in this section briefly. Accordingly, 10 cases were examined by the help of 2 methods in order to investigate how their indoor visual quality is formed. Therefore:

1. **Exploration of Design Approach:** As a result of a literature review, the design approach of each case is determined and briefly explored.
2. **Investigation via Framework:** Each case is evaluated separately with the help of framework which was developed at the end of Chapter 2.

Framework briefly categorizes 5 visual quality elements (VQE)[3] that are *form, colour, light, texture, material*, and hence key definitions were specified for each visual quality element and listed in the framework one by one which has directed the investigation of visual quality formation at the determined cases.

4.4 Investigating Indoor Visual Quality of Toddler Recreation Spaces at the Selected Cases

Ten cases were analysed one by one in this section via filling inventories for each case and stating their design approach and analysing visual quality elements in accordance with the above-stated method. Accordingly, the interior design approach and visual quality formation by the determination of visual quality elements' effective role via the developed framework is presented in the following part.

[3] Visual Quality Elements (abbreviated as VQE)

CASE 1. JAURÈS RECREATION CENTER IN FRANCE

a) Interior Design Approach of Jaurès Recreation Centre in France

The construction of the Jaurès Recreation Centre gave the city of Athis-Mons in France the opportunity to equip itself with a facility specifically for young children, fully adapted to open learning methods, while also helping to reduce the pressures of the growing population [see Table 4.3]. This recreation area was designed by Graal architecture in 2019 and total square meter area is 610m². According to Graal architecture, in the coating of the Jaurès Recreation Centre in Athis-mons, a system of soft curved modules was used in addition to pink painted concrete.

These modules serve to remember the infrastructure language of the urban context while maintaining the materiality, soft and accessible image that defines the building. In this Mons's new Jaurès Recreation Centre with Graal architecture, a large central hall surrounded by a distinctive design consisting of smaller workshops is held. In the main hall, the building stretches across its entire width.

In addition, they are designed for easy maintenance and the most important feature is that they have large glass panels to provide optimum natural light and fresh air. Workshops are deliberately simple spaces for active facilities, designed in a variety of ways. Designed for easy maintenance, these rooms are as simple as possible to reduce finishing and assembly costs (Pintos, 2020).

Table 4.3: Tabulating Jaurès Recreation Centre's visual information and drawings URL 60

CASE 1: JEURES RECREATION CENTER IN FRANCE		
Location: ATHIS-MONS, FRANCE **Architect:** Graal architecture **Construction Date:** 2019 **Area: :** 610 m²		
Drawings	Drawings	Pictures

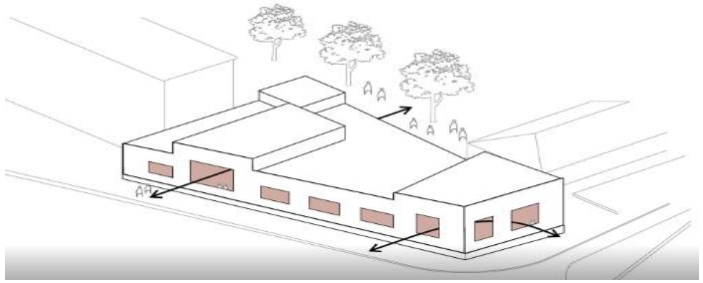
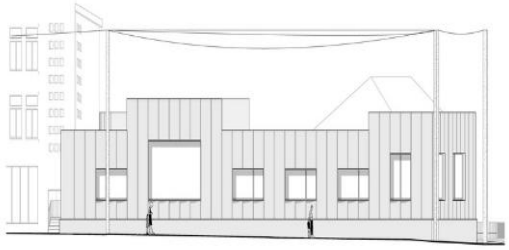
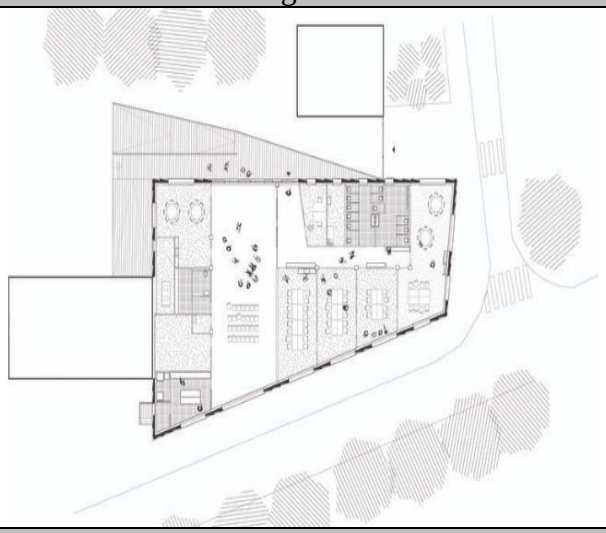
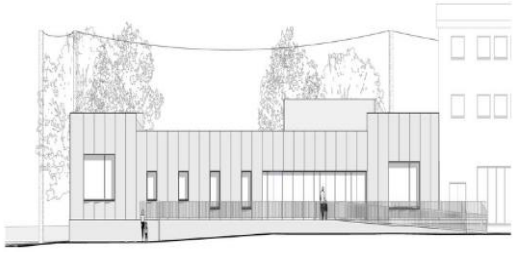

	

Diagram		Activity Room
		
	Elevations	Kitchen workshop area
		
Plan	Section	Big-Hall

b) Investigating Visual Quality of Toddler Recreation Spaces at Jaures Recreation Centre in France via framework.

Table 4.4: Investigating Visual Quality of Toddler Recreation Spaces at Jaurès Recreation Centre in France.

Framework for Investigating Visual Quality of Indoor Spaces					
Visual Quality Elements	**Criteria of Investigation**		**Visual Quality Elements**	**Criteria of Investigation**	
		CASE 1			**CASE 1**
Form	1. Forms are created with various elements for different functions.		**Light**	1. Use of light causes both color and objects to be recognized.	✓
	2. Forms are the existence of closed volumes.			2. Entire Space / Sub Spaces are highlighted with light.	✓
	3. Architectural form was created with different/similar masses			3. Use of Light makes space understandable and meaningful	✓
	4. Forms consist of three-dimensional shapes that make subspaces within the entire space.			4. The way Lighting articulated is one of the most important elements of space quality.	✓
	5. Sense of depth is created with the illusion of a vacuum			5. Light creates visual comfort and provides 3-dimensional perception of spaces	✓
	6. Form perception depends on light quality. a. Low perception due to improper lighting quality b. Proper perception due to proper lighting quality	✓		6. Use of Light is the effective factor that displays the important features of design	✓
				7. Light adds aesthetic value to the space.	✓
				8. Natural/ Artificial Light is used in the space	✓
				9. Use of different / similar lighting solutions creates different atmospheres in the space.	✓
	7. The form created in the space provides soft / hard effect on the space.	✓		10. Use of Light creates positive emotions in the visual quality of the space.	✓
	8. Forms created by curvilinear lines provide comfort and joy.			11. Use of insufficient light decreases the visual quality of the interior space.	
	9.. Forms created by straight and hard lines create a clear and simple spatial effect.	✓		12. Use of daylighting is more than artificial lighting.	✓
	10. Forms created by a combination of various / similar design elements.	✓	**Material**	1. Spiritual feeling is conveyed with the use and appearance of similar / different materials.	✓
				2. Use of two or three materials in harmony created aesthetically	
Color	1. Colors create ‘the definition’ of the space.			3. Use of harmonious material removes the need for unnecessary decoration and provides wealth	✓
	2. The color of the space is created as a result of using natural or artificial lights.			4. Materials were combined in the best way to capture the visual and tactile quality of the space.	
	3. Color is the main effective element on the perceptual experience.	✓	**Texture**	1. Visual / tactile texture is created in the interior space.	✓
	4. Cold/cool colors create a more stable effect in the space.			2. 2D /3D texture is created in the space	
	5. Warm colors create a dynamic effect in the space.			3. Texture articulated in the space is rough / smooth.	
	6. The intensity of different color tones creates a sense of diversity			4. Texture created in the space as the artistic representation of the tactile quality of the surface	
	7. Object's color affects the perception of the medium's color: Object has a contrasting color from the background that is detected in three dimensions.			5. The texture is created by the roughness of a chenille fabric piece or natural fluctuations of an unfinished wood.	✓
	8. Use of dark colors affects perception of interior space as heavier and narrower			6. The texture is created by gloss or a combination of reflection and transparency partitioned by brushed steel or a sheet of glass	✓
	9. Use of light colors create a light and wide effect in the interior space			7. Objects in the interior space have a texture.	✓
	10. Use of color affects the shape and proportion of the interior space.			8. Texture in the space is/are soft or hard, smooth or rough, loose or dense, light or heavy	✓
	11. Color utilized as the most important visual element of the interior design.	✓		9. Texture created in the space is the unique feature of everything.	✓

Investigation results put forward that *light* and *texture* are the most effective visual quality elements on the indoor visual quality formation at this case [see Table 4.4]. Accordingly, it has been revealed that the use of light made this space more understandable while it provides an improved emphasis both on objects and colors. The natural and artificial lights were articulated respective to each different function of the space and hence it creates improved visual comfort whilst act as a guiding element for the users. It is worth mentioning that in this case the light has played the leading role on the interior space's visual quality.

For the texture, it has been investigated that use of roughness of the chenille fabric piece and the natural fluctuations of the unfinished wood affected the visual quality. In this space, the surface was softened by the pillows which were used on the floor. Material characteristics, such as glossiness, reflection, and transparency were determined as having a role of adding more texture to the interior spaces as well as acting as division elements in the space as a result of using brushed steel and sheets of glass that.

Accordingly, it must be noted that these two significant elements improved the visual quality by using the contradictions of combining soft and hard, smooth and rough, lose and dense, textures while using both natural and artificial lights. This variety has enriched the interior space by offering an enjoyable experience to the users whether it was toddlers or stakeholders.

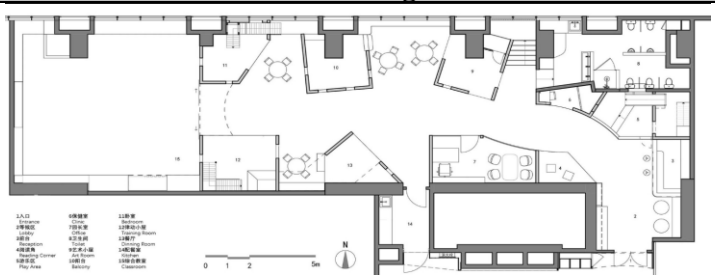
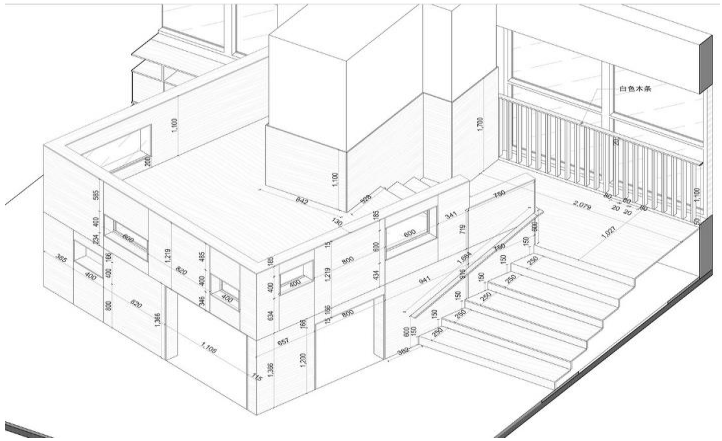
CASE 2: LEDEER DAY CARE IN CHINA

a) Interior Design Approach of Ledeer Day Care in China

Ledeer Day Care was designed by Credohus, in China at 2018. Its total area is 280 m² [see Table 4.5]. As a community-based childcare institution, as a recreation venue Ledeer designed with an approach of creating a space in a community where children of different ages can play together, so that children can receive professional care to give parents the necessary personal time. This recreation place was designed resembling a small village. A series of small wooden houses of various sizes and shapes are arranged along the street to create a seamless border that completely surrounds the entire space. Credohus designed the children's activity area as a public street that connects functional rooms with large spaces located at the end of the site.

In these wooden houses, the height of the floor is deliberately differentiated, which means that children should pay attention to the height change when entering different wooden houses to avoid falling. Three warm colours; red, orange and yellow, were used as colours from the interior elements. Accordingly, the interior of the wooden house is selectively painted to give children a unique spatial memory and to create a sense of belonging from the inside out (Chen, 2020).

Table 4.5: Tabulating Ledeer Day Care's visual information and drawings URL 61

CASE 2: LEDEER DAY CARE IN CHINA			
Location: CHINA	**Architect:** Credohus	**Construction Date:** 2019	**Area:** 280m²
Drawings		Drawings	Pictures
			
Plan			Work-shop Area
			
		Sections	Play Area
3-D View		 Diagram	 Big-Hall

b) Investigating Visual Quality of Recreation centre Ledeer Day Care in China via framework.

Table 4.6: Investigating Visual Quality of Toddler Recreation Spaces at Ledeer Day Care, China.

Framework for Investigating Visual Quality of Indoor Spaces					
Visual Quality Elements	**Criteria of Investigation**		**Visual Quality Elements**	**Criteria of Investigation**	
		CASE 2			**CASE 2**
Form	1. Forms are created with various elements for different functions.	✓	**Light**	1. Use of light causes both color and objects to be recognized.	✓
	2. Forms are the existence of closed volumes.	✓		2. Entire Space / Sub Spaces are highlighted with light.	✓
	3. Architectural form was created with different/similar masses	✓		3. Use of Light makes space understandable and meaningful	✓
	4. Forms consist of three-dimensional shapes that make subspaces within the entire space.	✓		4. The way Lighting articulated is one of the most important elements of space quality.	✓
	5. Sense of depth is created with the illusion of a vacuum			5. Light creates visual comfort and provides 3-dimensional perception of spaces	✓
	6. Form perception depends on light quality. a. Low perception due to improper lighting quality b. Proper perception due to proper lighting quality	✓		6. Use of Light is the effective factor that displays the important features of design	✓
				7. Light adds aesthetic value to the space.	✓
				8. Artificial Light is used in the space	✓
				9. Use of different / similar lighting solutions creates different atmospheres in the space.	✓
	7. The form created in the space provides soft / hard effect on the space.	✓		10. Use of Light creates positive emotions in the visual quality of the space.	✓
				11. Use of insufficient light decreases the visual quality of the interior space.	
	8. Forms created by curvilinear lines provide comfort and joy.			12. Use of daylighting is more than artificial lighting.	
	9.. Forms created by straight and hard lines create a clear and simple spatial effect.	✓	**Material**	1. Spiritual feeling is conveyed with the use and appearance of similar / different materials.	✓
	10. Forms created by a combination of various / similar design elements.	✓		2. Use of two or three materials in harmony created aesthetically	
Color	1. Colors create ‘the definition’ of the space.			3. Use of harmonious material removes the need for unnecessary decoration and provides wealth	
	2. The color of the space is created as a result of using natural or artificial lights.	✓		4. Materials were combined in the best way to capture the visual and tactile quality of the space.	
	3. Color is the main effective element on the perceptual experience.	✓	**Texture**	1. Visual / tactile texture is created in the interior space.	
	4. Cold/cool colors create a more stable effect in the space.			2. 2D /3D texture is created in the space	
	5. Warm colors create a dynamic effect in the space.	✓		3. Texture articulated in the space is rough / smooth.	
	6. The intensity of different color tones creates a sense of diversity	✓		4. Texture created in the space as the artistic representation of the tactile quality of the surface	
	7. Object's color affects the perception of the medium's color: Object has a contrasting color from the background that is detected in three dimensions.			5. The texture is created by the roughness of a chenille fabric piece or natural fluctuations of an unfinished wood.	✓
	8. Use of dark colors affects perception of interior space as heavier and narrower			6. The texture is created by gloss or a combination of reflection and transparency partitioned by brushed steel or a sheet of glass	
	9. Use of light colors create a light and wide effect in the interior space	✓		7. Objects in the interior space have a texture.	✓
	10. Use of color affects the shape and proportion of the interior space.	✓		8. Texture in the space is/are soft or solid, smooth or rough, loose or dense, light or heavy	✓
	11. Color utilized as the most important visual element of the interior design.			9. Texture created in the space is the unique feature of everything.	✓

In Case two, it has been achieved that the form element is clearly controlling the visual quality of the interior space. Using various shapes for different functions with straight lines and hard edges creates different 3-dimensional masses [see Table 4.6]. These forms created closed volumes for different functions making subspaces within the entire space. Perception of these forms was enhanced with the quality of light within the interior spaces. The case objects have texture that was a combination of soft and solid, smooth and rough, and light and heavy. This diversity improved the inner spaces features.

Light was the second significant element in this case. The artificial light was used excessively while daylight openings were used only as a strip line on the wall's upper side. Nevertheless, the used light helped the users understand the spaces and identify both colours and objects. The light played a significant role in creating positive emotions and visual comfort to the users. There is a use of similar and different lighting solutions that form different atmospheres in the space and ultimately develop the inner spaces' aesthetics.

Investigation results have also revealed that the colour element affected the visual quality of the interior space. Warm colours were used in correspondence with the wood material and hence it provides a sense of cozy and warmth resulting from using them all over the surfaces, including walls and floors.

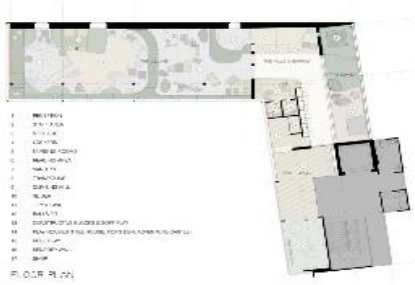
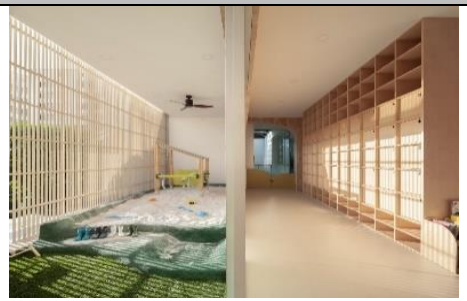
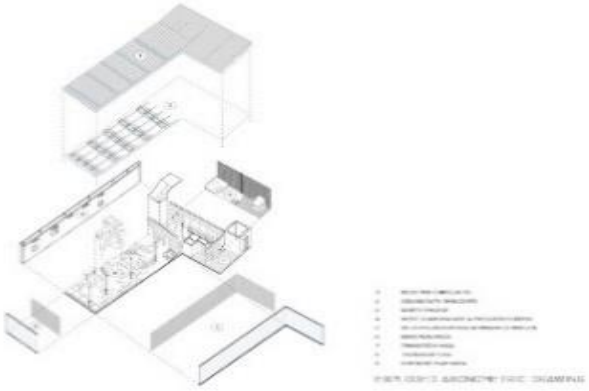
CASE 3: PLAY VILLE DAY CARE, BANGKOK, THAILAND

a) Interior Design Approach of PlayVille Day Care in Bangkok, Thailand

Playville Daycare was designed for pre-school children in 2018 by Nitaprow in Bangkok, Thailand. Its total area is 266 m² [see Table 4.7]. According to Nitaprow, it has been stated that the essential thing in this place is to address the users. In particular, Gradient film, wood-covered floor, walls, cabinets, and arches were combined to create an excellent, warm, and charming entrance. Simultaneously, the Raised terrain is designed to physically connect the main recreation area to the indoor and outdoor space at one end and visually at the other end.

Moreover, there is a resemblance with the direction of the natural lighting and sunlight coming from the sky due to articulating multiple planes of light systems that are evenly placed throughout the main recreation area. In the recreation space, the pixelated felt curtain, which creates acoustic performance, is designed to maintain the visual connection between ceiling and floor and between indoor and outdoor space. Moreover, multiple skylight planes were also designed evenly across the main play area to resemble the lighting and the lecture hall, placing the direction of sunlight coming from the sky above (Tapia, 2020).

Table 4.7: Tabulating at Playville Day Care's visual information and drawings URL 62

CASE 3: PLAYVILLE DAY CARE IN BANGKOK, THAILAND			
Location: BANKOK-THAILAND	**Architect:** NITAPROW	**Construction Date:** 2018	**Area:** 266 m²
Drawings			Pictures
			
Plan	Sections		Activity Room
			
			Workshop Area
			
Diagram	Play Area		Big-Hall

b) Investigating Visual Quality of Recreation centre PlayVille Day Care in Bangkok in Thailand via framework.

Table 4.8: Investigating Visual Quality of Toddler Recreation Spaces at PlayVille Day Care in Bangkok, Thailand.

Framework for Investigating Visual Quality of Indoor Spaces					
Visual Quality Elements	**Criteria of Investigation**		**Visual Quality Elements**	**Criteria of Investigation**	
		CASE 3			**CASE 3**
Form	1. Forms are created with various elements for different functions.	✓	**Light**	1. Use of light causes both color and objects to be recognized.	✓
	2. Forms are the existence of closed volumes.	✓		2. Entire Space / Sub Spaces are highlighted with light.	✓
	3. Architectural form was created with different/similar masses			3. Use of Light makes space understandable and meaningful	✓
	4. Forms consist of three-dimensional shapes that make subspaces within the entire space.	✓		4. The way Lighting articulated is one of the most important elements of space quality.	✓
	5. Sense of depth is created with the illusion of a vacuum	✓		5. Light creates visual comfort and provides 3-dimensional perception of spaces	✓
	6. Form perception depends on light quality. a. Low perception due to improper lighting quality b. Proper perception due to proper lighting quality	 ✓		6. Use of Light is the effective factor that displays the important features of design	✓
				7. Light adds aesthetic value to the space.	✓
				8. Natural/ Artificial Light is used in the space	✓
				9. Use of different / similar lighting solutions creates different atmospheres in the space.	✓
	7. The form created in the space provides soft / hard effect on the space.	✓		10. Use of Light creates positive emotions in the visual quality of the space.	✓
				11. Use of insufficient light decreases the visual quality of the interior space.	
	8. Forms created by curvilinear lines provide comfort and joy.	✓		12. Use of daylighting is more than artificial lighting.	✓
	9. Forms created by straight and hard lines create a clear and simple spatial effect.	✓	**Material**	1. Spiritual feeling is conveyed with the use and appearance of similar / different materials.	✓
	10. Forms created by a combination of various / similar design elements.			2. Use of two or three materials in harmony created aesthetically	✓
Color	1. Colors create ‘the definition’ of the space.			3. Use of harmonious material removes the need for unnecessary decoration and provides wealth	✓
	2. The color of the space is created as a result of using natural or artificial lights.	✓		4. Materials were combined in the best way to capture the visual and tactile quality of the space.	✓
	3. Color is the main effective element on the perceptual experience.		**Texture**	1. Visual / tactile texture is created in the interior space.	✓
	4. Cold/cool colors create a more stable effect in the space.			2. 2D /3D texture is created in the space	✓
	5. Warm colors create a dynamic effect in the space.	✓		3. Texture articulated in the space is rough / smooth.	✓
	6. The intensity of different color tones creates a sense of diversity			4. Texture created in the space as the artistic representation of the tactile quality of the surface	✓
	7. Object's color affects the perception of the medium's color: Object has a contrasting color from the background that is detected in three dimensions.			5. The texture is created by the roughness of a chenille fabric piece or natural fluctuations of an unfinished wood.	✓
	8. Use of dark colors affects perception of interior space as heavier and narrower			6. The texture is created by gloss or a combination of reflection and transparency partitioned by brushed steel or a sheet of glass	✓
	9. Use of light colors create a light and wide effect in the interior space	✓		7. Objects in the interior space have a texture.	✓
	10. Use of color affects the shape and proportion of the interior space.	✓		8. Texture in the space is/are soft or solid, smooth or rough, loose or dense, light or heavy	✓
	11. Color utilized as the most important visual element of the interior design.			9. Texture created in the space is the unique feature of everything.	✓

In case three, the richness in using different visual quality elements can be recognized. The natural light penetrating through openings was used rapidly, which makes design objects and spaces more recognizable [see Table 4.8]. It has been revealed that both natural and artificial light is effective in the generation of positive emotions. Hence, it creates a different atmosphere and added more aesthetics to the indoor spaces. Light in the spaces has enhanced the perception of the various forms used to create a more enjoyable perceptual experience to the users. These forms created 3-D dimensional shapes to define subspaces within the entire space and add multiple functions to the interior spaces.

The use of colour affects the shape and proportion of the space. In particular, the use of warm colours has created a dynamic effect in this space. Moreover, it has been investigated that several materials were used in harmony and are creating an aesthetic appearance. In this manner, several visual and tactile textures were used by offering more artistic representation to the interior spaces due to the combination of rough and soft surfaces using wood, steel, and glass. Both 2D and 3D textures provided a sense of roughness and smoothness to the indoor spaces.

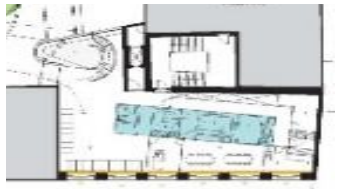
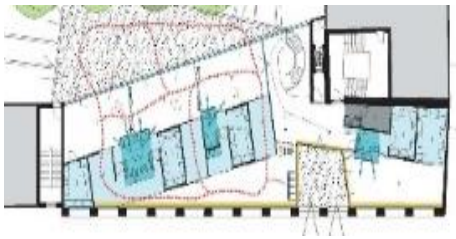
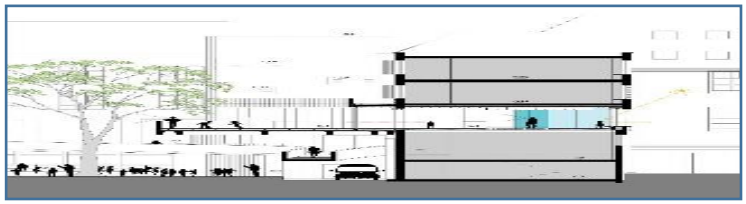
CASE 4: CHILD DAY CARE CENTER IN BRUSSELS, BELGIUM

a) Interior Design Approach of Child Day Care Centre in Brussels, Belgium

Burobill, Zampone architecture in 2015 has built this area. This project has been awarded a sustainable exemplary building project of Brussels' city in Belgium [see Table 4.9]. A modulation system for the concrete terrace's support beams was designed to limit the concrete structure's weight. The total area is 1407 m². In this case, it can serve all age categories to accommodate four and 68 children in the centre of Brussels. Also, there is limited space in this building block in the fourth case, which hosts many more recreations to guide children from the day they enter until they leave school at age 18.

All living groups in this building are adjacent to an outdoor space, and the reason is getting as much sunlight as possible. Multifunctional areas organize circulation. This space is situated on the first floor of an existing building block. There is a concrete path to guide children and parents to the entrance to get on this floor. The same vocabulary of concrete curves is repeated in the terrace on the second floor that serves as an external recreation for the 68 children of case four (Sanchez, 2015).

Table 4.9: Tabulating at Child Day Care Centre's visual information and drawings URL 63

CASE 4: CHILD DAY CARE CENTER IN BRUSSELS, BELGIUM			
Location: BRUSSEL, BELGIUM **Architect:** BUROBILL, ZAMPONE **Construction Date:** 2015 **Area:** 1407 m²			
Drawings		Pictures	Pictures
 			
Plan			Activity Room
			
Sections		Play Area	Workshop Area
			
Hall	Front View	First Floor	Big-Hall

b) Investigating Visual Quality of Recreation Centre Child Day Care Centre in Brussels, Belgium via framework.

Table 4.10: Investigating Visual Quality of Toddler Recreation Spaces at Child Day Care Centre in Brussels, Belgium.

Framework for Investigating Visual Quality of Indoor Spaces					
Visual Quality Elements	**Criteria of Investigation**		**Visual Quality Elements**	**Criteria of Investigation**	
		CASE 4			**CASE 4**
Form	1. Forms are created with various elements for different functions.		**Light**	1. Use of light causes both color and objects to be recognized.	✓
	2. Forms are the existence of closed volumes.	✓		2. Entire Space / Sub Spaces are highlighted with light.	✓
	3. Architectural form was created with different/similar masses			3. Use of Light makes space understandable and meaningful	✓
	4. Forms consist of three-dimensional shapes that make subspaces within the entire space.	✓		4. The way Lighting articulated is one of the most important elements of space quality.	✓
	5. Sense of depth is created with the illusion of a vacuum			5. Light creates visual comfort and provides 3-dimensional perception of spaces	✓
	6. Form perception depends on light quality. a. Low perception due to improper lighting quality b. Proper perception due to proper lighting quality	✓		6. Use of Light is the effective factor that displays the important features of design	✓
				7. Light adds aesthetic value to the space.	✓
				8. Natural/ Artificial Light is used in the space	✓
				9. Use of different / similar lighting solutions creates different atmospheres in the space.	✓
	7. The form created in the space provides soft / hard effect on the space.	✓		10. Use of Light creates positive emotions in the visual quality of the space.	✓
				11. Use of insufficient light decreases the visual quality of the interior space.	
	8. Forms created by curvilinear lines provide comfort and joy.			12. Use of daylighting is more than artificial lighting.	✓
	9. Forms created by straight and hard lines create a clear and simple spatial effect.	✓	**Material**	1. Spiritual feeling is conveyed with the use and appearance of similar / different materials.	✓
	10. Forms created by a combination of various / similar design elements.			2. Use of two or three materials in harmony created aesthetically	✓
Color	1. Colors create 'the definition' of the space.	✓		3. Use of harmonious material removes the need for unnecessary decoration and provides wealth	✓
	2. The color of the space is created as a result of using natural or artificial lights.			4. Materials were combined in the best way to capture the visual and tactile quality of the space.	
	3. Color is the main effective element on the perceptual experience.		**Texture**	1. Visual / tactile texture is created in the interior space.	
	4. Cold/cool colors create a more stable effect in the space.			2. 2D /3D texture is created in the space	
	5. Warm colors create a dynamic effect in the space.	✓		3. Texture articulated in the space is rough / smooth.	
	6. The intensity of different color tones creates a sense of diversity	✓		4. Texture created in the space as the artistic representation of the tactile quality of the surface	
	7. Object's color affects the perception of the medium's color: Object has a contrasting color from the background that is detected in three dimensions.			5. The texture is created by the roughness of a chenille fabric piece or natural fluctuations of an unfinished wood.	
	8. Use of dark colors affects perception of interior space as heavier and narrower			6. The texture is created by gloss or a combination of reflection and transparency partitioned by brushed steel or a sheet of glass	✓
	9. Use of light colors create a light and wide effect in the interior space	✓		7. Objects in the interior space have a texture.	✓
	10. Use of color affects the shape and proportion of the interior space.	✓		8. Texture in the space is/are soft or solid, smooth or rough, loose or dense, light or heavy	✓
	11. Color utilized as the most important visual element of the interior design.			9. Texture created in the space is the unique feature of everything.	✓

In this case, it has been revealed that light is the leading visual quality element where the natural light was used mostly on the walls with the use of the artificial light to add more illuminance to space [see Table 4.10]. Natural and artificial light made the spaces more understandable, creating visual comfort and providing three-dimensional perception to the inner spaces. Both objects and colours were more clarified and recognized due to the light element's leading role, which has enriched the spaces' aesthetics. The proper perception of the inner forms was due to the appropriate use of the lighting quality.

Furthermore, it has been discussed that the use of glass walls as separations from the outer spaces improved the users' connection between interior and exterior spaces and hence was formed closed volumes while adding subspaces within the main space. The variation between glass walls and concrete ones have provided soft and hard effects to the inner space. Despite the contrasting effects, the use of different materials was in harmony and added visual aesthetics to the interior spaces.

This variation of materials and forms enriched the spaces' visual and tactile textures with rough and smooth surfaces. The roughness of the concrete's natural fluctuations is creating a unique feature of the space's visual aesthetic. Similarly, the floorings' colourful patterns were an effective visual quality element for enhancing the interior spaces' visual appearance. These colourful patterns also vary according to the space's function and act as the interior spaces' guiding elements.

CASE 5: CHILD DEVELOPMENT SUPPORT CENTER KITOS IN HAMURA, JAPAN

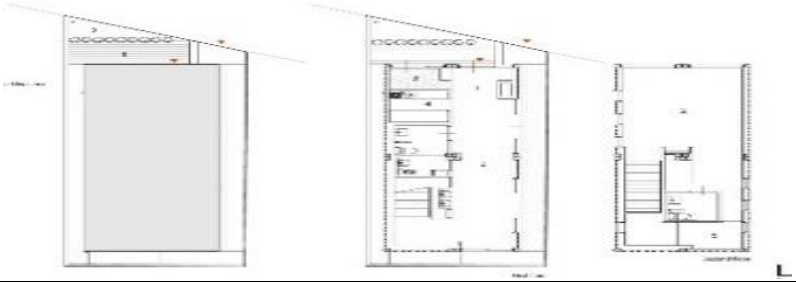
a) Interior Design Approach of Child Development Support Center Kitos in Hamura, Japan

Hibinosekkei, Fukushiken, Youji No Shiro Architects Built This Children Development Support Kitos Center in Hamura, Japan. The total area is 108 m^2, and the construction date was in 2017 [see Table 4.11]. "Gonokami area" is a place where the individuals have to earn a living with the technique of manufacturing. Many casters clustered around this city and made and sold pan, iron pot, plow, etc.

Kids in this region with developmental disabilities have a hard time expressing their sensations. Therefore, the feeling of "balance" and the five senses of "touch, taste, hearing, smell, sight" are essential to them. The best way is to "play" to get these senses. Many places are located in this building where children can play unconsciously to experience the sensation.

There is a room in the manufacturing facility to think of creative ideas and build trial mold flasks, where space with both silence and motion is necessary. Playing in this building will unconsciously offer a balance to all senses, and children will engage in this workshop regardless of the rainy day (Sánchez ,2015).

Table 4.11: Tabulating Child Development Support Center's visual information and drawings Kitos URL 64

<table>
<tr><th colspan="4">CASE 5: CHILD DEVELOPMENT SUPPORT CENTER KITOS IN HAMURA JAPAN</th></tr>
<tr><td colspan="4">Location: HAMURA JAPAN Architect: Fukuhiken, Hibinosekkei, Yoji No Shiro Construction Date: 2017 Area: 108 m²</td></tr>
<tr><td colspan="2">Drawings</td><td>Pictures</td><td>Pictures</td></tr>
<tr><td colspan="2">  </td><td colspan="2">  </td></tr>
<tr><td colspan="2">Plan</td><td colspan="2">Active facility</td></tr>
<tr><td colspan="2">  </td><td>  </td><td>  </td></tr>
<tr><td colspan="2">Sections & Elevations</td><td>Front View</td><td>Activity Room</td></tr>
<tr><td>  </td><td>  </td><td>  </td><td>  </td></tr>
<tr><td>Gonokami area</td><td>Basic Facility Area</td><td>Open Sitting Area</td><td>Sitting room</td></tr>
</table>

b) Investigating Visual Quality of Recreation centre Child Development Support Center Kitos in Hamura, Japan via framework.

Table 4.12: Investigating Visual Quality of Toddler Recreation Spaces Child Development Support Center Kitos in Hamura, Japan.

Framework for Investigating Visual Quality of Indoor Spaces					
Visual Quality Elements	**Criteria of Investigation**		**Visual Quality Elements**	**Criteria of Investigation**	
		CASE 5			**CASE 5**
Form	1. Forms are created with various elements for different functions.		**Light**	1. Use of light causes both color and objects to be recognized.	✓
	2. Forms are the existence of closed volumes.			2. Entire Space / Sub Spaces are highlighted with light.	✓
	3. Architectural form was created with different/similar masses			3. Use of Light makes space understandable and meaningful	✓
	4. Forms consist of three-dimensional shapes that make subspaces within the entire space.			4. The way Lighting articulated is one of the most important elements of space quality.	✓
	5. Sense of depth is created with the illusion of a vacuum			5. Light creates visual comfort and provides 3-dimensional perception of spaces	✓
	6. Form perception depends on light quality. a. Low perception due to improper lighting quality b. Proper perception due to proper lighting quality	✓		6. Use of Light is the effective factor that displays the important features of design	✓
				7. Light adds aesthetic value to the space.	✓
				8. Natural/ Artificial Light is used in the space	✓
				9. Use of different / similar lighting solutions creates different atmospheres in the space.	✓
	7. The form created in the space provides soft / hard effect on the space.			10. Use of Light creates positive emotions in the visual quality of the space.	✓
				11. Use of insufficient light decreases the visual quality of the interior space.	✓
	8. Forms created by curvilinear lines provide comfort and joy.			12. Use of daylighting is more than artificial lighting.	✓
	9. Forms created by straight and hard lines create a clear and simple spatial effect.	✓	**Material**	1. Spiritual feeling is conveyed with the use and appearance of similar / different materials.	✓
	10. Forms created by a combination of various / similar design elements.			2. Use of two or three materials in harmony created aesthetically	
Color	1. Colors create ‘the definition’ of the space.			3. Use of harmonious material removes the need for unnecessary decoration and provides wealth	
	2. The color of the space is created as a result of using natural or artificial lights.			4. Materials were combined in the best way to capture the visual and tactile quality of the space.	✓
	3. Color is the main effective element on the perceptual experience.		**Texture**	1. Visual / tactile texture is created in the interior space.	
	4. Cold/cool colors create a more stable effect in the space.			2. 2D /3D texture is created in the space	
	5. Warm colors create a dynamic effect in the space.	✓		3. Texture articulated in the space is rough / smooth.	✓
	6. The intensity of different color tones creates a sense of diversity	✓		4. Texture created in the space as the artistic representation of the tactile quality of the surface	✓
	7. Object's color affects the perception of the medium's color: Object has a contrasting color from the background that is detected in three dimensions.			5. The texture is created by the roughness of a chenille fabric piece or natural fluctuations of an unfinished wood.	
	8. Use of dark colors affects perception of interior space as heavier and narrower			6. The texture is created by gloss or a combination of reflection and transparency partitioned by brushed steel or a sheet of glass	
	9. Use of light colors create a light and wide effect in the interior space	✓		7. Objects in the interior space have a texture.	✓
	10. Use of color affects the shape and proportion of the interior space.	✓		8. Texture in the space is/are soft or solid, smooth or rough, loose or dense, light or heavy	✓
	11. Color utilized as the most important visual element of the interior design.			9. Texture created in the space is the unique feature of everything.	✓

Investigation results revealed that the visual quality elements are limited to light and texture in this case [see Table 4.12]. On the one hand, the natural light was enriched through the glass walls that are connecting the users visually to the outdoor spaces and making the inner spaces more understandable. Both main spaces and the minor ones were highlighted with light articulation as an effective visual quality element that makes the space's colors and objects more recognizable.

The light was investigated as the effective factor where the daylight enriched the users' positive emotions and comfortable feelings. On the other hand, the combined texture between the smoothness of the wood and the roughness and the same material (wood) for floors, walls, and ceilings made the case's simple artistic representation. Furthermore, it could be noted that the warm color of the wooden material added dynamism to the inner spaces, and it affected the shapes used and proportions of the interior space.

CASE 6: BABY STEPS INTERIOR IN HONG KONG

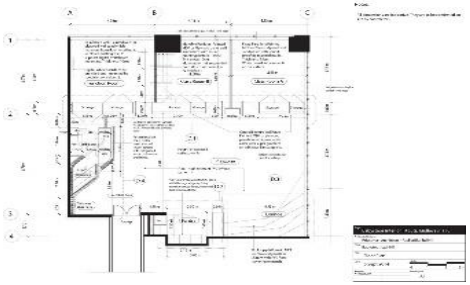
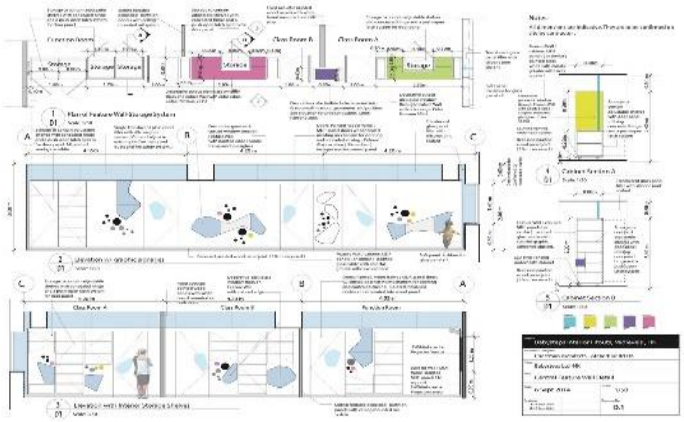
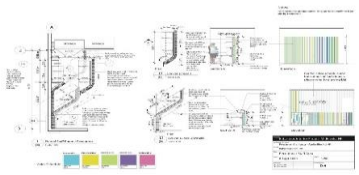
a) Interior Design Approach of Baby Steps Interior in Hong Kong

Architects Atelier Blur / Georges Hung Architect D.P.L.G. Priestman designed the Baby Step in 2014. This recreation area is 160 m², as Table 4.13 shows. The location of this center is in Hong Kong. It was created to shape and foster a unique learning experience and offers innovative psychological approaches to bring to life each child's passion for learning.

This center of discovery and motion is marked by the primary play zone. It is an open, bright and welcoming play area with several activity zones. The room is anchored by curved, vibrant geometrical cut outs and built-in storage. There are triple activity rooms behind its feature wall that are connected with the glass curtain wall. In this space, the gateway through clear glass consists of a series of angled planes paired with vertical color and monochrome metal shutters.

The colors are drawn from the same shades of paint as the baby numeral logos. It blends with the graphics of the game world and deals with the overall simple monochrome qualities of the interior. Also, it was connected for convenience in an inviting, fluid, and accessible space where gaming and learning was combined in a single experience. This discovery and action center is the primary virtual space. It is an open, lively, and inviting play are with lots of active, tactile, and quiet spaces. In the space, a wide wall of curved abstract-colored cavities and built-in storage balances the room and provides a lively yet quiet setting for transformative play staging. Further, the cavities give a brief description of both infant and adult levels (Silva, 2021).

Table 4.13: Tabulating Baby Steps Interior's visual information and drawings URL 65

CASE 6: BABY STEPS INTERIOR IN HONG KONG		
Location: HONG KONG **Architect:** Atelier Blur/ Georges Hung Architect D.P.L.G., Priestman Architects HK **Construction Date:** 2014 **Area:** 160 m2		
Drawings	Pictures	Pictures
		
Plan	Activity Room	
		
	Play Area	Big- Hall
		
Sections	Drawings Details	Sitting Area

b) Investigating Visual Quality of Recreation centre Baby Steps Interior in Hong Kong via framework.

Table 4.14: Investigating Visual Quality of Toddler Recreation Spaces at Baby Steps Interior in Hong Kong.

Framework for Investigating Visual Quality of Indoor Spaces					
Visual Quality Elements	**Criteria of Investigation**		**Visual Quality Elements**	**Criteria of Investigation**	
		CASE 6			**CASE 6**
Form	1. Forms are created with various elements for different functions.		**Light**	1. Use of light causes both color and objects to be recognized.	✓
	2. Forms are the existence of closed volumes.			2. Entire Space / Sub Spaces are highlighted with light.	✓
	3. Architectural form was created with different/similar masses			3. Use of Light makes space understandable and meaningful	✓
	4. Forms consist of three-dimensional shapes that make subspaces within the entire space.			4. The way Lighting articulated is one of the most important elements of space quality.	✓
	5. Sense of depth is created with the illusion of a vacuum			5. Light creates visual comfort and provides 3-dimensional perception of spaces	✓
	6. Form perception depends on light quality. a. Low perception due to improper lighting quality b. Proper perception due to proper lighting quality	✓		6. Use of Light is the effective factor that displays the important features of design	✓
				7. Light adds aesthetic value to the space.	✓
				8. Natural/ Artificial Light is used in the space	✓
				9. Use of different / similar lighting solutions creates different atmospheres in the space.	✓
	7. The form created in the space provides soft / hard effect on the space.			10. Use of Light creates positive emotions in the visual quality of the space.	✓
				11. Use of insufficient light decreases the visual quality of the interior space.	✓
	8. Forms created by curvilinear lines provide comfort and joy.			12. Use of daylighting is more than artificial lighting.	✓
	9. Forms created by straight and hard lines create a clear and simple spatial effect.	✓	**Material**	1. Spiritual feeling is conveyed with the use and appearance of similar / different materials.	✓
	10. Forms created by a combination of various / similar design elements.			2. Use of two or three materials in harmony created aesthetically	✓
Color	1. Colors create 'the definition' of the space.	✓		3. Use of harmonious material removes the need for unnecessary decoration and provides wealth	
	2. The color of the space is created as a result of using natural or artificial lights.	✓		4. Materials were combined in the best way to capture the visual and tactile quality of the space.	
	3. Color is the main effective element on the perceptual experience.	✓	**Texture**	1. Visual / tactile texture is created in the interior space.	✓
	4. Cold/cool colors create a more stable effect in the space.	✓		2. 2D /3D texture is created in the space	
	5. Warm colors create a dynamic effect in the space.	✓		3. Texture articulated in the space is rough / smooth.	
	6. The intensity of different color tones creates a sense of diversity	✓		4. Texture created in the space as the artistic representation of the tactile quality of the surface	
	7. Object's color affects the perception of the medium's color: Object has a contrasting color from the background that is detected in three dimensions.	✓		5. The texture is created by the roughness of a chenille fabric piece or natural fluctuations of an unfinished wood.	
	8. Use of dark colors affects perception of interior space as heavier and narrower	✓		6. The texture is created by gloss or a combination of reflection and transparency partitioned by brushed steel or a sheet of glass	
	9. Use of light colors create a light and wide effect in the interior space			7. Objects in the interior space have a texture.	✓
	10. Use of color affects the shape and proportion of the interior space.	✓		8. Texture in the space is/are soft or solid, smooth or rough, loose or dense, light or heavy	✓
	11. Color utilized as the most important visual element of the interior design.	✓		9. Texture created in the space is the unique feature of everything.	✓

The use of strong colors with both natural and artificial light played the leading role on the visual quality of this case [see Table 4.14]. The light made the colors more recognizable while enriching the identity of the inner spaces. Both spaces and subspaces were highlighted with light and making them more understandable to the users as it plays a crucial role to indicate the spaces' features. Both natural and artificial lights added aesthetic and visual comfort by creating different atmospheres in the interior space.

For the color element, the use of intense colors defined the space and enriched the users' perceptual experience. The combination of cold and warm colors merges stability and dynamism in the atmosphere. The color was utilized as one of the effective visual elements in the interior spaces. The intense colors were contrasted with the white background which is affecting the users' perception of the atmosphere. Although interior space was designed as an open plan, the intensity of different colors created a sense of diversity and variety to the space. This color intensity was more clarified with the use of natural and artificial lights. Use of texture was limitedly effective on the spaces' visual quality due to its use on the inner objects. The texture combined in different ways and provided a unique feature to the interior spaces.

CASE 7: KALORIAS-CHILDREN'S SPACE IN PORTUGAL

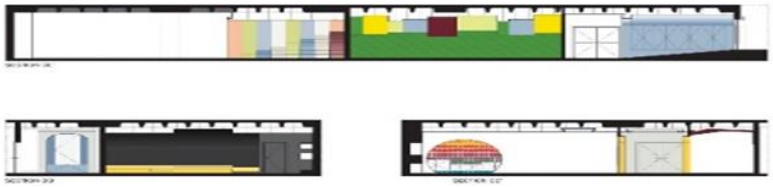
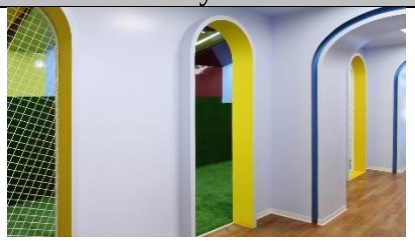
a) Interior Design Approach of Kalorias-Children Space in Portugal

Estúdio Amatam in Portugal has designed Kalorias-Children's Space. The case's total Area is 410 m² and was created in 2013 [see Table 4.15]. The current space of Kalorias-Children's Space complex in Lisbon is characterized by two big rooms and a large hall. The need to build a multifunctional space, broad and flexible, enabling numerous uses, was programmed and established.

The areas were modified on the basis of these programmatic criteria, preserving much of the existing structures. Each newly built room has distinctive characteristics, telling a different story in a way, it's an attraction per say. A passage is symbolized by the numerous arches, which are the principal distinguishing characteristic of the corridor. The Reading Area, where a small amphitheater was built, enables children to draw and write around with a giant blackboard.

The Room for Visual Arts gives primacy to curves and organic forms, and vivid colors to promote visual expression. The giant blue ceiling, illuminated by white lights, is reminiscent of a starry sky. The green carpet dilutes the ground with the wall in the Play Area, which is covered in a series of colored slopes that deconstruct the ceiling. A most rewarding aspect of this project is to see how different kids adapt this space as their own and appropriate it (Sagredo, 2018).

Table 4.15: Tabulating Kalorias-Children's Space visual information and drawings URL 66

CASE 7: KALORIAS-CHILDREN'S SPACE IN PORTUGAL			
Location: Portugal	**Architect:** Estudio AMATAM	**Construction Date:** 2013	**Area:** 410 m²
Drawings		Pictures	Pictures
			
Plan		Activity Room	Reading Area
			
Elevations		Play Area	Workshop Area
			
Sections		Enterance of Play Areas	Fitness Club

b) Investigating Visual Quality of Toddler Recreation Space at Kalorias-Children's Space in Portugal via Framework

Table 4.16: Investigating Visual Quality of Toddler Recreation Spaces at Kalorias-Children's Space in Portugal.

Framework for Investigating Visual Quality of Indoor Spaces					
Visual Quality Elements	**Criteria of Investigation**		**Visual Quality Elements**	**Criteria of Investigation**	
		CASE 7			**CASE 7**
Form	1. Forms are created with various elements for different functions.	✓	**Light**	1. Use of light causes both color and objects to be recognized.	✓
	2. Forms are the existence of closed volumes.	✓		2. Entire Space / Sub Spaces are highlighted with light.	✓
	3. Architectural form was created with different/similar masses	✓		3. Use of Light makes space understandable and meaningful	✓
	4. Forms consist of three-dimensional shapes that make subspaces within the entire space.	✓		4. The way Lighting articulated is one of the most important elements of space quality.	✓
	5. Sense of depth is created with the illusion of a vacuum	✓		5. Light creates visual comfort and provides 3-dimensional perception of spaces	✓
	6. Form perception depends on light quality. a. Low perception due to improper lighting quality b. Proper perception due to proper lighting quality	✓		6. Use of Light is the effective factor that displays the important features of design	✓
				7. Light adds aesthetic value to the space.	✓
				8. Natural/ Artificial Light is used in the space	✓
				9. Use of different / similar lighting solutions creates different atmospheres in the space.	✓
	7. The form created in the space provides soft / hard effect on the space.	✓		10. Use of Light creates positive emotions in the visual quality of the space.	✓
				11. Use of insufficient light decreases the visual quality of the interior space.	✓
	8. Forms created by curvilinear lines provide comfort and joy.	✓		12. Use of daylighting is more than artificial lighting.	
	9. Forms created by straight and hard lines create a clear and simple spatial effect.		**Material**	1. Spiritual feeling is conveyed with the use and appearance of similar / different materials.	✓
	10. Forms created by a combination of various / similar design elements.			2. Use of two or three materials in harmony created aesthetically	
Color	1. Colors create 'the definition' of the space.	✓		3. Use of harmonious material removes the need for unnecessary decoration and provides wealth	
	2. The color of the space is created as a result of using natural or artificial lights.	✓		4. Materials were combined in the best way to capture the visual and tactile quality of the space.	
	3. Color is the main effective element on the perceptual experience.	✓	**Texture**	1. Visual / tactile texture is created in the interior space.	✓
	4. Cold/cool colors create a more stable effect in the space.	✓		2. 2D /3D texture is created in the space	✓
	5. Warm colors create a dynamic effect in the space.	✓		3. Texture articulated in the space is rough / smooth.	✓
	6. The intensity of different color tones creates a sense of diversity	✓		4. Texture created in the space as the artistic representation of the tactile quality of the surface	
	7. Object's color affects the perception of the medium's color: Object has a contrasting color from the background that is detected in three dimensions.	✓		5. The texture is created by the roughness of a chenille fabric piece or natural fluctuations of an unfinished wood.	
	8. Use of dark colors affects perception of interior space as heavier and narrower	✓		6. The texture is created by gloss or a combination of reflection and transparency partitioned by brushed steel or a sheet of glass	
	9. Use of light colors create a light and wide effect in the interior space			7. Objects in the interior space have a texture.	✓
	10. Use of color affects the shape and proportion of the interior space.	✓		8. Texture in the space is/are soft or solid, smooth or rough, loose or dense, light or heavy	✓
	11. Color utilized as the most important visual element of the interior design.	✓		9. Texture created in the space is the unique feature of everything.	✓

According to the investigation results, it has been revealed that almost all elements have played a significant role in the formation of interior space's visual quality [see Table 4.16]. The excessive use of colors was the most effective element on the perceptual experience in the interior space. The colors were used in various sizes and shapes with different color tones and, hence, enriching the space's dynamism. Sense of diversity was created due to the use of different color tones. These colors were light and dark, cold and warm, affecting the users' perception of interior spaces.

Despite the limited use of natural light, artificial light was used widely and made the colors and forms more recognizable. It made the inner spaces more understandable while giving those positive emotions and visual comfort. The use of light increased the visual quality of the interior space. Various elements that were used to define the form were emphasizing the identification of each function. These have created closed volumes and were defined subspaces within the interior space while enriching the space's sense of depth. Straight or curvilinear lines were combined to create different shapes and masses where forms and colors were extended up to the ceiling and the use of visual/tactile texture, which appeared more on the floors as the unique features supported the visual quality of the interior spaces

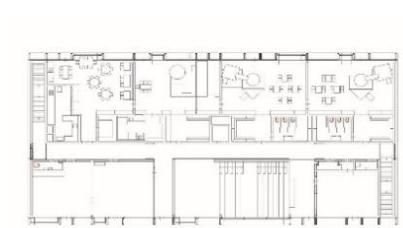
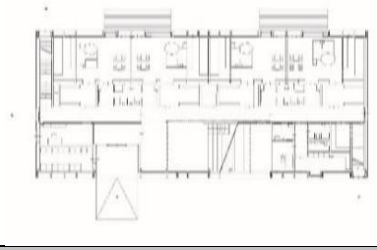
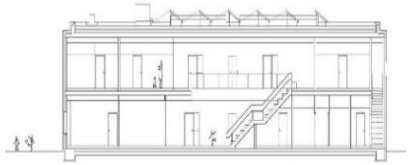
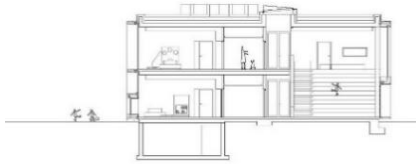
CASE 8: BEIERSDORF CHILDREN'S DAY CARE CENTRE IN GERMANY

a) Interior Design Approach of Beiersdorf Children's Day Care Centre in Germany

Architect Kadawittfeld designed this area of Recreation in Hamburg, Germany. Its total area is 1750 m², and it was designed in 2013 [see Table 4.17]. The new build is located next to a green area on the inner-city grounds of the Beiersdorf AG in Hamburg-Eimsbüttel. The design inspiration came from the recreation center resembles an abstract version of an apothecary cabinet. Featuring a shelf-like structure, the facade creates different functions and requirements, while at the same time, creates a light and transparent atmosphere indoors.

The added colorful frames shape the exterior and offer children a sense of direction and a way to identify with their group. Inside, the frames are accessible and complement the recreation area with exciting elements: platforms, boxes, seating areas, climbing, and playing have become a recreation area designed to stimulate children's creativity and imagination. The wide window formats provide suitable conditions for play. The German Sustainable Building Council awarded the children's daycare center a DGNB Gold certificate at the end of November 2014 (Aguilar ,2015).

Table 4.17: Tabulating Beiersdorf Children's Day Care Center's visual information and drawings URL 67

CASE 8: BEIERSDORF CHILDREN'S DAY CARE CENTRE IN GERMANY			
Location: HAMBURG, GERMANY **Architect:** KADAWITTFELDARCHITEKTUR **Construction Date:** 2013 **Area:** 1750 m²			
Drawings		Pictures	Pictures
 			
Plans		Front View	Open Play Area
			
Section 1	Exterior Place	Activity Hall	Close Play Area
			
Section 2	Resting Room	Activity Room	Interior View

b) Investigating Visual Quality of Recreation centre Beiersdorf Children's Day Care Centre in Germany Interior via framework.

Table 4.18**:** Investigating Visual Quality of Toddler Recreation Spaces at Beiersdorf Children's Day Care Centre in Germany

Framework for Investigating Visual Quality of Indoor Spaces					
Visual Quality Elements	**Criteria of Investigation**		**Visual Quality Elements**	**Criteria of Investigation**	
		CASE 8			**CASE 8**
Form	1. Forms are created with various elements for different functions.	✓	**Light**	1. Use of light causes both color and objects to be recognized.	✓
	2. Forms are the existence of closed volumes.	✓		2. Entire Space / Sub Spaces are highlighted with light.	✓
	3. Architectural form was created with different/similar masses			3. Use of Light makes space understandable and meaningful	✓
	4. Forms consist of three-dimensional shapes that make subspaces within the entire space.	✓		4. The way Lighting articulated is one of the most important elements of space quality.	✓
	5. Sense of depth is created with the illusion of a vacuum	✓		5. Light creates visual comfort and provides 3-dimensional perception of spaces	✓
	6. Form perception depends on light quality. a. Low perception due to improper lighting quality b. Proper perception due to proper lighting quality	 ✓		6. Use of Light is the effective factor that displays the important features of design	✓
				7. Light adds aesthetic value to the space.	✓
				8. Natural/ Artificial Light is used in the space	✓
				9. Use of different / similar lighting solutions creates different atmospheres in the space.	✓
	7. The form created in the space provides soft / hard effect on the space.	✓		10. Use of Light creates positive emotions in the visual quality of the space.	✓
				11. Use of insufficient light decreases the visual quality of the interior space.	
	8. Forms created by curvilinear lines provide comfort and joy.	✓		12. Use of daylighting is more than artificial lighting.	✓
	9. Forms created by straight and hard lines create a clear and simple spatial effect.		**Material**	1. Spiritual feeling is conveyed with the use and appearance of similar / different materials.	✓
	10. Forms created by a combination of various / similar design elements.	✓		2. Use of two or three materials in harmony created aesthetically	
Color	1. Colors create 'the definition' of the space.	✓		3. Use of harmonious material removes the need for unnecessary decoration and provides wealth	
	2. The color of the space is created as a result of using natural or artificial lights.	✓		4. Materials were combined in the best way to capture the visual and tactile quality of the space.	
	3. Color is the main effective element on the perceptual experience.	✓	**Texture**	1. Visual / tactile texture is created in the interior space.	✓
	4. Cold/cool colors create a more stable effect in the space.	✓		2. 2D /3D texture is created in the space	✓
	5. Warm colors create a dynamic effect in the space.			3. Texture articulated in the space is rough / smooth.	
	6. The intensity of different color tones creates a sense of diversity	✓		4. Texture created in the space as the artistic representation of the tactile quality of the surface	
	7. Object's color affects the perception of the medium's color: Object has a contrasting color from the background that is detected in three dimensions.	✓		5. The texture is created by the roughness of a chenille fabric piece or natural fluctuations of an unfinished wood.	
	8. Use of dark colors affects perception of interior space as heavier and narrower	✓		6. The texture is created by gloss or a combination of reflection and transparency partitioned by brushed steel or a sheet of glass	
	9. Use of light colors create a light and wide effect in the interior space			7. Objects in the interior space have a texture.	✓
	10. Use of color affects the shape and proportion of the interior space.	✓		8. Texture in the space is/are soft or solid, smooth or rough, loose or dense, light or heavy	✓
	11. Color utilized as the most important visual element of the interior design.	✓		9. Texture created in the space is the unique feature of everything.	✓

Investigation results put forward that almost all visual quality elements where natural light, different forms, and intense color tones created a reach perceptual and visual appearance in this case [see Table 4.18]. The light played a significant role in clarifying the objects and colors and better understanding the inner spaces. The co-existence of natural and artificial lights is adding a more appealing visual appearance to the interior spaces. The use of different and similar lighting solutions has created a different atmosphere.

The intense use of colors effectively defined the inner spaces and created a sense of diversity while enriching its perceptual experience. The objects' color has affected the perception of the spaces' shapes and proportions. Similarly, the form element affected the inner visual quality by creating similar and various masses and 3-dimensional shapes. Forms were created through curvilinear and hard lines while combining the sense of joy from the former with the latter's simplicity. The texture role as a visual quality element was limited. Accordingly, investigation results have revealed a combination of the soft and solid, loose and thick, and light and dense textures over the surfaces.

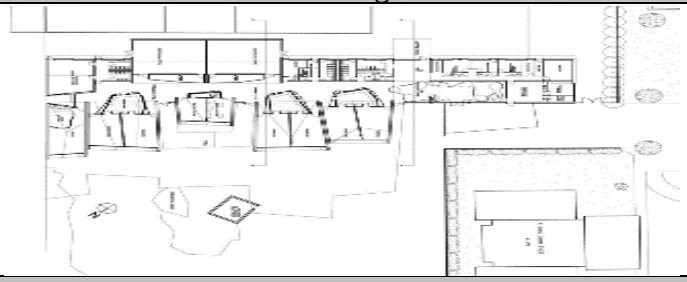
CASE 9: CHILDREN'S RECREATION CENTRE IN FRANCE

a) Interior Design Approach of Children's Recreation Centre in France

The AIR Architecture designed children's Recreation Centre in 2008 in France. It was located in the middle of a rural agricultural town within an area of 5250 m2 [see Table 4.19]. The case aimed to consider the site's specific layout where the building was reached via a narrow path that extended into it. The center was designed in a single volume that was entirely paved with mechanical tiles; nevertheless, the children's space was created using small volumes of different shapes, sizes, and colors. The interior spaces were also divided by creating subspaces of curvilinear masses. This division offered more breadth and generosity to the users' experience.

The children's recreation center is situated in a small rural town in the middle of agricultural fields. The plan considers the site's precise nature: except through a narrow ledge that extends through it can the building be reached. The key framework follows and reinforces this urban pattern, thus articulating a children-reserved filter between the city and the site. A single-volume completely covered by mechanical tiles is seen on the street, and the building blends in with other buildings. Small colored structures of various shapes open to the garden built for the kids on the other side (Valenzuela, 2014).

Table 4.19: Tabulating Children's Recreation Center's visual information and drawings URL 68

CASE 9: CHILDREN'S RECREATION CENTRE IN FRANCE			
Location: PIERRELAYE, FRANCE **Architect:** AIR/CYRILLE HANAPPE&OLIVER L. **Construction Date:** 2008 **Area:** 5250 m²			
Drawings		Pictures	Pictures
			
Plan			Exterior View
			
Diagram	Hall		Big Hall
			
Activity Hall	Play Area	Front View	Back View

b) Investigating Visual Quality of Recreation centre Children's Recreation Centre Space via framework.

Table 4.20: Investigating Visual Quality of Toddler Recreation Spaces at Children's Recreation Centre in France

Framework for Investigating Visual Quality of Indoor Spaces					
Visual Quality Elements	**Criteria of Investigation**		**Visual Quality Elements**	**Criteria of Investigation**	
		CASE 9			**CASE 9**
Form	1. Forms are created with various elements for different functions.	✓	**Light**	1. Use of light causes both color and objects to be recognized.	✓
	2. Forms are the existence of closed volumes.	✓		2. Entire Space / Sub Spaces are highlighted with light.	✓
	3. Architectural form was created with different/similar masses			3. Use of Light makes space understandable and meaningful	✓
	4. Forms consist of three-dimensional shapes that make subspaces within the entire space.	✓		4. The way Lighting articulated is one of the most important elements of space quality.	✓
	5. Sense of depth is created with the illusion of a vacuum			5. Light creates visual comfort and provides 3-dimensional perception of spaces	✓
	6. Form perception depends on light quality. a. Low perception due to improper lighting quality b. Proper perception due to proper lighting quality	✓		6. Use of Light is the effective factor that displays the important features of design	✓
				7. Light adds aesthetic value to the space.	✓
				8. Natural/ Artificial Light is used in the space	✓
				9. Use of different / similar lighting solutions creates different atmospheres in the space.	✓
	7. The form created in the space provides soft / hard effect on the space.	✓		10. Use of Light creates positive emotions in the visual quality of the space.	✓
				11. Use of insufficient light decreases the visual quality of the interior space.	
	8. Forms created by curvilinear lines provide comfort and joy.	✓		12. Use of daylighting is more than artificial lighting.	✓
	9. Forms created by straight and hard lines create a clear and simple spatial effect.	✓	**Material**	1. Spiritual feeling is conveyed with the use and appearance of similar / different materials.	✓
	10. Forms created by a combination of various / similar design elements.	✓		2. Use of two or three materials in harmony created aesthetically	
Color	1. Colors create 'the definition' of the space.	✓		3. Use of harmonious material removes the need for unnecessary decoration and provides wealth	
	2. The color of the space is created as a result of using natural or artificial lights.	✓		4. Materials were combined in the best way to capture the visual and tactile quality of the space.	
	3. Color is the main effective element on the perceptual experience.	✓	**Texture**	1. Visual / tactile texture is created in the interior space.	✓
	4. Cold/cool colors create a more stable effect in the space.	✓		2. 2D /3D texture is created in the space	
	5. Warm colors create a dynamic effect in the space.	✓		3. Texture articulated in the space is rough / smooth.	
	6. The intensity of different color tones creates a sense of diversity	✓		4. Texture created in the space as the artistic representation of the tactile quality of the surface	✓
	7. Object's color affects the perception of the medium's color: Object has a contrasting color from the background that is detected in three dimensions.	✓		5. The texture is created by the roughness of a chenille fabric piece or natural fluctuations of an unfinished wood.	✓
	8. Use of dark colors affects perception of interior space as heavier and narrower	✓		6. The texture is created by gloss or a combination of reflection and transparency partitioned by brushed steel or a sheet of glass	
	9. Use of light colors create a light and wide effect in the interior space			7. Objects in the interior space have a texture.	✓
	10. Use of color affects the shape and proportion of the interior space.	✓		8. Texture in the space is/are soft or solid, smooth or rough, loose or dense, light or heavy	✓
	11. Color utilized as the most important visual element of the interior design.	✓		9. Texture created in the space is the unique feature of everything.	✓

In case nine, it has been revealed that *light, color, and form* elements controlled the visual quality on the interior spaces [see Table 4.20]. The light played a significant role due to its role in identifying both colors and forms. Both artificial and natural lights were used in the interior spaces. The light added more aesthetic to the inner spaces. The use of different and similar lighting solutions created diversified atmospherics in the space. Artificial and natural light were used while articulating more on the latter, which has triggered a positive visual appearance quality.

The light quality made the forms more perceptual to the users. These forms are articulated using straight and hard lines in creating open and simple spaces for the outer shape while using curvilinear lines for the subspaces in the creation of closed volumes for various functions. Combining similar and diverse forms had an essential impact on forming the architectural form in this case. It is noticeable that these forms, using intense colors, impacted the space's visual quality simultaneously. The combination of cold and warm colors and intense use of various color tones added a sense of diversity. These colors were influential on the space's definition more and hence affected the interior shapes and proportions that ultimately influence users' perceptual experience. On the other hand, the texture element assisted the creation of forms and colors' artistic representation through the treatment of surface's tactile quality.

Case 10: HOUSE OF CHILDREN IN SAUNALAHTI IN FINLAND

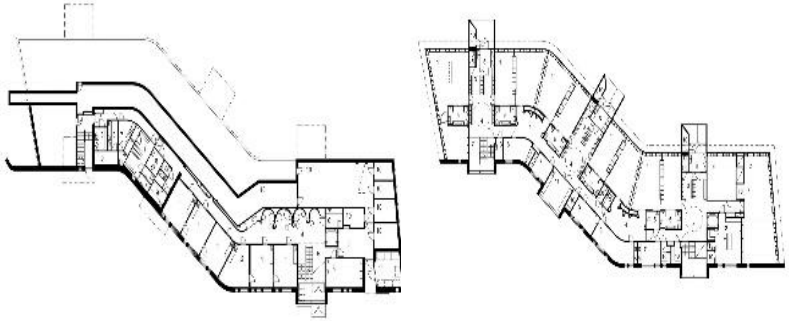
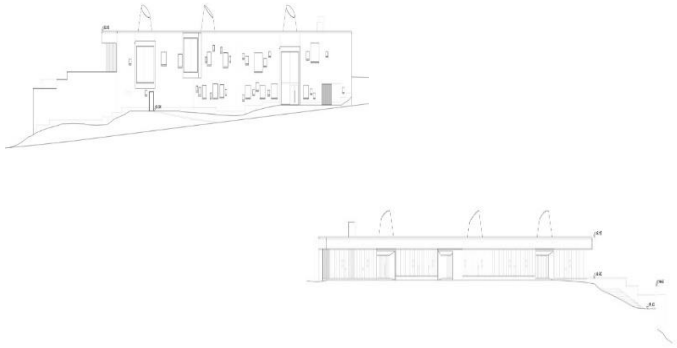
a) **Interior Design Approach of House of Children in Saunalahti in inland**

The motto of the case ten of Children (case ten) competition entry was "Mato Matala" (Lowly Worm by Richard Scarry) [see Table 4.21]. The first floor a recreation area with and communal spaces for all users. The recreation areas open out on the playing yard designed between the growing pine covering the hill slope and the new space. There are general and worker's amenities on the street side. The rendered, curved southern wall forms the building's public façade.

The majority of the façades are built of wood. The building is situated on a daunting, rocky site near the seashore of Saunalahti Gulf. A protected, unobstructed and exhilarating artificial landscape forms the recreation space. The current landscape has influenced the building's motifs, textures, and colors. The building's mainframe is built out of concrete. Light masonry with over-spread joint sealing is the Southwest facade. Other facades with wooden frame windows are plastered. Skylight windows open down to each unit's entry hall and contain photographs from sea, earth, and space.

Wooden ash parquet and filler flooring, green tufted carpet and wall plastering, and soft acoustic paper coating on the walls are interior materials. In this recreation space, special light fittings and fixtures, and furniture pieces are individually crafted and personalized. The architecture of the building is intended to stir up memories of fairytales in the world of children playing (Sánchez ,2014).

Table 4.21: Tabulating House of Children in Saunalahti visual information and drawings URL 69

<table>
<tr><th colspan="3">CASE 10: HOUSE OF CHILDREN IN SAUNALAHTI IN FINLAND</th></tr>
<tr><td colspan="3">Location: ESPOO, FINLAND Architect: JKMM ARCHITECTS Construction Date: 2011 Area: 1750 m²</td></tr>
<tr><td>Drawings</td><td>Pictures</td><td>Pictures</td></tr>
<tr><td>  </td><td>  </td><td>  </td></tr>
<tr><td>Plan</td><td>Big-Hall</td><td>Front View</td></tr>
<tr><td>  </td><td>  </td><td> 
Play Area
  </td></tr>
<tr><td>Elevations</td><td>Indoor Rooms</td><td>Activity Room</td></tr>
</table>

b) Investigating Visual Quality of Recreation centre House of Children in Saunalahti in Finland via framework.

Table 4.22: Investigating Visual Quality of Toddler Recreation Spaces at House of Children in Saunalahti in Finland.

Framework for Investigating Visual Quality of Indoor Spaces					
Visual Quality Elements	**Criteria of Investigation**		**Visual Quality Elements**	**Criteria of Investigation**	
		CASE 10			**CASE 10**
Form	1. Forms are created with various elements for different functions.	✓	**Light**	1. Use of light causes both color and objects to be recognized.	✓
	2. Forms are the existence of closed volumes.	✓		2. Entire Space / Sub Spaces are highlighted with light.	✓
	3. Architectural form was created with different/similar masses			3. Use of Light makes space understandable and meaningful	✓
	4. Forms consist of three-dimensional shapes that make subspaces within the entire space.	✓		4. The way Lighting articulated is one of the most important elements of space quality.	✓
	5. Sense of depth is created with the illusion of a vacuum	✓		5. Light creates visual comfort and provides 3-dimensional perception of spaces	✓
	6. Form perception depends on light quality. a. Low perception due to improper lighting quality b. Proper perception due to proper lighting quality	 ✓		6. Use of Light is the effective factor that displays the important features of design	✓
				7. Light adds aesthetic value to the space.	✓
				8. Natural/ Artificial Light is used in the space	✓
				9. Use of different / similar lighting solutions creates different atmospheres in the space.	✓
	7. The form created in the space provides soft / hard effect on the space.	✓		10. Use of Light creates positive emotions in the visual quality of the space.	✓
				11. Use of insufficient light decreases the visual quality of the interior space.	
	8. Forms created by curvilinear lines provide comfort and joy.	✓		12. Use of daylighting is more than artificial lighting.	✓
	9. Forms created by straight and hard lines create a clear and simple spatial effect.		**Material**	1. Spiritual feeling is conveyed with the use and appearance of similar / different materials.	✓
	10. Forms created by a combination of various / similar design elements.	✓		2. Use of two or three materials in harmony created aesthetically	✓
Color	1. Colors create ‘the definition’ of the space.	✓		3. Use of harmonious material removes the need for unnecessary decoration and provides wealth	✓
	2. The color of the space is created as a result of using natural or artificial lights.	✓		4. Materials were combined in the best way to capture the visual and tactile quality of the space.	✓
	3. Color is the main effective element on the perceptual experience.	✓	**Texture**	1. Visual / tactile texture is created in the interior space.	✓
	4. Cold/cool colors create a more stable effect in the space.	✓		2. 2D /3D texture is created in the space	✓
	5. Warm colors create a dynamic effect in the space.			3. Texture articulated in the space is rough / smooth.	✓
	6. The intensity of different color tones creates a sense of diversity	✓		4. Texture created in the space as the artistic representation of the tactile quality of the surface	✓
	7. Object's color affects the perception of the medium's color: Object has a contrasting color from the background that is detected in three dimensions.	✓		5. The texture is created by the roughness of a chenille fabric piece or natural fluctuations of an unfinished wood.	✓
	8. Use of dark colors affects perception of interior space as heavier and narrower	✓		6. The texture is created by gloss or a combination of reflection and transparency partitioned by brushed steel or a sheet of glass	
	9. Use of light colors create a light and wide effect in the interior space			7. Objects in the interior space have a texture.	✓
	10. Use of color affects the shape and proportion of the interior space.	✓		8. Texture in the space is/are soft or solid, smooth or rough, loose or dense, light or heavy	✓
	11. Color utilized as the most important visual element of the interior design.	✓		9. Texture created in the space is the unique feature of everything.	✓

All of the visual quality elements played a recognizable role; nevertheless, color, material, and texture can be considered the most dominant elements [see Table 4.22]. The intense color tones defined the inner spaces and added more diversity to the space’s visual appearance. The light colors added a sense of wideness to space, while the dark light colors affect interior spaces' perception as heavier and narrower. However, it must be noted that the diversity of colors has added dynamism to the inner spaces and enriching the users’ visual perception.

The use of diverse materials was co-existed in harmony, created an aesthetic atmosphere. It has been investigated that the materials were mixed in the best way to capture the visual and tactile quality of the space. Following the diverse use of materials, the varied visual and tactile textures were created in the interior spaces. The combination between roughness and smoothness has articulated the space and enhanced the interior spaces' artistic representation. Besides using 3D forms, 2D tactile textures were used in the interior space on the walls and on the furniture to increase attraction. Curvilinear and straight lines were both used to add more diversity to the spaces. Natural and artificial lights were used widely in the interior, and hence they have enriched the perceptual experience of the interior space.

4.5 Evaluation of Findings and Discussion

This research was conducted to investigate which features play a primary role in forming the spatial and visual quality of toddler recreation spaces. Investigation results have revealed that the main significant visual quality element that is effective in the formation of the visual quality of toddler recreation spaces is *light*. For instance, in the Jaures Recreation center (case one), the light made the space clearer, and the objects and colors were emphasized much better [see Table 4.4]. As it was stated by Mania (2005), the use of light helped to recognize both color and objects, and this case is a proper exemplar of this statement. Moreover, as was mentioned by Okutan (2008) and Goler (2009), light makes the space more understandable and meaningful. This research evidenced how light makes the toddler recreation indoor spaces meaningful.

On the other hand, there was an emphasis on using different/similar lighting solutions and how this articulation creates different atmospheres in the space while the use of light affects the visual quality of the space while triggering positive emotions (Ching; 1987). Hence, in the analyzed cases, the investigation results put forward the blended usage of natural and artificial light in the space investigated as the signifying issue that has enriched the visual quality of the space and thus users' experience in the interior space.

Investigation results conclude that Ledeer Day Care case's (case two) forms were created with various items for different functions [see Table 4.6]. It could be noted that this formation controls the space's visual quality due to creating varied masses with closed volumes, as it was also indicated by Turgay and Altuncu (2011) in the literature. Furthermore, as it was described earlier, forms are created by combining various or

similar design elements (Ching, 2007), and namely, they are influential elements of visual quality in this case. Alongside the role of form, it could be said that the use of color has improved the users' perceptual experience as it was one of the matters of visual quality formation highlighted by Bayık (2001).

Moreover, findings upon the use of color are the exemplar for the descriptions made by Sekerci et al. (2016). They stress the use of intense color tones, especially the warm ones, would add more dynamism to the indoor spaces as it is investigated in that case. Case two was also affected by the light element that helps the user identify both color and objects, as stated by Mania (2005). As Dodsworth mentioned (2009), the texture could be created by combining reflection and transparency, as it was investigated in case two.

Potter (1856) emphasized the crucial need to use natural and artificial light in interior spaces due to light in recognizing the material, texture, and color. In this sense, it was investigated that the wide usage of natural light in case three has enriched the interior spaces by enhancing texture perception. The particular use of various forms in the recreation centre is recognizable as there is a creation of subspaces from 3-D dimensional shapes. This kind of use of rich forms in this centre emphasizes the sense of depth, forming a vacuum's illusion as was stated by Shamsuddin et al. (2013).

As it was stated by Pile (2005), using different materials in harmony creates an aesthetic interior space. In this manner, it has been revealed that the use of several visual and tactile textures offers more artistic representation to this interior space due to combining rough and soft surfaces with the help of wood, steel, and glass.

According to Goler (2009), light is the main factor that reveals most characteristics of the indoor spaces. It is noticeable that the Child Day Care Centre's (case five) visual quality is mainly guided by the element of light. Accordingly, it has been found that the centre emphasized the light's role in illuminating the spaces and hence for creating positive emotions for the users, as it was also argued by Okutan (2008). The rapid use of natural light in the care centre was followed by the wide use of glass walls (light material) to provide a light texture to the indoor spaces, recommended by Loei and Deeley (2002).

The coloured floorings have helped define the spaces, and the use of color has played a crucial role in improving users' perceptual experience. Moreover, it was revealed that the centre also enriched the users' perceptual sense through using rough and smooth textures, as similarly stated by Loei and Dekeyel (2002). Additionally, it could be seen that using curvilinear lines in indoor spaces bring more comfort and joy to the users, as was described by Aslan et al. (2015).

The Child Development Support Canter's (case five) visual quality was guided by the light element predominantly [see Table 4.12] and an exemplar of the statement by Goler (2009) that light is one of the most effective indoor factors. Textures also played a crucial role in case five visual quality, where these textures can create the uniqueness of this interior space. Despite the limited use of materials such as wood and glass, in this case, extending the wood to the ceilings eliminated the need for additional visual elements, as it was argued by Dodsworth (2009). Moreover, it has been seen that the use of wood materials also added more warmth in the indoor spaces.

The excessive use of colors in the Baby Steps Interior case improved the users' perceptual experience in the space, as similarly stated by Turgay and Altuncu (2011). Shamsuddin and others (2013) explained that warm colors create a dynamic effect in indoor spaces, while Aslan et al. (2015) discussed that cold colors result in more simplicity to space. Accordingly, it has been investigated that using different color tones, including warm and cold colors, combine both categories' benefits [see Table 4.14]. The rich colors were followed by rich textures that provided artistic representation to the interior surfaces. Similarly, it has been revealed that various forms created closed volumes and subspaces within the interior space. Aslan et al. (2015) further added that using straight lines in interior design can create a simple and easy to reach spatial effect, seen in the Baby Steps Interior spaces.

The investigation concluded that Kalorias-Children’s (case seven) Space's visual quality was affected by almost all elements; nevertheless, the rapid use of color could be recognized from the first sight [see Table 4.16]. The use of colors is effective on the definition of the place as described by Sekerci et al. (2016) and investigated that it creates a more perceptual space as similar to (Bayik (2001) statement as cited in Guley, 2017). The intensity of different colors, as this case represents, creates a sense of diversity that was mentioned by Sekerci et al. (2016). To add more recognition to the colors used, artificial light was used, and it could be noted that this articulation is making the spaces more understandable, as stated by Guley (2017). The indoor spaces included several forms that have created closed volumes. This was effective in creating the illusion of vacuums (Shamsuddin et al., 2013) and forming subspaces, as Aslan et al. (2015) argued.

The use of intense color emphasizes Beiersdorf Children's Day Care Centre (case eight). The intensity of different color tones creates a sense of diversity, as Sekerci et al. (2016) stated. It has been revealed that the extensive use of colors could also affect the design shapes and proportions [see Table 4.18]. The various forms also affected the center's visual quality, where these forms created 3-D dimensional masses that effectively made indoor subspaces. These masses were also created for different functions of the spaces by articulating curvilinear lines while adding more joy to the interior atmosphere, as Aslan et al. (2015) described. Natural and artificial light was used widely in the centre to identify the primary and subspaces in the project while adding a sense of safety to the users, as highlighted by Bell (2001).

In the last case study House of Children in Saunalahti, it has been revealed that the visual quality was influenced by almost all of the elements [see Table 4.22]. Interior space was formed with various elements to sub-divide the space for the use of different functions, as emphasized by Turgay & Altuncu (2011). Forms were created closed volumes with soft and hard effects on the space due to using curvilinear lines to make the space more comfortable. On the other hand, it was determined that straight and rigid lines create the open and simple spatial effect in the space. Moreover, it must be noted that in this case, forms were created by the combination of various and similar design elements by following Ching's (2007) descriptions.

As a result of the investigation of 10 cases (Table 4.23), role of visual quality elements can be listed in line with their significance on the formation of visual quality at toddlers' recreation areas indoor spaces as follows:

Table 4.23: Theoretical Framework or Investigation Visual Quality for the Case Studies of Toddlers' Recreational Spaces

VISUAL QUALITY ELEMENTS (VEM)	*THEORITICAL FRAMEWORK FOR INVESTIGATING VISUAL QUALITY*											
	Criteria of Investigation		**Case 1**	**Case 2**	**Case 3**	**Case 4**	**Case 5**	**Case 6**	**Case 7**	**Case 8**	**Case 9**	**Case 10**
FORM	1.	Forms are created with various elements for different functions.		✓	✓				✓	✓	✓	✓
	2.	Forms are existence of closed volumes.		✓	✓	✓			✓	✓	✓	✓
	3.	Architectural form was created with different / similar masses.		✓					✓			
	4.	Forms consist of three-dimensional shapes that make sub spaces within the entire space.		✓	✓	✓			✓	✓	✓	✓
	5.	Sense of depth is created with the illusion of a vacuum			✓				✓	✓		✓
	6.	Form perception depends on the light quality. a. Low perception due to improper lighting quality	✓				✓					
		b. Proper perception due to proper lighting quality		✓	✓	✓		✓	✓	✓	✓	✓
	7.	The form created in the space provides soft / hard effect on the space	✓	✓	✓	✓			✓	✓	✓	✓
	8.	Forms created by curvilinear lines provide comfort and joy.			✓				✓	✓	✓	✓
	9.	Forms created by straight and hard lines create a clear and simple spatial effect.	✓	✓	✓	✓	✓	✓			✓	
	10.	Forms created by a combination of various / similar design elements.	✓	✓						✓	✓	✓
COLOR	1.	Colors create 'the definition' of the space.				✓		✓	✓	✓	✓	✓
	2.	The color of the space is created as a result of using natural or artificial lights.		✓	✓			✓	✓	✓	✓	✓
	3.	Color is the main effective element on the perceptual experience.	✓	✓				✓	✓	✓	✓	✓
	4.	Cold/cool colors create a more stable effect in the space.						✓	✓	✓	✓	✓
	5.	Warm colors create a dynamic effect in the space.		✓	✓	✓	✓	✓	✓		✓	
	6.	The intensity of different color tones creates a sense of diversity.		✓		✓	✓	✓	✓	✓	✓	✓
	7.	Object's color affects the perception of the medium's color: Object has a contrasting color from the background that is detected in three dimensions.						✓	✓	✓	✓	✓
	8.	Use of dark colors affects perception of interior space as heavier and narrower						✓	✓	✓	✓	✓
	9.	Use of light colors create a light and wide effect in the interior space		✓	✓	✓	✓					
	10.	Use of color affects the shape and proportion of the interior space.		✓	✓	✓	✓	✓	✓	✓	✓	✓
	11.	Color utilized as the most important visual element of the interior design.	✓					✓	✓	✓	✓	✓

LIGHT	1.	Use of light causes both color and objects to be recognized.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	2.	Entire Space / Sub Spaces are highlighted with light.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	3.	Use of Light makes space understandable and meaningful	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	4.	The way Lighting articulated is one of the most important elements of space quality.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	5.	Light creates visual comfort and provides 3-dimensional perception of spaces.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	6.	Use of Light is the effective factor that displays the important features of design.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	7.	Light adds aesthetic value to the space.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	8.	Natural/ Artificial Light is used in the space,	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	9.	Use of different / similar lighting solutions creates different atmospheres in the space.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	10.	Use of Light creates positive emotions in the visual quality of the space.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	11.	Use of insufficient light decreases the visual quality of the interior space.					✓	✓	✓			
	12.	Use of daylighting is more than artificial lighting.	✓		✓	✓	✓	✓		✓	✓	✓
MATERIAL	1.	Spiritual feeling is conveyed with the use and appearance of similar / different materials.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	2.	Use of two or three materials in harmony created aesthetically.			✓	✓		✓				✓
	3.	Use of harmonious material removes the need for unnecessary decoration and provides wealth.			✓	✓						✓
	4.	Materials were combined in the best way to capture the visual and tactile quality of the space.			✓		✓					✓
TEXTURE	1.	Visual / tactile texture is created in the interior space.			✓			✓	✓	✓	✓	✓
	2.	2D /3D texture is created in the space	✓		✓				✓	✓		✓
	3.	Texture articulated in the space is rough / smooth.			✓		✓		✓			✓
	4.	Texture created in the space as the artistic representation of the tactile quality of the surface.			✓		✓				✓	✓
	5.	The texture is created by the roughness of a chenille fabric piece or natural fluctuations of an unfinished wood.	✓	✓	✓						✓	✓
	6.	The texture is created by gloss or a combination of reflection and transparency partitioned by brushed steel or a sheet of glass.	✓		✓	✓						
	7.	Objects in the interior space have a texture.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	8.	Texture in the space is/are soft or solid, smooth or rough, loose or dense, light or heavy.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	9.	Texture created in the space is the unique feature of everything.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

According to the findings, the significant role of the addressed visual quality elements could be ordered as following:

1. *Light*

Accordingly, *light* is determined as the most effective element for toddler recreation spaces' visual quality. Penetrating daylight properly in most interior spaces has evidenced how it enriched visual comfort and positive emotions. Both natural and artificial light made the use of an object and the perception of colors accurately and understandable. This effect added aesthetic value to the spaces. In this sense, all cases show sufficient light usage and reflect properly how it increases interior spaces' visual quality.

2. *Color*

The use of *color*, particularly in the definition of spaces, support shapes, and proportions perception. The spaces' color was clarified due to the articulation of natural or artificial lights in toddler recreational spaces. This confirms the main effective rule of the color element towards the visual quality. Most cases (case 2,3,4,5,6,7,8) adapted intense warm color use, which enriched the sense of diversity while adding more comfort and joy to inner spaces. Despite the excessive use of intense colors, the cases placed between using dark colors and light colors. While the former affected the users' perception of interior space, making them heavier and narrower, the latter created a broad internal space effect. It is worth mentioning that the use of contrasting colors on objects was limited among the case studies.

3. *Materials*

The reliance on wooden *materials* is recognized in all cases, which played a significant role in enhancing the users' spiritual feelings. The use of similar and different materials was in harmony and enriched the interior spaces' aesthetic quality. Hence, in most

cases, it could be argued that materials were combined effectively to capture the visual and tactile quality of the spaces.

4. *Texture*

Mutual use of *texture* within the interior spaces, such as soft/hard, smooth/rough, light/heavy, etc., demonstrated the enhancement of toddler recreational areas' visual quality. Objects with their textures also played a significant role in the interior spaces by their visual and tactile surfaces. Textures were mostly created by the roughness of a chenille fabric piece or natural fluctuations of the materials. Textures created 2D /3D surfaces by adding roughness and smoothness in the spaces, making the textures more understandable. The use of glossy texture that combined reflection and transparency was limited in the case studies.

5. *Form*

Form played its effective role as a visual quality element through providing soft and hard effects in the inner spaces. Its perception was dependent on the light quality, where most cases were percept properly by the users. In most cases (case 2,3,4,7,8,9,10), there is a formation of three-dimensional shapes that are creating subspaces within the entire space to inhabit several functions in the area. These closed volumes are mainly articulated with straight and hard edges to create a clear and simple spatial effect. Despite the arguments that state that toddler recreation spaces were designed principally by curvilinear lines, investigation results revealed the limited use of these types of lines. Moreover, the use of illusion effects of forms and the sense of depth created with this approach were limitedly investigated in the case studies.

Chapter 5

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusion

Toddler recreation venues worldwide share a leading role by providing various opportunities to learn through playing whilst improving toddlers' skills. Since play is essential for a child in early childhood, these venues should aim to provide various play-based recreations and spaces equipped with diverse game elements as well as appropriate spatial qualities. This thesis therefore being aware of this significance aimed to investigate the role of visual quality elements on the formation of visual quality at toddler's recreation areas. Ten case studies including toddler recreation centres from different locations / context of the world were chosen by following the systematic filtering method in order to conduct a study for the investigation of significant aspect of indoor spaces.

Spatial and visual elements of recreational spaces are essential features for toddlers and children during they learn by playing due their physical and psychological engagement by these features while playing. However, at the very beginning of this study it has been observed that the visual and spatial quality of toddler recreation spaces in the current context show several weaknesses and defined as the life problem of this study. Problems exist in those spaces could roughly listed as, inappropriate/ arbitrary spatial design, imperfect play and spatial equipment which was not specifically built / selected for toddler, inappropriate visual elements like form, texture,

color, material, and form. Therefore, this study initiated with a quest of how toddler recreation spaces' visual quality could be accomplished and then conduct an investigation in order to determine the role of visual quality elements in the formation of visual quality as a result of analysing ten successful toddlers' recreational centres worldwide which were designed particularly for this purpose.

Each case study was objectively analysed with the framework developed as a result of the literature review. Accordingly, as a result of this investigation this study has concluded some general findings on the formation of indoor spatial and visual quality of toddler recreation centres. Therefore, it has been revealed that there is a sensible articulation of both natural and artificial light solutions. Particularly, penetration of natural light into these indoor spaces which adds reflective and transparent textures to the areas as a result of using glass walls and large windows was one of the significant findings.

In the current context, inadequate besides improper penetration of natural light was one of the detected weakness and a significant life problem which must be concerned cautiously. This feature is also significant due to its effective role on the recognition of the use of color in that spaces as well as making them more legible to the users. Moreover, investigation results revealed that proper light quality also affects perception of the space forms where in each case, it has been exposed that use of 3-dimensional masses generated subspaces for different functions. Sub spaces were created more with rectilinear forms and as a result of this formation it has been determined that a simpler layout has been achieved rather than a complicated one.

Use of natural materials were established as the other significant concern, especially the use of wood material. Due to the materials' role in enhancing the spiritual feelings, it could be noted that natural light and natural materials enrich both perceptual and visual experience and adding more positive emotions to the users. As last but not the least it has been exposed that the use of various materials in harmony with warm and intense colors creates more dynamic atmospheres for the toddlers.

Accordingly, following the findings as a result of this study this thesis concluded with the below stated recommendations while designing toddler recreation centres' indoor spaces.

1. *Natural lighting solutions must be properly provided and primarily for main spaces, while the artificial ones are more useful in the subspaces to enrich legibility of various functions for their users.*
2. *Toddlers' recreational spaces should use natural materials to improve their perceptual experience.*
3. *Warm and intense colours could be used in recreational spaces in order to enhance diversity and dynamism.*
4. *Recreational centres for toddlers need to shelter 3-dimensional masses with a proper size and scale to form subspaces to enrich proper integration of diverse recreational functions.*
5. *Combining diverse textures as soft and hard, smooth and rough, loose and dense, etc., would enhance the recreational areas' visual / aesthetic representation.*

6. *Role of furniture fixtures and accessories, on the formational of visual quality is also necessary to study. According to this point of view, these can also be examined in order to take the visual quality one step further.*

In order to enhance the toddler indoor recreation spaces', visual and spatial quality could be improved through forming sub-spaces for the desired scale in these spaces with suitable lighting solutions, material, texture, and colors. Creating space in space considering these factors are effective in the visual quality of recreation interiors, which is the place where children learn while playing.

This thesis study results were limited to the investigation of 10 cases and findings in line with their existing features. However, determination of the repetitive findings was revealed the general concerns related with the visual quality of the indoor toddler recreation spaces as a result of a proper design process. In the further stages, this study could be developed by increasing the number of the cases. Moreover, this study is limited to a physical / visual analysis of the cases and results achieved as a result of re-readings of the cases. There is also a need to address user opinions through a survey in order to understand how various visual quality elements is effective on their psychological well-being and also to determine user satisfaction related to articulation of visual quality elements in the toddler recreation indoor spaces in order to develop design guidelines for the interior design of this particular recreation space. In this study, only visual materials were examined. Nevertheless, there are other indirect and direct effects like sound and smell that affect visual perception. Therefore, in addition to the discussed five elements, future studies are advised to consider sound and smell indirect and direct effects. The role of furniture fixtures and accessories is also

recommended for further investigation to reach more comprehensive findings for improving the visual quality of these interior spaces.

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