



**DESIGNING A MIXED - AGE PLAYGROUND BASED
ON CHILDREN IMAGINATION**

TAYYEBEH BABAEI

Master's Thesis

Graduate School

Izmir University of Economics

İzmir

2022

**DESIGNING A MIXED - AGE PLAYGROUND BASED
ON CHILDREN IMAGINATION**

TAYYEBEH BABAEI

A Thesis Submitted to
The Graduate School of Izmir University of Economics
Master's Program in Design Studies

İzmir
2022

ABSTRACT

DESIGNING A MIXED - AGE PLAYGROUND BASED ON CHILDREN IMAGINATION

Babaei, Tayyebeh

Master's Program in Design Studies

Advisor: Asst. Prof. Dr. Didem Kan Kılıç

March, 2022

As children grow and develop, they play in a variety of ways and possess a variety of strengths and limits. Playground equipment is often created with a certain age group in mind in order to maintain children's interest and ensure their safety. The purpose of this study is to extract an imaginary playground from children and to design a playground for children of various ages. This study analyzes that, how to design a playground for mixed age children and, how children may learn from one another on this playground, what are additional advantages of mixed age playgrounds, and also how playgrounds impact children's creativity. We believe that mixed-age playgrounds benefit both younger and older children by encouraging peer learning. We also feel that playgrounds constructed by designers who rely on children's imaginations may have an impact on their creativity. Because of the special spatial circumstances of children, Karşıyaka Child Protection Center in Izmir, Turkey, was chosen as a case study for this research. At the first step, survey with 111 children and was undertaken to determine their preferred playground; and in the second step, a mixed- age

playground was designed according to the survey results. We found that same-age play allows youngsters to collaborate fully and equally. Even the competitiveness produced by same-age play may be interpreted as beneficial, as it, can assist inspire performance and prepare children for competitive adult job conditions in a competitive society. Nevertheless, age-mixed play has benefits to same-age play in terms of acquiring skills, culturally relevant information, cultural rituals, nurturance, and leadership. When children are not institutionally separated by age, they opt to engage in a lot of age-mixed and same-age play, gaining experience with both. At the end, according to results, we designed a mixed-age playground for the children and employees in Karşıyaka Child Protection Agency in Izmir, Turkey.

Keywords: Playground Design, Play, Mixed- Age Children, Imagination, Children 3 To 12.

ÖZET

ÇOCUKLARIN HAYALLERİNE DAYALI KARMA - YAŞ OYUN ALANLARI TASARLAMAK

Babaei, Tayyebeh

Tasarım Çalışmaları Yüksek Lisans Programı

Tez Danışmanı: Dr. Öğr. Üyesi Didem Kan Kılıç

Mart, 2022

Çocuklar büyüdükçe ve geliştikçe, çeşitli şekillerde oynarlar ve çeşitli güçlü yönlere ve sınırlara sahip olurlar. Oyun alanı ekipmanları da çocukların ilgisini çekmek ve güvenliklerini sağlamak için genellikle belirli bir yaş grubu düşünülerek oluşturulur. Bu çalışmanın amacı, çocukların hayalindeki oyun alanını keşfetmek ve çeşitli yaş grubundaki çocuklar için oyun alanı tasarlamaktır. Bu çalışmada, karma yaş grubu çocuklar için bir oyun alanının nasıl tasarlanacağı ve çocukların bu oyun alanında birbirlerinden ne öğrenebilecekleri, karma yaş oyun alanlarının ek avantajlarının neler olduğu ve oyun alanlarının çocukların yaratıcılığını nasıl etkilediği incelenmiştir. Karışık yaş oyun alanlarının akran öğrenimini teşvik ederek hem küçük hem de büyük çocuklara fayda sağladığına inanıyoruz. Ayrıca çocukların hayal güçlerine güvenen tasarımcılar tarafından inşa edilen oyun alanlarının çocukların yaratıcılıkları üzerinde de etkisi olabileceğini düşünüyoruz. Çocukların özel mekânsal koşulları nedeniyle, bu araştırma için örneklem olarak İzmir'deki Karşıyaka Sevgi Evleri Çocuk Yuvası seçilmiştir. İlk aşamada 111 çocuğa anket uygulanmış ve tercih

ettikleri oyun alanı belirlenmeye çalışılmış; ikinci adımda ise anket sonuçlarına göre karma yaş oyun alanı tasarlanmıştır. Bu çalışmayla birlikte, aynı yaş grubu için tasarlanan oyun alanlarının tam ve eşit bir şekilde işbirliği yapılmasına olanak sağladığını gördük. Aynı yaştaki oyunların ürettiği rekabet gücü bile faydalı olarak yorumlanabilir, çünkü performansa ilham verebilir ve çocukları rekabetçi bir toplumda rekabetçi yetişkin iş koşullarına hazırlayabilir. Bununla birlikte, karma-yaş oyun alanlarının çocuklar için beceri edinme, kültürel ritüeller, bakım ve liderlik açısından faydaları olabileceğini gördük. Çocuklar kurumsal olarak yaşlarına göre ayrılmadıklarında, her ikisinde de deneyim kazanarak, yaşları karıştıran ve aynı yaştaki birçok oyuna katılmayı tercih ederler. Bu çalışmanın sonunda, sonuçlara göre, İzmir Karşıyaka Çocuk Esirgeme Kurumu'nda çocuklar ve çalışanlar için karma yaş oyun alanı tasarladık.

Anahtar Sözcükler: Oyun Alanı Tasarımı, Oyun, Karışık Yaştaki Çocuklar, Hayal Gücü, 3-12 Yaş Arası Çocuklar.

ACKNOWLEDGEMENTS

I would like to thank my dearest Professor Didem Kan Kılıç for her invaluable support and insights that helped me write this thesis. She offered her assistance without hesitation and generously shared her specialized expertise and experience dealing with children. She was always there for me with her patience, management, and impeccable timing.

My sincere thanks also go to the principal and members of Karşıyaka Child Protection Center in Izmir for their assistance and patience during the completion of the of this project.

A special thanks also to students from IUE's FFAD course who enthusiastically collaborated on this project. A further special thanks to my family for accompanying me on this journey, and everyone who works to make the world a better place for children.

TABLE OF CONTENTS

ABSTRACT	III
ÖZET	V
ACKNOWLEDGEMENTS	VII
TABLE OF CONTENTS	VIII
LIST OF TABLES	X
LIST OF FIGURES	xi
CHAPTER 1: INTRODUCTION.....	1
1.1. <i>Problem Definition</i>	1
1.2. <i>Research Questions of the Study</i>	2
1.3. <i>Methodology of the Study</i>	3
1.4. <i>Structure of the Study</i>	4
CHAPTER 2: PLAY CONCEPTS	6
2.1. <i>Stages of Play</i>	7
2.2. <i>Mixed- Age Play's Values for children</i>	16
2.2.1. <i>The Benefits of Mixed-age Play for Younger Children</i>	17
2.2.1.1. <i>Play in the Proximal Development Zones</i>	18
2.2.1.2. <i>Role Models for Younger Children</i>	19
2.2.1.3. <i>Additional Caregivers and Emotional Support</i>	20
2.2.2 <i>The Benefits of Mixed-age Play for Older Children</i>	20
2.2.2.1. <i>Strengthen the Ability to Nurture and Lead</i>	20
2.2.2.2. <i>Broaden Comprehension Via Teaching</i>	21
2.2.2.3. <i>Boosts Creativity</i>	21
2.3. <i>Creativity in Children</i>	21
2.4. <i>Chapter Discussion</i>	23
CHAPTER 3: HISTORY OF PLAYGROUNDS.....	25
3.1 <i>Playground Types</i>	27
3.2. <i>Design Principals for Mixed- Age Playgrounds</i>	30
CHAPTER 4: METHODOLOGY	32
4.1. <i>Case Study</i>	32

4.2. <i>Participants</i>	34
4.3. <i>Questionnaire</i>	34
4.4. <i>Design Part</i>	36
CHAPTER 5: FINDING AND DISCUSSION.....	37
5.1. <i>Results According to the Survey</i>	37
5.2. <i>Design Process</i>	45
CHAPTER 6: CONCLUSION	57
REFERENCES.....	60
APPENDICES	66
<i>APPENDICES A: QUESTIONNAIRE</i>	66
<i>APPENDICES B: ALTERNATIVE I- TECHNICAL DRAWINGS</i>	70
<i>APPENDICES C: ALTERNATIVE I- RENDERS</i>	71
<i>APPENDICES D: ALTERNATIVE II- TECHNICAL DRAWINGS</i>	76
<i>APPENDICES E: ALTERNATIVE II- RENDERS</i>	78

LIST OF TABLES

Table 1. Classification of Stages of Play	8
Table 2. Playgrounds' Design Assessments.	50



LIST OF FIGURES

Figure 1. Karşıyaka Sevgi Evleri Çocuk Yuvası Garden.....	4
Figure 2. Fröbel Gifts.....	25
Figure 3. A Group of Children Playing in Hull House Playground.....	26
Figure 4. Junk Playground. Photograph: Abby Oulton.....	28
Figure 5. The Notting Hill Adventure Playground in Faraday Road.....	28
Figure 6. Karşıyaka Sevgi Evleri Çocuk Yuvası Entrance.	32
Figure 7. Arial View of Project's Site.....	33
Figure 8. Participant's Age Range.....	34
Figure 9. Thumbnail of the Conducted Questionnaire's Pages.	35
Figure 10. Question Number 1, Constructive Play Elements or Traditional Playground Elements.....	37
Figure 11. Question Number 2, Sedentary or Active Play Elements.....	38
Figure 12. Question Number 3, Adventure Playground Elements, Water or Hanging Ropes.....	39
Figure 13. Question Number 4, Imaginative or Realistic Pretending Play.....	40
Figure 14. Question Number 5, Playmates.	40
Figure 15. Question Number 6, Outdoor or Indoor Playground.....	41
Figure 16. Question Number 7, Color Palette.....	42
Figure 17. Question Number 8, Color Palette.....	42
Figure 18. Question Number 9, Seasonal Color Palette.	43
Figure 19. First Top Three Choices	43
Figure 20. Question Number 10, Elements of 3D and 2D Playgrounds.....	43
Figure 21. Second Top Three Choices.....	44
Figure 22. Question Number 11, Elements of 3D and 2D Playgrounds.....	44
Figure 23. A Grassy Area with Trees and Buildings in the Background of the Project's Site.	46
Figure 24. A Grassy Area with Trees and Bushes in the Site of Project.	46
Figure 25. The Playground's Location	47
Figure 26. Circular Flower Box.	47
Figure 27. Playground Alternative 01.....	48
Figure 28. Playground Alternative 02.....	49

Figure 29. Socializing Part, Sitting Area	70
Figure 30. Benches in Adventure Playground	70
Figure 31. Traditional Playground and Mounds View.	71
Figure 32. Traditional Playground with a View of the Trampoline.....	71
Figure 33. View to the Traditional Playground.	72
Figure 34. Adventure Playground and Trampoline View	72
Figure 35. Adventure Playground View.	73
Figure 36. Sitting and Socializing Area.	73
Figure 37. Sandbox View.....	74
Figure 38. View of Adventure Playground with Benches.	74
Figure 39. View of Adventure Playground.	75
Figure 40. Holistic Perspective.	75
Figure 41. Shape Sorter Details	76
Figure 42. Tic Tac Toe Details	76
Figure 43. Adventure Playground Section	77
Figure 44. Flowerbox.	78
Figure 45. Sandbox View.....	78
Figure 46. Other View of Sandbox.	79
Figure 47. Tic Tac Toe Table.....	79
Figure 48. Shape Sorting Element.	80
Figure 49. The Part that Extracted from Children Imagination.	80
Figure 50. View to the Central part of Adventure Playground.....	81
Figure 51. Adventure Playground View.	81
Figure 52. Interior Space of Adventure Playground.	82
Figure 53. Exterior Space of Adventure Playground.	82
Figure 54. Gardening Area.....	83
Figure 55. View to the Reading and Socializing Area.....	83
Figure 56. Reading and Socializing Part.....	84
Figure 57. View to the Central Part of Adventure Playground.....	84

CHAPTER 1: INTRODUCTION

The majority of modern definitions of play are based on a few basic elements that are all important to consider, but all emphasize that, play is crucial for a child's development which offers a lot to the holistic development of a child. As Chia (2007) describes, play not only provides an opportunity for the child's creativity and imagination to blossom, but it also allows them to learn to problem solving, and social interaction. While play is necessary for a child's growth and enhances children's abilities, is playing alone sufficient?

Even while the sight of a group of children all about of the same age enjoying themselves in a school yard may be familiar to contemporary eyes, it is a strange image when seen in the context of human cultural and evolutionary history. The notion of children playing only with children their own age is a relatively recent phenomenon. Separating children by age has become more apparent as a result of our contemporary (but entirely obsolete) educational system. When seen from an evolutionary standpoint, children's typical social play includes children of varying ages and abilities. Throughout the majority of human history, children played in mixed-age groups. It is most probable that our ancestors resided in tiny groups due to low birth rates, which made play with others who were approximately in the same age unusual. As a result, studying children's social play in different groups which contain children of varying ages provides the most comprehensive understanding of the evolutionary purposes of children's social play (Gray, 2011).

As Gray (2011) points out, mixed-age play offers chances for learning and development that are not accessible in play between children of comparable ages, allowing younger children to have a deeper grasp of older play partners than if they had just interacted with their friends of same age. Mixed age play is characterized by older children's more sophisticated conduct, which acts as role models for younger children, who are more likely than their peers to get emotional support from older children. As a bonus, age-mixed play provides an opportunity for older children to learn via mentoring and leadership practice; in addition, older children are typically inspired by their younger playmates' inventiveness and ingenuity.

1.1. Problem Definition

As mentioned before, children's social play has generally occurred between children of varied ages, and sometimes between individuals of dramatically opposing

ages, as natural selection created the brain processes of play throughout our species' history. We should thus monitor play among mixed-age groups of children if we want to get a deeper understanding of the evolutionary benefit of children's social play- the adaptive functions that drove natural selection to mold social play into its human forms. As a result, this study's main objective is to conduct a social responsibility project and social service to create a mixed-age playground for disadvantaged children in a mixed-age environment. This research would examine principals of playground designs for mixed age children and the study's core research question is: How can a playground for mixed-age children be designed? Which components may there be? We are convinced that as mixed-age playgrounds assist both younger and older children by fostering peer learning, we need to pay attention to location of different play spaces which have the necessary potential for visual and auditory interactions, and also by considering play stages, we can design playgrounds for different ages. And also, how can playgrounds be designed with children's preferences in mind? We also believe that playgrounds which designed by designers that extract from children imagination can affect the creativity of children.

According to our last sub question of main question, we believe that designers can incorporate playground foundations as well as the play stages that lead to the growth and development of children, could provide this opportunity for children of various ages to learn from one another; for instance, younger children can emulate older children when they play in a mixed-age playground.

Another critical research question of this study is how a playground influences children's creativity? Environmental elements impact creativity indirectly and via the influence of individual characteristics, as stated by Kristensen (2004) Light, scenery, music, and even noise and visual pollution all contribute to creative enhancement, therefore we genuinely believe that, along with contributing in the development of communication skills among children of various ages, the designed playground would also aid in the strengthening of their creative thinking skills.

1.2. Research Questions of the Study

As stated above, this study tries to identify methods for enhancing creativity and fortifying social bonds in mixed-age children. Therefore, the following research questions were posed:

1. What are the design principals of designing a mixed age playgrounds?
 - 1.1. How can children's creativity be used to design a playground?

- 1.2. How should be the characteristics of playground design to support social development in children?
2. How can play assist in the development of a creative persona?
 - 2.1. How influential are playgrounds on children's creativity?
 - 2.2. How do playgrounds impact children's creativity?
 - 2.3. How can children at playgrounds learn from one another?
 - 2.4. How does a mixed-age playground effect children?

1.3. Methodology of the Study

The approach used is influenced by the study's research topics. This research benefited from an interpretive, constructivist, and mixed method approach. A mixed method approach includes "either quantitative or qualitative procedures that incorporate the collection and analysis of both quantitative and qualitative data in a single research" (Creswell, 2003). According to Creswell (2003), "this strategy integrated qualitative data from field methods such as observations and interviews with quantitative data from standard surveys".

Given the above, this study focused on mixed-age play and attempts to assess children's performance in these types of playgrounds. My responsibility as a researcher was to observe user behavior during this thesis, as a researcher, I sought to grasp the implications of children own lived experiences. As a result, I believe that the mixed method technique was an appropriate framework for our investigation.

Karşıyaka Sevgi Evleri Çocuk Yuvası in Izmir is a child protection center which was selected for this research as a case study. This center was selected due to presence of mixed-age children, around 186 children ranging in age from one to thirteen years old, and also center's lack of amusement facilities. Another reason for picking this child protection center was that these facilities are responsible for fostering an enabling environment conducive to children's healthy development, and since children who grow up in this center are in constant touch with particular people, need to develop individual and social skills in the same way that other children do prior to entering the community.

A magnificent landscape with trees and plants surrounds the Karşıyaka child protection center. Although there is much potential for entertaining children, almost all of the above-mentioned garden is underutilized, and after visiting, we concluded that it would be ideal for developing a mixed-age playground around children's preferences.



Figure 1. Karşıyaka Sevgi Evleri Çocuk Yuvası Garden.

As previously stated, the study was obtained using a survey. The illustrated questionnaire created for this research, was aimed to help children choose their preferred playground and imaginary playground. As part of the survey design process, the following characteristics were taken into consideration: playground site (indoors or outdoors), color palette, and with whom children like to play (younger, peer, older and adults). And then, after the necessary coordination, as a case study, 111 children participated in our questionnaire, and further analysis was performed by the author, who divided the data into nine age groups.

At the end, according to the results of the survey, the imaginary playground was designed collaboratively by design students from Izmir Economy University's faculty of fine art and design in coordination with author in the garden of the Karşıyaka child protection center.

1.4. Structure of the Study

This thesis is divided into six chapters. The first chapter is the Introductory section, which describes the thesis's goal, research question and hypothesis, and methodology. The research's literature reviews, and case studies are discussed in chapters two and three. The fourth chapter delves further into the research methodology. And the fifth chapter discusses the design process in depth, as well as

the statistical analysis of the questionnaire. The 6th chapter, which is the last, summarizes the study's results and makes suggestions for further research.



CHAPTER 2: PLAY CONCEPTS

Play may be defined in a variety of ways. Play has traditionally been described as the child's work. For progressive educator Dewey (1997), play symbolizes what one loves while doing it, whereas labor represents what one enjoys after doing it. Play, according to Johnson and Ershler (1982, p. 137), is:

“Behavior that is intrinsically motivated, freely chosen, process-oriented, and pleasurable”.

Play is an essential component of all human societies and is more than just a physical or biological activity. Play, defined as participation in an activity for the purpose of pleasure and enjoyment, which is critical for a child's optimal development. Play is an important aspect of a child's connection to the community, social relationships, and physical and mental activity. The youngsters get an understanding of themselves and the world via play. Playing increase, one's ability to achieve independence and self-sufficiency. According to the famous Dutch historian *Huizinga* (1955), play is "a free activity, experienced as 'make-believe' and situated outside of everyday life, nevertheless capable of totally absorbing the player".

Play helps with cognitive, emotional, and psychomotor development. Language, symbolism, mathematical linkages, and scientific ideas are all aspects of cognitive development. Affective development encompasses social skills like sharing, taking responsibility, and cooperating, as well as emotions like pleasure and dealing with intense feelings like rage. Psychomotor development includes both big and small motor development, as well as coordination. By combining all areas of development, play assists a kid in becoming a fully functional individual (Brett et al., 1993).

Throughout play, a child develops a variety of distinct functions that are necessary for brain development. Play contributes to the development of neuronal connections, which improves our memory and enables a more stable link between our right and left brains. Grob-Zakhary (2014) explains during her lecture, “This is your brain when you are playing,” that we don't produce new neurons as we age; rather, we construct pathways and connections between existing neurons. To generate as many different paths and new connections as feasible, we must use current knowledge and generate new possibilities, both of which are attainable via play. She believes that self-control and concentration are often more essential than knowing the letters. Play enables us to build confidence via unexpected actions and also exposes us to

intellectual property dangers through the sharing of our new ideas with others. Not only does play enable people to develop novel ways, but it also enables individuals to express themselves uniquely and creatively. Thus, via play, it is possible to acquire abilities such as adaptability, a desire to learn, problem solving, and the ability to create new designs. The capacity to fail is also a result of a play. Different games may assist a person enhance their spatial mapping abilities, which can be used to arithmetic, self-control, and other skills such as improved attention, concentration, and so on. Tulley (2007) concurs that play, particularly tossing objects, helps youngsters acquire visual acuity, 3D comprehension, structural difficulties, and, most importantly, predictability. Throwing combines mental and physical ability and aids in attention development. Thus, play fosters the development of practical, intellectual, and social abilities.

2.1. Stages of Play

Both pedagogy and psychology have long studied play and produced multiple categories based on two basic dimensions: the cognitive complexity suggested by distinct forms of play, and the degree and type of social contact in which the child interacts while playing. In some situations, these classifications referred to multiple types of developmental stages as developmental phases and linked them to children's general cognitive and/or social development; in others, these types may be considered to coexist and overlap, at least partially (Bulgarelli and Bianquin, 2017).

Piaget's (1945) initial cognitive categorization of play was arranged in stages of increasing complexity, and it has been modified in part by subsequent scholars such as Smilansky (1968) who created substages or subtypes to more accurately capture various characteristics of play, or who added new stages or types to incorporate the interactional dimension (Bulgarelli and Bianquin, 2017). Parten (1932) developed the social categorization of play in the early 1930s, and it remains the primary reference in this field of study. Additionally, this categorization was organized in phases of increasing complexity. Garvey's (1990) suggestion was distinct from the others in that the author did not embrace cognitive or social aspects, but instead decided to isolate and characterize broad categories of play behaviors; also, they were not hierarchically organized. The last category of play categories is based only on the sort of toys used during play (Bulgarelli and Bianquin, 2017). Meanwhile, further experiments have been done by various researchers, including Rubin and his Associates (1976), Smith (2002), Kudrowitz and Wallace (2010), and Peter Gray (2013). These findings will be

discussed in depth below.

Table 1. highlights the various forms of play specified in the categories under consideration, as well as the primary developmental characteristic that defines them and whether they are hierarchically organized. More detail regarding the different writers' definitions of the types of play is provided in the section that follows.

Table 1. Classification of Stages of Play

Author(S)	Year	Stages	Dimension	Type
a. Piaget	1945	Yes	Cognitive	Practice Play; Symbolic Play; Play with Rules.
b. Smilansky	1968	Yes	Cognitive	Functional Play; Constructive Play; Symbolic Play; Play with Rules.
c. Rubin's and his Associate's	1976 1983	Yes	Cognitive	Sensorimotor Play; Simulation; Simulation with Objects; Simulation with Substitution; Sociodramatic; Role-Playing; Games with Rules.
d. Garvey	1990	No	Behavioral	Play with Motion and Interaction; Play with Objects; Play with Language; Play with Social Materials.
e. Mildred Parten	1932	Yes	Social	Solitary Play; Parallel Play; Associative Play; Cooperative Play.
f. Smith	2002	Yes, Within Each Stage	Cognitive	Early Exploratory/ Practice Play; Construction Play, Pretend & Role Play, Game & Activity Play; Sport & Recreational Play; Media Play; Educational & Academic Play.
g. Kudrowitz & Wallace	2010	N.A.	Toys	Construction; Fantasy; Sensory; Challenge.
h. Peter Gray	2013	N.A.	N.A.	Physical Play; Language Play; Exploratory Play; Constructive Play; Fantasy Play; Social Play.

a. Piaget (1945)

According to Piaget (1945), children participate in different sorts of play depending on their cognitive development stage. Initially suggesting three distinct types of play: functional, symbolic, and rule based. the following categories are organized hierarchically:

- ***Practice Play or Functional Play***

Children participate in functional play as their first sort of play activity. Functional play involves repeated physical acts, language, and object manipulation. Children begin to understand that they have power over their bodies and things in infancy, and that they can act on those items. Infants engage in repetitive play via behaviors such as shaking a rattle, splashing in the bath, or repeatedly dumping objects from above of their chair. When a baby participates in an activity for enjoyment, these fundamental behaviors become play (Frost, 1992). Simple repetitive behaviors are eventually replaced by more complex, coordinated activities as children develop intellectually. Children enjoy functional play throughout their childhood, especially when they learn and practice new motor skills including sliding, climbing, stacking, leaping, and bouncing.

- ***Symbolic Play***

The capacity of children to use items, actions, or ideas to symbolize other objects, activities, or ideas in play is referred to as symbolic play. These activities may involve role-playing or make-believe play, such as pretending to be a baby, fireman, or monster, as well as make-believe actions, such as driving a vehicle by turning a pretend steering wheel or calling someone on the phone with a banana. This is often regarded as the most complex stage of play throughout the preschool and kindergarten years. Symbolic play promotes the development of social abilities, scholastic abilities, early literacy ideas, and self-regulation of behavior (Bodrova and Leong, 2015).

- ***Rule-Based Play***

The last sort of play is that which is regulated by rules. At this level, the play activity imposes regulations on the participants. To engage effectively at this level of play, children must possess the cognitive capacity to comprehend and recall rules. Additionally, these play force players to exercise self-regulation, restraining their own wants and demands in order to follow the game's rules. Rules-based play are often associated with logic and order, and as children age, they may include technique and preparation into their game play (Frost et al., 2004). School-aged children gain a knowledge of cooperation and competitiveness via rules-based play. By creating their own games with rules, children learn the value of rules, how to communicate with one another, and how to play fairly so that everyone has a good time. Team sports and board games are play with highly strict rules that promote strategy development. Electronic games are created for children at various developmental stages and often

stimulate the practice and mastering of new abilities via difficult tasks and fantasies (Frost et al., 2011).

b. Smilansky (1968)

Smilansky added a fourth stage to Piaget's model: constructive play. Each style of play develops at a distinct age and stage of cognitive development, and the predominance of each type of play also varies with maturity (Johnson et al., 2005).

- Functional play: basic body motions or object activities.
- Constructive Play

Children move from basic, repetitive utilitarian play to goal-directed, creative activities by the age of two. Children engage in constructive play when they use items to make something. They arrange materials like as blocks, clay, and craft supply in order to accomplish a task. Constructive play is a kind of hands-on inquiry in which children acquire knowledge by raising questions, testing hypotheses, and collecting data (Drew et al., 2008). while experimenting with simple materials in order to construct something more complicated. This sort of play promotes anticipation, exploration, and discovery. Constructive play helps children develop their imaginations, problem-solving abilities, fine motor skills, and self-esteem. Children may learn spatial connections by building using blocks. Manipulating items may transfer into comfort when words, thoughts, and concepts are manipulated. This style of play helps children develop the necessary skills for intellectual, social, and emotional success later in life (Bodrova and Leong, 2015). Additionally, constructive play serves as a scaffold for children when they shift from functional to symbolic play. Children should be encouraged to participate in constructive play by giving enough opportunity for exploration and play materials. The provision of motivating materials is critical for the promotion of constructive play.

- Symbolic play (as described by Piaget's examples).
- Rules-based play (as defined by Piaget).

c. Rubin and his associate's (1976)

split Piaget's symbolic stage into five progressively more complicated stages:

- Sensorimotor play and Piaget's practice play are equivalent.
- The child's action simulation: just the body is engaged at this stage.
- Object-based simulation (accompanied by dolls or other playthings).
- Simulation with replacement, in which the items transform into something

different than what they are.

- Sociodramatic play, in which children play out roles in real-life scenarios.
- Role-playing, in which the child goes on to assign roles to others and organize situations.
- Rules-based play (as defined by Piaget).

d. Garvey's approach (1990)

Defines the following major categories of play behaviors:

- Movement and interaction-based play: this style of play expresses excitement; running, leaping, skipping, shouting, and laughing are all examples of this type of play.
- Object play: children may use their senses to investigate items, manipulate them, practice, and utilize the things in the intended manner, and repeat these behaviors numerous times.
- Playing with language may take four various forms: experimenting with sounds and noises; experimenting with linguistic systems, such as those involving word meanings or grammatical structures; experimenting with rhymes and words; and experimenting with speech norms.
- Social materials play: this style of play is centered on the social realm and involves fantasy and pretending.

e. Mildred Parten (1932)

Researcher and sociologist identified six stages of play that children go through. She established the stages of social engagement in children aged two to five years in the early 1930s as follow: unoccupied Play, Onlooker Play, Solitary play, parallel play, associative play, and cooperative play.

- ***Unoccupied Play***

The children's play seems to be spread and reasonably calm. This stage of play builds the foundation for the subsequent five. Unoccupied play seems to include infants or young children exploring their surroundings in an unstructured way. This period enables infants to experiment with manipulating objects, gaining self-control, and learning about the environment.

- ***Solitary Play***

This kind of play occurs when children enjoy themselves apart from other social activities. Children who engage in solitary play may fail to recognize or identify the

presence of other children. Adults may be anxious about children playing alone, despite the frequency of such behavior. Children are able to explore freely, acquire new personal talents such as motor or cognitive skills, and prepare to play with others via solo play.

- ***Onlooker Play***

Onlookers are children who observe other children playing but do not join in. Their part in the game consists on observing others. It is tempting to assume that children who participate in spectator play are lonely or fearful of interacting with other children, but this is really a totally normal component of their play development. Children learn a great deal by observing others, just like adults do at coffee shops. They gain knowledge of the social rules of play and relationships, explore with new games and materials, and gain knowledge of the world as a whole.

- ***Parallel Play***

This occurs when children play in close proximity but do not interact with one another. Two youngsters may drive automobiles adjacent to one another on the carpet, but their activity does not overlap. At this moment, children are not truly engaged in social interactions. Consider this period a warm-up in which youngsters practice skills and discover new ways to engage while doing the same activity.

- ***Associative Play***

This kind of play indicates a developmental shift in the youngster. During play, children learn to concentrate more on the other players than on the task or item. Associative play lets children to apply what they have learned via observer and parallel play. During an activity or excursion, kids may begin to use their newly acquired social skills by interacting with other children or adults.

- ***Cooperative Play***

This form of play is characterized by the joint efforts of the players. Children may establish group objectives and play rules. It is essential to remember that teamwork is a difficult ability that young children may find tough. Contrary to common assumption, cooperative play often involves a great deal of tension. This is very normal. In such play environments, it might be difficult for young children to share, take turns, and negotiate power. You may assist children engaged in cooperative play by being close and teaching them proper emotional expression and problem-solving skills.

f. Smith (2002)

He performed studies for the US Consumer Product Safety Commission and classified the following play phases:

- Early exploratory/ Practice play (firstly described by Piaget): encompasses all of the child's first stages of manipulative and experimental play, including mirrors, mobiles, pull and push toys.
- Construction play (defined by Smilansky): activities using blocks and other interlocking construction items.
- Pretend and role play: any activity that requires symbolic and/or narrative competency, such as dolls and stuffed animals, play sets and puppets, dress-up materials, and tiny vehicles.
- Toys for game and activity play: include puzzles, card, floor, board, and table games; as well as computer and video games.
- Sport and leisure play: this category includes ride-on toys, recreational and sporting equipment.
- Media play: Smith includes arts and crafts, audio-visual technology, and musical instruments in this category.
- Educational and academic play: Books, learning toys, smart toys, and educational software.

g. Kudrowitz and Wallace (2010)

They presented four characteristics to define the values associated with play and/or toys:

- Construction (Smilansky's definition): this is a play about creation, not just about creativity.
- Fantasy: this play is either about role-playing or has an element of deception.
- Sensory: this play is concerned with aesthetics and the stimulation of the senses.
- Challenge: this may be physical or mental; physical challenges include the development of both fine and gross motor skills.

h. Peter Gray (2013)

Play gives children valuable abilities and prepares them for life skills that they will need throughout their childhood and adult lives. To promote young children's learning via play, it is first necessary to understand the many forms of play and why

they are useful to children. He discusses the various sorts of play and why they are vital for development.

- ***Physical Play***

Physical play encompasses any sort of play that requires physical or motor talents. Running, jumping, twirling, chasing, and roughhousing are all examples of physical play that children engage in. Physical play helps children build strength and coordination, as well as express the innate energy of child.

Bodily play may also help a kid establish a physical sense of self, boundaries, and impulse control. When children achieve physical control of their bodies, they begin to form brain connections that enable them to govern those movements on both a motor and a cognitive level. When a child develops a feeling of mastery over their motor talents, they are better able to control their hands during interactions with others.

- ***Language Play***

Garvey (1990) identified this stage initially, and Gray expanded on it. Around the age of two months, infants begin to experiment with language by producing repetitive cooing noises. Children, as they grow, utilize their voices, sounds, and ultimately words for reasons other than fundamental communication. Older youngsters may generate new phrases, rehearse rhymes, or transform into mini-comedians who answer to everything with a knock-knock joke.

Children like experimenting with phrases, puns, rhymes, alliterations, and alternative syntax. Language play include children manipulating play to enjoy themselves, or they may use language as a tool in other play, such as providing directions to another kid during fantasy play.

- ***Exploratory Play***

This sort of play entails, as the name suggests, discovering something new or unknown. The world is vast and, at times, intimidating (even for adults). Exploratory play gives youngsters not just the abilities they need to investigate, but also the drive to comprehend or learn about new topics.

Exploratory play may be as simple as a toddler wandering through a park climber to see what new and fascinating chances for play it provides. Exploration play fosters comprehension and a child's natural desire to learn.

- ***Constructive Play*** (as defined by Smilansky).

When children construct something or try to develop a framework in their minds, they are participating in constructive play. Children that participate in constructive play have the chance to practice cognitive growth. Children exercise not just cognitive capabilities, but also fine motor skills, hand-eye coordination, and fundamental engineering skills. Constructive play also encourages children to be creative, express themselves, and frequently extend other types of play, such as fantasy play.

- ***Fantasy Play***

Rubin and his Associate's coined the term "Role-playing," which Smith developed to "Pretend & Role Play, while Kudrowitz and Wallace came up with the term Fantasy and expanded by Gray. In fantasy or pretend play children use their imaginations to find out how the world works and then construct their own universe. Children can experiment with different roles and relationships via pretend play. When youngsters play as "Mommy," "Grandpa," "Doctor," or "Giant Flying Dragon," they get to learn about how each character functions in the real world. What exactly do they do? How do they communicate? What is it that they are concerned about?

The amazing thing about fantasy play is that children not only get to practice these roles and relationships, but they also learn to think outside the box by questioning rules and conventions, exploring many options, and challenging the world's logical processes. Along with the crucial skill-building potential of fantasy play, it also allows youngsters to escape and have fun. Children might benefit from the ability to escape to a world of their own creation, much as adults would plunge into a book or watch a movie to momentarily escape the stress and obligations of everyday life.

- ***Social Play***

Social play is critical for the development of young children. Children who engage in social play must develop crucial social and life skills such as communication, compromise, collaboration, problem-solving, turn-taking, and self-expression. Children practice roles, appropriate conduct, and crucial life skills such as negotiating.

These sorts of play are not distinct entities; children can participate in many types of play at the same time. This demonstrates the tremendous power of play. Even the most basic play experiences provide children with the chance to practice skills, learn, and grow. Simply by assisting your child in playing, you may help them realize their full potential.

As stated above, both pedagogy and psychology have a long history of studying play and have developed numerous classifications that can be categorized along two primary dimensions: the cognitive complexity implied by the various types of play and the degree and type of social interaction in which the child engages while playing. In some instances, these classifications referred to the different types of as developmental stages and linked them to the general cognitive and/or social development of children; in other instances, these types may be seen as coexisting and partially overlapping. Piaget's original cognitive classification of play was organized in stages of increasing complexity, and it has been partially modified by subsequent scholars who created substages – or subtypes – to capture various aspects of play more accurately, or who added new stages or types to include the interactional dimension. In the early 1930s, Parten established the social categorization of play, which continues to be the key reference in this area of research. In addition, this category was ordered in ascending order of complexity. The difference between Garvey's proposal and the others was that the author did not include cognitive or social features, but rather isolated and characterized broad types of play activities, which were not hierarchically arranged. A second classification of play is based only on the kind of toys used during play.

2.2. Mixed- Age Play's Values for children

Recent theoretical concepts and research data imply that mixed-age socializing may provide children with distinct adaptational benefits. According to Gray (2011) from an evolutionary standpoint, children's typical social play involves children of diverse age groups. Our great ape predecessors and human ancestors most likely lived in tiny groups with low birth rates, making play with children of similar ages uncommon. As a result, studying play in groups of children of various ages is the greatest way to understand the evolutionary purposes of children's social play (Gray, 2011).

Age segregation training, according to Stone and Burriss (2019), is based on a factory model and is a result of the Industrialization, which lasted 200 years. Learning is viewed as a series of distinct abilities that grow in complexity from year to year, and children of similar ages are considered to have similar development and demands. Children, at least in public schools in the United States, often walk outside for recess breaks to play with their same-age classmates in the same class, and they seldom get opportunity to play with children from different grades at school (Stone and Burriss, 2019).

Children need to develop a wide collection of abilities, and more uniformity, as Robinson (2015) points out, goes against the way children learn – via play. An estimated 65 percent of children entering grade school will work in occupations that do not yet exist, necessitating the development of critical thinking abilities to better prepare them for the future labor market (Krueger, 2021). Collaboration, communication, critical thinking, creativity, subject knowledge, and confidence are among the 6 C's that are increasingly viewed as vital to children's future success (Trilling and Fadel, 2012). Many of these abilities are not officially taught in the classroom, but they may be learnt via unstructured play (Hirsh-Pasek et al., 2008), especially among children of various ages. For children's cognitive development, Vygotsky (1979) emphasized the significance of the social environment and social contact with others, particularly those who are more talented. He believes, play is a crucial learning experience that develops brain processes and creates the groundwork for children's most effective functioning in the future (Bodrova and Leong, 2001).

Gray (2011) believes that mixed age play provides chances for learning and growth not found in play between children of similar ages, younger children may learn more from older playmates than by playing with their peers alone. In mixed age play, the more complex behavior of older children serves as a model for younger children, who often get more emotional support from older children than from children their own age. Age-mixed play also allows older children to learn by teaching and practice nurturing and leadership, and they are frequently inspired by their younger playmates' inventiveness and creativity.

According to research findings, younger children prefer to imitate older models (Peifer, 1972), and children find it more rewarding if they are imitated by younger peers (Thelen and Kirkland, 1976).

2.2.1. The Benefits of Mixed-age Play for Younger Children

Gray (2011) divides the advantages of age-mixed play into three categories for younger players. Younger children can participate in and learn from activities that they wouldn't be able to accomplish alone or with just their peers; Observation and copying of activities that are more sophisticated than their own age group; Additionally, emotional support and care beyond what age-mates can provide, which would be explained in the bellow.

2.2.1.1. Play in the Proximal Development Zones

When combined with larger children, younger children may play within their zones of proximal development. Younger children benefit from age-mixed play because it exposes them to activities that are too complex, challenging, or dangerous for them to engage in by themselves or with just their peers. The term zone of proximal development was developed by Russian psychologist Lev Vygotsky in the 1930s to describe a range of tasks that a kid cannot undertake alone or with others of the same aptitude but can do in collaboration with individuals who are more proficient (Vygotsky, 1979). He proposed that children learn new abilities and gain new knowledge by working together with others in their zones of proximal development. Using Vygotsky's concept as a springboard, Harvard psychologist Jerome Bruner and his colleagues coined the word scaffolding to describe how competent participants help beginners participate in a shared activity (Wood et al., 1976).

According to Gray (2011), Vygotsky's and Bruner's theories are commonly used by educators and developmental psychologists to interactions with children and adult trainers or parents. However, according to him, these theories are even more applicable to relationships between children of different ages. Because older children are more similar to younger children than adults in age, interests, abilities, energy level, and available time, older children are more likely to behave within the younger children's zones of proximal development for longer periods of time. When children play in mixed-age pairs or groups, the older, more capable members accidentally provide a framework that raises the quality of play for the younger children (Gray, 2011). Mildred Parten's basic theory of phases of play development states that children under the age of two or three are incapable of collaborative social play (Parten, 1932). They participate in what Parten refers to as parallel play when they are placed together; they play side by side, paying some attention to one another but without combining their play into a socially connected activity. However, as Konner (2010) pointed out, such play is a byproduct of today's age-restricted nursery school or developmental psychology lab. Older play partners create scaffolding that entice toddlers into collaborative social play in an age-mixed environment. Even four-year-old can play at a higher level than three-year-old (Konner, 2010). Through such play with older children, younger children acquire not just physical abilities and awareness of appropriate cultural norms, but also social skills. Preschoolers with older siblings or other regular, older child playmates are better able to perceive things from the

perspective of others, comprehend what is on their thoughts, and provide effective assistance to others than preschoolers without such playmates. Toddlers in age-mixed day-care groups with older playmates have better language, general cognitive, and motor development than toddlers in otherwise equivalent age-segregated day-care groups, according to the Battelle Developmental Inventory (Bailey et al., 1993).

Children who grow up in a household where their parents read, write, and use numbers are more likely to incorporate the "three Rs" into their social interactions. In age-mixed play, when the older children are more literate and numerate than the younger ones, the younger children may learn reading, writing, and arithmetic abilities.

2.2.1.2. Role Models for Younger Children

Age integration gives younger children with role models to emulate. The complementary activities of play and exploration are used by young mammals of all species to learn. They may practice skills like pursuing, fleeing, and preying via play, and they can learn about the environment around them through exploration, such as where food can be obtained and where hazards lurk. Although the desires to play and explore sometimes collide in the shape of of discovery play in youngsters, it's helpful to conceive of them as essentially separate. Children become more aware of their environment by exploring it, and they reinforce that knowledge via play, both verbally and through muscular patterns. For youngsters, the most important aspect of exploration is observing other people, notably older, more skilled, more informed individuals, in particular. Hearing and observing are examples of such observations. Children observe the words and actions of older children and adults, incorporating what they see into their own play. The single most significant kind of learning is observation, Lancy and his colleagues argued (2010). In traditional communities, there is often little explicit education. Young children practice skills by actively interacting with adults who are more skilled, and although some verbal instruction may accompany these activities, most children learn about culturally relevant activities – and other cultural information – by observation. The natural way by which children educate themselves includes the inclination to learn by watching individuals who are older, particularly those who are only a few years older. When youngsters are often isolated from adults and older children, watching television may be an indication of a strong drive to learn by observing others (Lancy et al., 2010).

2.2.1.3. Additional Caregivers and Emotional Support

Age mixing offers extra sources of care and emotional support for younger children. Younger children gain not just from playing with elder children, but also from the emotional support and care that older children offer. Siblings are possibly the most apparent example of this. In traditional agricultural societies, when families are big and both parents work, older siblings frequently provide the majority of daytime care for younger siblings, with most of that care taking place via play. Compassionate elder siblings shield younger siblings from the detrimental consequences of parental conflict, abuse, and neglect, according to research in modern Western societies (Brody, 2004). Outside of sibling relationships, little research has been done on the care and support that older child provide to younger ones.

2.2.2 The Benefits of Mixed-age Play for Older Children

The advantages of mixing ages run both ways in terms of development. Gray (2011) divides the advantages for the older participants into three groups. The older participants get experience in caring and directing, as well as opportunity to learn via instruction and inspiration for creative and imaginative activities, through age-mixed play.

2.2.2.1. Strengthen the Ability to Nurture and Lead

Age mixing helps older children to hone their nurturing and leadership skills. Interactions with younger children assist older children and teens because they get the chance to be the responsible parties in relationships and therefore practice caring and leading (Zukow-Goldring, 2002). This is supported by a variety of sources. Whiting and her colleague (1973) found in an examination of cross-cultural studies of children's social interactions that boys and girls worldwide showed greater kindness and compassion for youngsters at least three years younger than themselves when it comes to their own age group of youngsters (Ember, 1973). She observed that males who assisted their mothers in caring for younger children and newborns at home, since they lacked sisters who could do this traditionally feminine duty, in general, nicer, more cooperative, and less aggressive with their classmates than boys who had no similar experience. In Western schools, cross-age teaching research usually reveals improvements in tutors' evaluations of responsibility, empathy, and compassion. Researchers have also discovered, predictably, that when children interact with younger children on joint projects, they demonstrate far greater leadership than when working with peers of the same age. All of the aforementioned instances of mixed age

interactions between children of different ages that benefit younger members also provide older children chances to display care and responsibility (Ember, 1973).

2.2.2.2. Broaden Comprehension Via Teaching

Through teaching, older children may broaden their learning by associating with younger ones. Learning and teaching are frequently described as reciprocal activities in which both the instructor and the student benefit from each other (Le Blanc and Bearison, 2004). Such bidirectionality appears to occur most often when the gap in position or the degree of authority between teacher and student is not excessive, enabling some to feel at ease while interrogating and confronting the former. A recurrent result in cross-age coaching research is that both mentors and mentees improve their understanding of the coached subjects (Cohen et al., 1982). Bidirectional learning occurs, without a doubt, in the setting of age-mixed play. In age-mixed play, older children must translate their previously implicit, unacknowledged knowledge into language that younger children may grasp. In their combined doll play, for instance, the eight-year-old explaining to the two-year-old how to bathe a newborn may have been turning those acts into words and verbalizing them for the first time. Similarly, children who help others learn to read or use numbers in a playful manner are more likely to explain and answer queries from younger children, and they may clarify specific phonological or mathematical ideas for themselves.

2.2.2.3. Boosts Creativity

In older children, age mixing fosters creativity. Competitiveness may interfere with pleasure when children of comparable ages play a game collaboratively. This is particularly true in today's Western society, which puts a great importance on victory and all kinds of comparisons aimed at determining who is better. When children of different ages play a game together, the focus shifts from competing to having a good time. The bigger, larger, more gifted kid takes no satisfaction in beating the much younger one, and the smaller child has no expectation of overcoming the older one. As a consequence, they play the game more joyfully and relaxedly, changing the rules to ensure that the game is both fun and difficult, but not confusing, for everyone (Gray, 2011).

2.3. Creativity in Children

Numerous theories have examined how children develop their creativity. The majority of child development theories see young children as very creative, having an innate proclivity to fantasize, experiment, and explore their surroundings. Runco

(1996) has conducted research on the development of creativity. He says that longitudinal study on creative trends indicates that there are both continuities and discontinuities over an individual's lifetime. In other words, a child who is characterized as highly creative early in life may or may not demonstrate creativity consistently later in life. He contends that this unequal growth might be explained by the fact that specific qualities and abilities develop at a different pace and are impacted by an individual's environment and life opportunities.

When it comes to children, it's best to have a wide, democratic understanding of creativity. In this sense, every child may be deemed to have creative potential and the ability to express themselves creatively (Sharp, 2004). It is critical to analyze what constitutes 'originality' in a young child's work. After all, only a kid genius is capable of creating something novel and beneficial to society. Rather than that, each child's creative ability might be tied to his or her developmental stage. For instance, a young kid's work may be adaptable and unique to that child and/or to other children in their class or age group (Runco, 2003).

Mellou (1996) proposes that educational environments may foster young children's creativity in three ways: the creative environment, creative programs, and creative instructors and instructional methods. Among these, the facilitation of children's play is critical to the creative environment. Numerous talks regarding young children's creativity emphasize the importance of play. Indeed, adults and older children are often urged to be 'playful' in order to foster creative thinking. In terms of creativity, imaginative play (particularly role play) and free choice of activities would seem to be critical components of the early childhood environment (Sharp, 2004). Both creativity and play need the use of imagination, intuition, problem solving, diverse thinking, as well as the capacity to feel emotion and make decisions, and this is not to say that all play is creative. Additionally, research indicates that adults may assist children in developing their imaginative play skills, with clear benefits to their creative talents (Russ, 2003) which Malaguzzi (1993) has also made many discoveries on the optimum circumstances for fostering creativity in children's everyday experiences, which include a focus on interaction with adults and peers.

Sharp (2004) argues that another way to modify the concept of creativity to fit young children is to emphasize the creative process rather than judging the quality of their 'products.' And she mentioned, Craft (2003), Tegano and her companions (1991) believe that this is due to the fact that young children may not have acquired all of the

abilities required to generate a good creative product. She continues, Malaguzzi makes a similar argument (1993, p. 77):

“Creativity becomes more visible when adults try to be more attentive to the cognitive processes of children than to the results, they achieve in various fields of doing and understanding.”

2.4. Chapter Discussion

In this study we will not focus on to measure the creativity of children, we examine how creative preferences from children affect the designers decision- making process. And additionally, how can arrange play equipment’s of different ages to design a mixed age playground.

Play researchers' nearly exclusive concentration on same age play has led to at least some conclusions that children's social play could have little to do with evolutionary purposes.

All of the above should not be regarded as evidence that same-age play is of no or little benefit and should not be regarded as evidence that same-age play is of no or little benefit. Because children of the same age may have different talents, needs, and perspectives, the advantages indicated for mixed age play may be realized to some extent in same-age play. Furthermore, same-age play allows children to collaborate fully and equally. Even the competition generated by same-age play may be interpreted as beneficial, as it can assist inspire performance and prepare children for competitive adult job conditions in a competitive society. Nevertheless, age-mixed play has benefits to same-age play in terms of skill acquisition, culturally relevant knowledge, local traditions, social support, improving creativity and teamwork. When children are not institutionally separated by age, they opt to participate in a lot of mixed age and same age play, gaining experience with both.

Unfortunately, in today's world, many children have few opportunities for age-mixed play. Directed by adults, age restricted events for children and solo indoor play are increasingly replacing free neighborhood play, which was once age-mixed (Gray, 2011). Therefore, in this study, firstly we tried to understand the play preferences of children in different age groups, we tried to examine how they approach to play all together. What are the needs of children considering the play concepts? And according to the preferences how children’s playgrounds can be designed in a creative manner? Does the playground which extracted from children preferences effect their creativity at the end? Before going any farther in this path or giving up hope of reversing the

trend, we need to have a strong grasp on the evolutionary purposes of mixed age play and how they continue to contribute to the growth of children today.



CHAPTER 3: HISTORY OF PLAYGROUNDS

While play has been for as long as children have lived, the notion of particularly constructed areas for children's play is a relatively modern development that began in the late nineteenth century. Playgrounds are believed to have originated in Germany, where early German play movements influenced by physical fitness, health, and nationalist motives created outdoor gymnasiums, sandpits, and exercise training, and, more notably, when educational theorist Friedrich Fröbel (1782-1852) established the first kindergarten in Germany in 1837 and called it playground, this institute used plays, activities, music, tales, and crafts to foster creativity and motor abilities. The room's supplies were separated into two categories: "gifts" and "occupations" (activities). Gifts were fixed items like bricks (Frost, 2012).

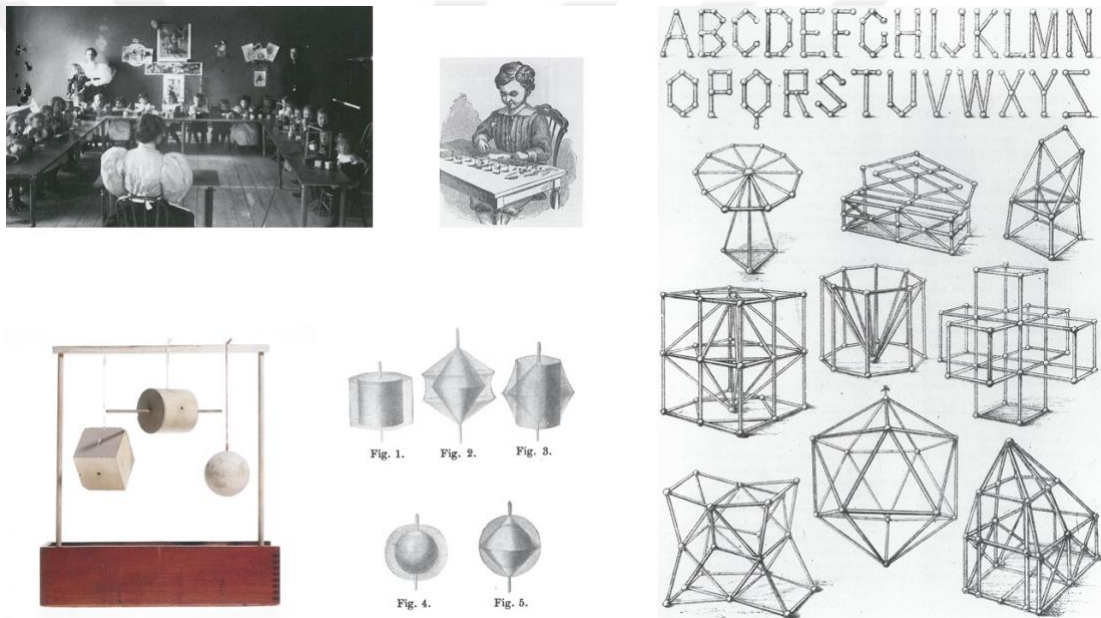


Figure 2. Fröbel Gifts. (Source: Brosterman, 1997).

Playgrounds were extensively supplied with industrial items during the early nineteenth century. Steel slides, swings, seesaws, and jungle gyms were rooted in threadbare grass and subsequently in asphalt, providing the ultimate no-maintenance option. The surface directly under the structures was sometimes softened by a coating of thin rubber tiles. Severe injuries, on the other hand, happened with frightening regularity when children fell from a height onto a hard surface or were severely harmed as a result of badly constructed and maintained equipment. The methods to manufactured playground equipment have varied over time. Individual constructions - a swing set here, a jungle gym there - gave birth to large composite creations, some reaching the complexity and scale of tiny play towns. Finally, some organizations used

community-built buildings instead of traditional, boring machinery and asphalt. Indeed, the increasing use of playground naturalization marks a return to a previous instructional paradigm (Brett et al., 1993).

In the latter decade of the nineteenth century, "model playgrounds" started to emerge in the United States' schools and parks, with the establishment of Hull House by philanthropist Jane Addams (1860-1953) in Chicago in 1893. The three-quarter-acre playground (Figure 3) has sand heaps, swings, building blocks, a huge stride or maypole for smaller children, seats, and youth-sized handball and baseball courts (Ângelo Sio, 2018).



Figure 3. A Group of Children Playing in Hull House Playground. (Source: Brosterman, 1997).

In the United States, playgrounds benefitted from a popular perception during the Progressive reform movement that play was a child's job. Dewey's (1997) thoughts influenced this notion. He depicted children as small grownups who needed to adjust to their surroundings by active exploration; else, they risked misbehavior. A second perspective was that of biological and psychological ideas that play creates experiences that aid in the development of specific cognitive abilities, moral dispositions, and social values necessary for the development of better citizens (Solomon, 2005).

The Playground Association of America, formed in 1906, advanced the playground movement by providing more, bigger, well-equipped, and supervised playgrounds for children. These early twentieth-century playgrounds were enclosed

facilities that incorporated running tracks, sports fields, and even community buildings, and contained a seesaw, monkey bars, rings, slides, ladders, and gigantic steps (Ângelo Sio, 2018).

3.1 Playground Types

Scholars have identified various types of playgrounds, including junk playgrounds, conventional playgrounds, adventure playgrounds, etc., which will be briefly discussed below.

Aaron and Winawer (1965) and Dattner (1969) all agree on how traditional American playgrounds should be described. They portray them as desolate, wide expanses paved with concrete or asphalt and often encircled by a towering fence. Swings, a slide, see-saws, and maybe a merry-go-round or jungle gym are all common pieces of equipment. Metal constructions are cemented in place. Generally, there is no protection from the heat or rain, no drinking fountains, or restrooms (Aaron and Winawer, 1965). This kind of construction was simple to construct, nearly indestructible, and essentially maintenance-free. Frost (1979) concur that such playgrounds provide just one kind of play-exercise and that each piece of equipment provides a one-dimensional play experience.

The constructive and free play offered by junk playgrounds (Figure 4) and adventure playgrounds, which were introduced in the 1930s, embodied a revolutionary and modern concept in its abandonment of traditional play equipment (swing, slide, seesaw, and sandbox), embracement of risk, and deliberate appropriation of vacant or bomb-out sites. They take shape as a result of an unconstrained, participative, and democratic process of architectural construction and destruction in which children use their initiative and imagination to give substance and meaning to their own play while projecting and playing in their own creations. The playground catered to a broad range of age groups and drew a huge number of children of both genders due to its constructive and unrestrained play, which not only revealed an unlimited variety of chances to explore, discover, and experiment in which children may freely participate (Ângelo Sio, 2018).



Figure 4. Junk Playground. (Source: The Guardian).

Adventure playgrounds (Figure 5) have been defined as areas where children are allowed to explore and develop their talents. According to Rudolph (1974), adventure playgrounds are difficult to promote due of their messy look. They are sometimes referred to as junk playgrounds due to the fact that children play and construct using scrap lumber, metal, and several other cast-off materials. The debris is transformed into forts, houses, tire swings, and other crafts that the youngsters make (Matthews, 1985).



Figure 5. The Notting Hill Adventure Playground in Faraday Road. (Source: The Guardian).

To summarize, "Traditional" playgrounds have huge, metal equipment for children to exercise on, such as climbers, slides, and swings. "Contemporary" playgrounds often have multi-purpose and connected constructions with several points of access and departure, as well as places or fixtures that encourage theatrical play. "Adventure" play areas include a variety of movable materials and equipment that children may use to create their own play buildings. Different types or frequency of behaviors are elicited by different types of playgrounds (Barbour, 1999).

According to Moore (2006) Over the last 150 years, the aims of playgrounds have evolved. At the turn of the century, we can identify four critical priorities for playgrounds:

- Safety.
- Educational success via participation in various living contexts.
- Active lifestyle (at least a basic level of prolonged physical exercise during the school day).
- Healthy social and psychological development via profound creative play (Moore, 2006).

All in all, playgrounds offer a one-of-a-kind environment for children to engage in the play process. Playgrounds, whether traditional, adventure, designer, or creative, provide children with a properly created setting whose main function and purpose is to promote and encourage the act of play (Brett et al., 1993).

Children's play is distinguished by spontaneity, independence, creativity, and discovery, and happiness. A playground should first and foremost be a place for children to play. They should engage their ideas and move their bodies (Brett et al., 1993).

- A playground should be safe and provide an environment for children to engage in constructive and responsible risk taking.
- A playground should be adaptable enough that children at various stages of development may adjust to it to fulfill their requirements.
- A playground should contain equipment and design elements. and a range of settings that allow children to utilize it in a number of ways based on their interests and imaginations.
- A playground should provide settings that children may physically modify to

meet their play needs.

- A playground should be designed to accommodate the particular needs and requirements of children with special needs.
- A playground should enable social contact not only between peers but also between generations.
- A playground should be visually appealing. It should entice children and excite them about the possibilities that play provides.

3.2. Design Principals for Mixed- Age Playgrounds

Given that the playground will be used by mixed- age children, it is preferable to design it using play theories so that children may experience the development of different play stages. Therefore, the following criteria might be considered while developing a mixed-age playground and the following are some design principles for enhancing motor skills, improvements of cognitive skills, developing social skills and emotional ability improvements, respectively.

In terms of strengthening motor skills, it is worth noting that the design should be such that it protects the child's freedom of mobility and instills in him or her a sense of accomplishment. Additionally, the equipment's design in playground should be such that it engages the child's full body in actions such as pushing, pulling, running, leaping, and escape. Also, the design should encourage the child to use his or her tiny limbs while playing, so that the child's little muscles are developed as well. Examples include picking up and dropping items. Moreover, the design should simplify complex tasks and prevent the child from becoming engrossed in difficult moves (Amouzegar et al., 2010).

About the enhancement of cognitive abilities, studies indicate that it is more beneficial to design playground equipment that is reflective of the adult world such as pretending play. In addition, the design should allow children to communicate their preferences in terms of the activities they desire to play. Also, playgrounds should be constructed in such a manner that they help the child's planning for an activity (Amouzegar et al., 2010).

Concerning the development of social skills, equipment's on public playgrounds should promote collaboration among a group of children while posing no hazard to the other children. Additionally, playgrounds should feature both equipment's for older children and those for younger children's group activities. And also, activities should allow adults to participate, so that children may also learn how to interact more

successfully with them (Amouzegar et al., 2010).

With regards to the improvement of emotional capacities, within playgrounds, there should be places dedicated to developing children's tactile abilities, such as sand boxes and facilities for water play. Plus, items that create sound and melody may help children develop their hearing capabilities. Further, the colors chosen in designs should have a great contrast and be a harmonious blend of varied colors, since children of all ages gravitate toward locations with bright and jubilant colors. Moreover, the designs should enhance the children's capacity for self-success. And also, the designs should be such that they do not impair the child's focus as they play. This is due to the fact that children's sensory perceptions are still developing (Amouzegar et al., 2010).

Bowers (1979) believes that, play areas should be positioned in areas where children naturally play. Equipment should be available to all children within the areas designated for play. Accessibility refers to the ease with which equipment may be accessed and, once on the equipment, the ease with which a child can play freely and securely. The apparatus must be able to accommodate both young toddlers who are barely walking and developing children who are not yet confident in their movements. Additionally, the play setting must include certain physical difficulties that allow the better performing children to acquire extra play skills. Additionally, there are children who, due to physical or mental disabilities, do not demonstrate performance levels commensurate with their chronological age. Thus, children of varying ages, physical sizes, and talents have unique demands that must be accommodated in the play center's design. Gently sloping ramps, handrail-equipped staircases, and platforms with progressively climbing heights are just a few of the built-in enablers that make accessibility simpler for all children.

Given that the playground will be used by mixed- age children, it is preferable to design it using play theories so that children may experience the development of different play stages. Therefore, the mentioned criteria might be considered while developing a mixed-age playground.

CHAPTER 4: METHODOLOGY

This part of the study will discuss the methods utilized to conduct the research, design process and how it was conducted. Firstly, Karşıyaka *Child Protection Agency* was selected as the case subject for this research. The reason behind selecting this center was due to the presence of mixed-age children, as well as the lack of amusement facilities at the center. Additionally, since children growing up at this institution are constantly in contact with specific persons, they must develop their individual and social abilities in the same way that other children do prior to entering society.

Then a survey conducted among the center's children aged 3 to 12. The researcher gathered data on-site with the support of instructors from the Karşıyaka Child Protection Center, following the questionnaire evaluations, a playground was designed for the garden of Karşıyaka Sevgi Evleri Çocuk Yuvası.

4.1. Case Study

Karşıyaka Sevgi Evleri Çocuk Yuvası (Figure 6) was founded in 1923. This center is tasked with the responsibility of caring for and meeting the needs of homeless and mistreated children. Since 1923, 500 children have been housed in this care facility, and when they turn 18, they are integrated into the community like other children.



Figure 6. Karşıyaka Sevgi Evleri Çocuk Yuvası Entrance.

Karşıyaka Sevgi Evleri Çocuk Yuvası is situated (Figure 7) in the district of Karşıyaka, Bahariye neighborhood, between the main streets 1671 and Hidayet Erzeybek and Yaşar Aksoy Street. The center's east and south sides are linked to 1671 Street, which connects to Alaybey subway station.



Figure 7. Aerial View of Project's Site. (Source: Google Earth).

The main entrance of Karşıyaka Sevgi Evleri Çocuk Yuvası is located at the intersection of Yaşar Aksoy and 1671 streets. After passing the guard, we are invited to a path that almost passes through the middle of the site and on both sides of the center, there are several middle-aged and young trees with bushes, which the presence of this greenery has softened the air. After crossing through a dense of trees, we reach the northern part of the property which is now under construction, and the building of the center which is located on northeast of the site. We considered the eastern side of

the center for the design, which has scattered trees, a pond, and a bushes.

4.2. Participants

The study's participants were children registered in the Karşıyaka Child Protection Agency. There was a total of 111 participants which they were between 3 to 12 years old. Although, children from 7 to 18 have to be surveyed in special surveys and children under the age of seven lack the cognitive abilities necessary to be questioned properly and methodically, nonetheless, with the support of teachers, the survey was completed for each kid between the ages of three and six at the Karşıyaka Child Protection Center. As it mentioned, participants varied in age from three to twelve years which the age range of participants has been shown on Figure 3. However, the basis of the conclusion was children aged 7 to 12 years in this survey. Additionally, although despite the fact that the poll comprised 36 girl respondents, 55 boy respondents, and 20 unknown respondents, gender was not taken into consideration in this questionnaire.

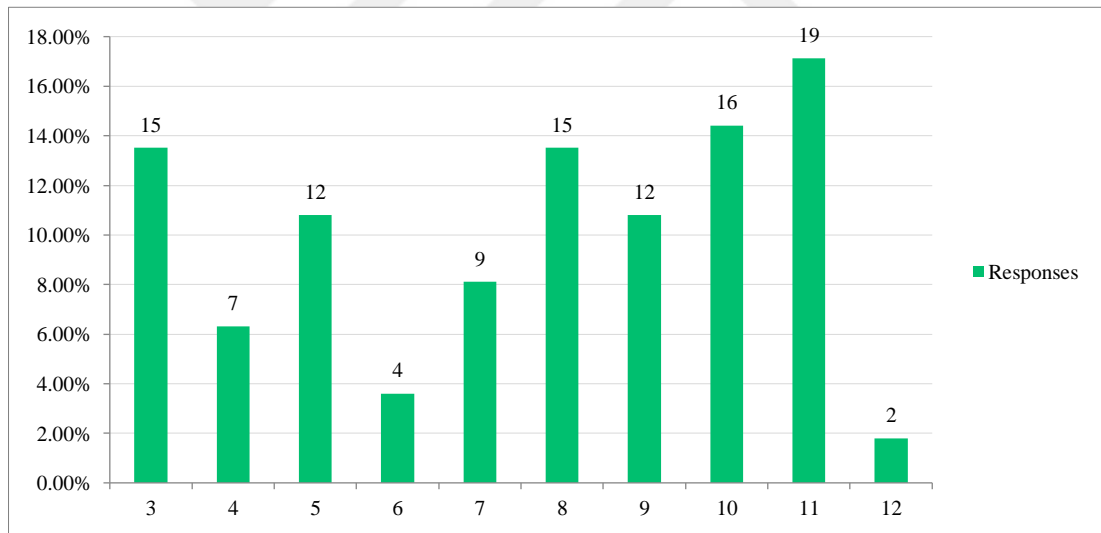


Figure 8. Participant's Age Range

4.3. Questionnaire

Children residing in Karşıyaka Child Protection Center completed the surveys. The purpose of this study is to provide a playground for all children in order to foster their creativity. The first section of the questionnaire asks for basic information about the user, such as the child's name, age, and gender (just to foster an atmosphere of friendship and trust), The second section of the questionnaire included the use of pictures. Participants were instructed to color-code their responses according to their visual preferences. The pages of the questionnaire are seen in Figure 4.



Figure 9. Thumbnail of the Conducted Questionnaire's Pages.

In terms of Designing a questionnaire, the researcher employed several ideas that can aid in the development of acceptable and effective inquiries for children which were as follows:

The length and phrasing of the question: As research indicates that children process information somewhat slowly than adults (Gray, 2002) and (Hershey and Hill, 1976) and because simplicity is critical when constructing surveys for children, the questions were generally brief and had simple syntax.

Stay away from complicated formulas: For children, questions with a complicated structure, such as those that are double-barreled or hypothetical, are more likely to create difficulties (Amato and Ochiltree, 1987). In the same way, negative formulation questions, which compel the responder to make a negative remark in order to offer a positive answer, are also problematic (Bell, 2007). Therefore, hypothetical, and negative questions in this survey for children were avoided.

Response Option: The researcher reduced the number of possible responses as children have difficulty processing a variety of options and, took advantage of images and colors to keep children's attention, particularly younger ones.

After extensive study on how to design a questionnaire for children, and according to published findings, a visual survey was designed. The purpose of the illustrated questionnaire was to communicate the author's message to children and to accommodate children with varying skills. The author endeavored to keep the questions concise and basic in syntax. In this poll, hypothetical and negative questions were avoided. In addition, the researcher attempted to limit the number of potential replies from children and used pictures and colors to maintain children's attention, especially younger children. The pictures in questions 1 through 4 were designed to assess the objective preferences of children. For instance, illustrations in question 1, the relative importance of traditional and constructive play was examined. In question 2, it was determined which of two types of play, sedentary and active, is preferred. The components of the adventure playground were evaluated in question 3. Having fun with water fountains or ropes. In question 4, children were asked to pick between two imaginative play and realistic pretending play. The images in question 5 depicted different age groups to help children decide and visuals in the sixth question included both outdoor and indoor playgrounds. Based on the top four palettes of children's color preferences and seasonal palettes, questions 7 to 9 on children's color preferences were analyzed. The purpose of questions 10 and 11 was to determine the preferences and interests of children for 2D and 3D playground equipment.

Due to the fact that this survey focuses on children between the ages of 3 and 12, age segregation was not considered on this questionnaire. The children in this center have different abilities and academic skills, and some of them were unable to receive an academic education, so we were unable to divide them into different age groups.

4.4. Design Part

Students from IUE's FFAD course designed the playground with assistance from the author. They visited the Karşıyaka Child Protection Center to determine the site's dimensions and assess the garden's physical condition. And then, after the survey data and results were compiled, they settled on the conceptual aspect, followed by technical drawings (Appendix B and D), and lastly, visual representations of the results (Appendix C and E).

CHAPTER 5: FINDING AND DISCUSSION

Chapter 5 discusses the descriptive and statistical analysis of the survey that was done. The frequency, percentage, average, and standard deviations of data are evaluated, and statistics are explained in relation to the study's premise. In the following, design alternatives will be presented, and each will be described in detail.

5.1. Results According to the Survey

As previously stated, since children have difficulty digesting a multitude of possible responses to inquiries, the questions that required a lengthy response were posed with two options. As a consequence, the first question, "Choose the image you would want to play with on a daily basis at your playground." was divided into four sections: Blocks and Legos versus Swings and Slides (Figure 10), Trampoline versus Sand Box (Figure 11), Water Fountain versus Adventure Playground Elements (Figure 12) and, two distinct types of Pretending Playgrounds, one realistic and one imaginary (Figure 13).

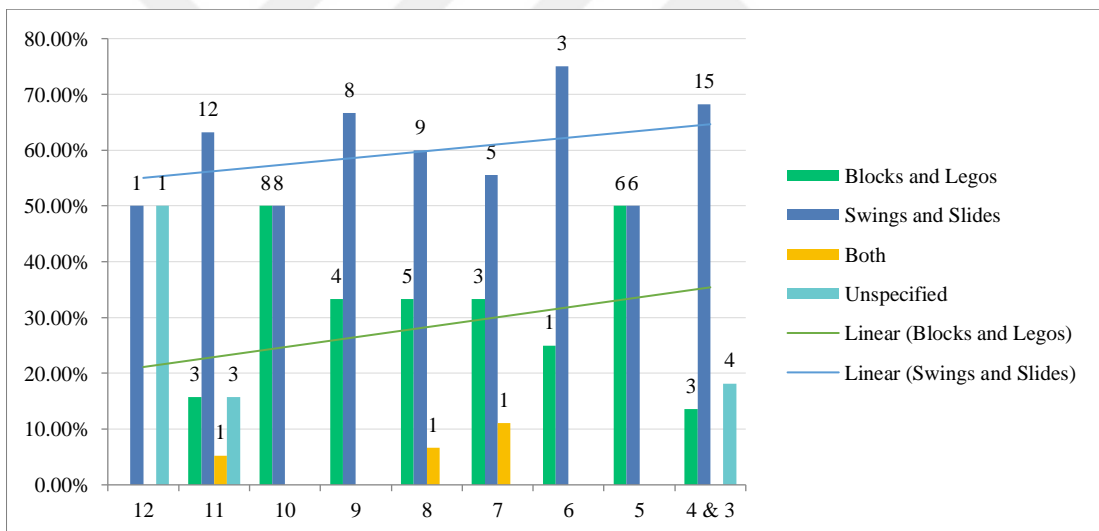


Figure 10. Question Number 1, Constructive Play Elements or Traditional Playground Elements.

As seen in Figure 10, based on trendlines and, whether or not children under the age of seven are included, the popularity of both Blocks & Legos and Swings & Slides have dropped with rising child age. And also, based on their responses, almost above half of the children preferred Swing and Slides above the other option, as discovered by academics, when children arrive at a playground, they immediately go toward the swings, slides, and other climbing structures. Children need a lot of unstructured playground time to help their growing brain, just as they need to learn to cut with scissors before they can write their name. All of these activities are important to a

child's mental development (Trautner, 2018).

According to the Royal Society for the Prevention of Accidents (Rospa), Children under the age of six should not be permitted on trampolines less than 20in high or with a circumference more than 10ft, and also children under the age of five are lighter and lack the coordination necessary to manage landings, increasing their risk of fractures (Briskin et al., 2012).

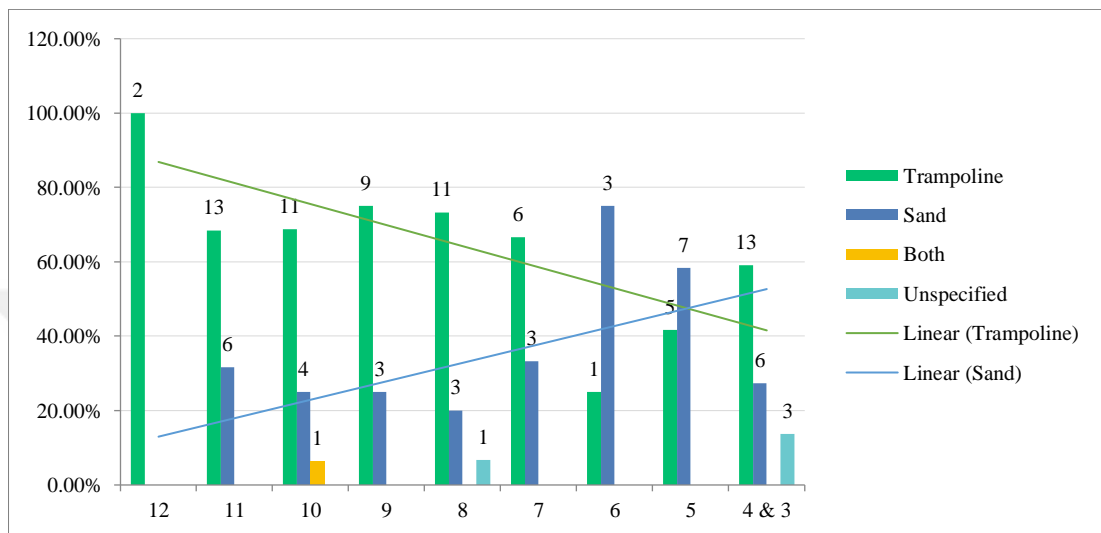


Figure 11. Question Number 2, Sedentary or Active Play Elements.

Figure 11 also indicates that, as children get older, trampolines become more popular, whereas sandboxes lose favor. As the trendlines indicate, this difference begins at the age of five. This suggests that the desire for a trampoline over a sandbox is much greater after the age of five than it is before the age of five. Out of the Twelve 5-year-olds that took part in the study, seven selected a sandbox and five chose a trampoline. Even when only children over the age of 7 are included in the statistical population, sandbox popularity diminishes with age, whereas trampolines popularity grows. Playcubed (2020) states, children's play varies according to their age and development of social skills. As the study and experts concluded, their play becomes much more physical. They want the opportunity to run, leap, and even swing. There is, however, more to this than meets the eye. Play and physical exercise are critical components of children's social development. It is via this activity that youngsters make new acquaintances and learn to collaborate and compete. Physical play may help young children develop critical social and behavioral skills such as reciprocation, turn-taking, and following rules, while also enhancing their physical condition.

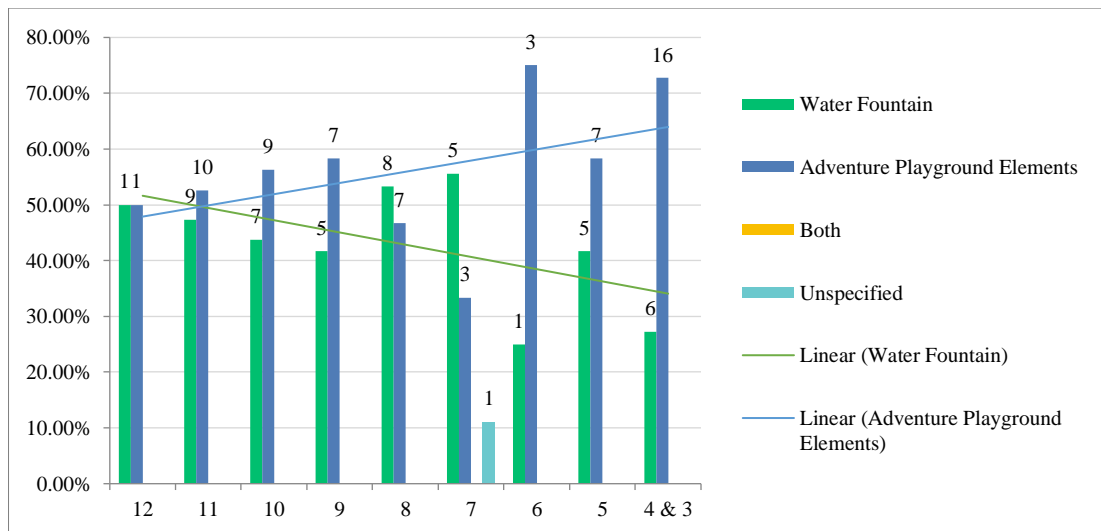


Figure 12. Question Number 3, Adventure Playground Elements, Water or Hanging Ropes.

The analysis of Figure 12 demonstrates that, around 72% of children between the ages of 3 and 4 prefer Adventure Playground Elements to Water Fountain, but as they get older, this preference flips, and near half of the older children prefer Water Fountain to Adventure Playground Elements. And even if we evaluate data on children aged 7 and older, again children prefer Adventure Playground Elements over Water Fountains, however this inclination changes as they get older. As stated by Homan (2017), sharing ideas and resources, taking turns, collaborating, listening to, and watching others, and learning new ideas from one another are all natural aspects of water play. This is how critical social skills are developed in older children.

Statistics from Figure 13 shows that, as children get older, they become more eager to play and pretend to be grownups, such as cooking, while their interest or choice for imagined playgrounds, such as Underwater, lessens. As previously indicated, concerning cognitive ability improvement, research indicates that it is more helpful to build playground equipment that is representative of the adult world, such as pretend play (Amouzegar et al., 2010).

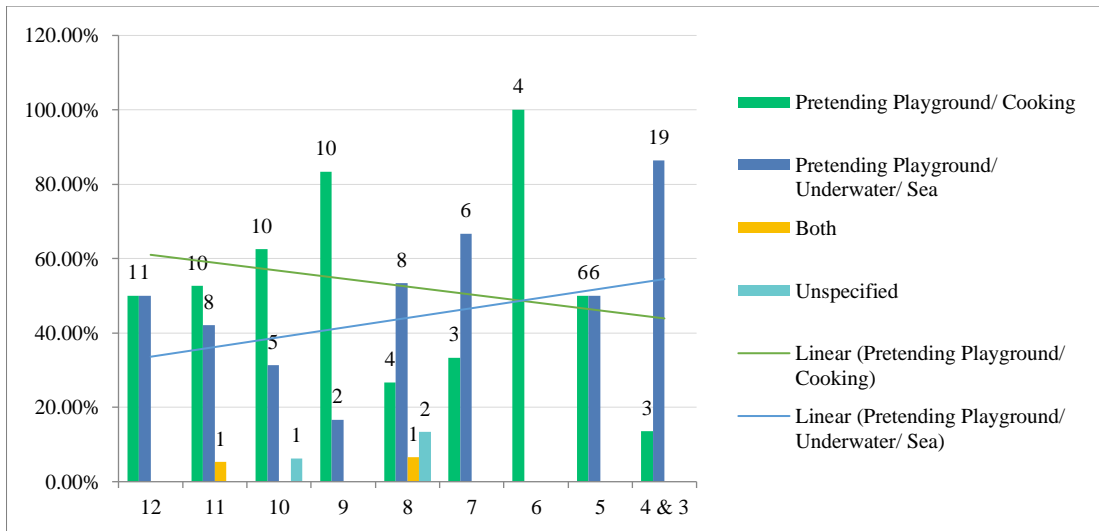


Figure 13. Question Number 4, Imaginative or Realistic Pretending Play.

According to the trendlines shown in Figure 14, playing with peers has been and continues to be popular at practically all ages. But, in the meanwhile, playing with other age groups has its fans too. According to the survey statistics, the tendency of children to play with adults increases with age, and when we just considered the survey's basis on children older than 7 years, we discovered that children in the age group of 7 years are less interested in playing with adults than children in the age group of 11 and 12 years.

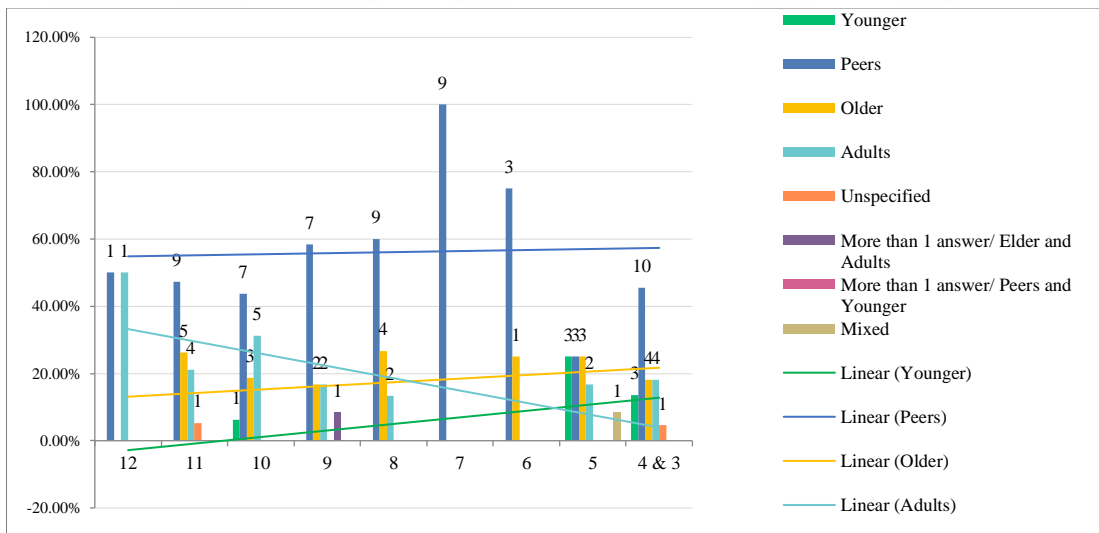


Figure 14. Question Number 5, Playmates.

Additionally, studies of survey showed that children's interest in playing with older and younger children declines with age, although the majority of children prefer to play with their older peers rather than their younger peers. As previously said, age segregation is a consequence of the modern era, and we must create mixed-age play areas for children (Gray, 2011).

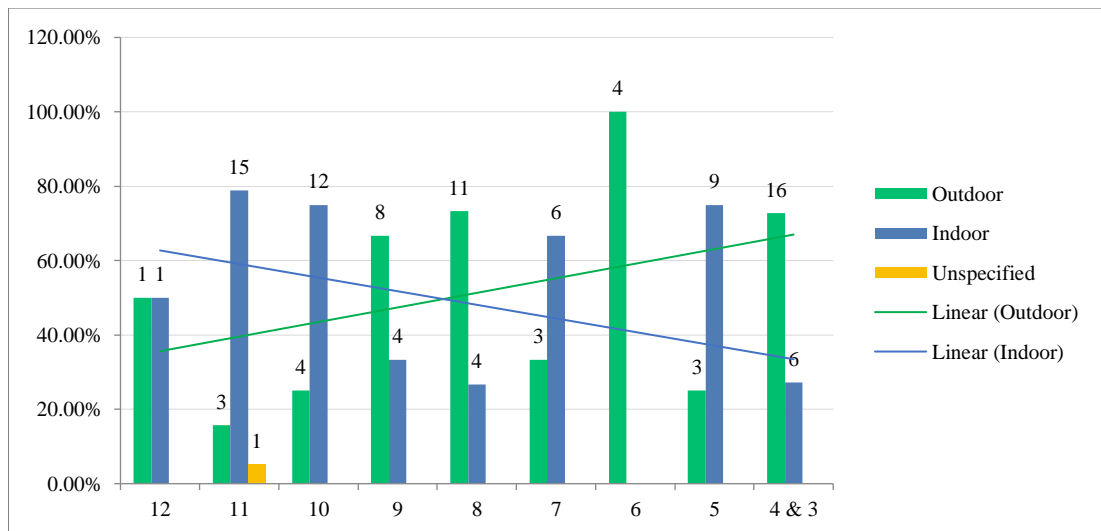


Figure 15. Question Number 6, Outdoor or Indoor Playground.

The children's choice for indoor or outdoor playgrounds was also a question on the survey. As seen by the results (Figure 15), most of the children choose indoor playgrounds over outdoor playgrounds as they get older; For instance, out the 19 attendees of 11-year-old children, three liked an outdoor playground, fifteen preferred an indoor playground, and one did not respond; in other words, according to studies, children prefer to play in outdoor playgrounds while they are young. The reduction in children's outside play is sometimes attributed to television's enticing features and, more lately, computer games and Internet activities. Without a doubt, these technological advancements have had a role. However, this problem may arise for a variety of reasons; in a recent poll, the majority of parents or guardians acknowledged to restricting their children's outside play, with 82 percent citing safety concerns, including fear of crime (Gray, 2011).

Gray (2011) stated, it is reasonable to argue that children spend so much time watching television and playing alone indoors partly because they are not permitted to play freely outdoors, and when they are permitted to play outdoors, they do not encounter the attractive play spaces and groups of other children that children did decades ago.

Although colors were included in the survey to make the project distinctive in various age groups, some reasons led to the supervisors to adopt a single dominating hue for the whole playground. Nonetheless, the following statistics from Figure 16, Figure 17 and Figure 18 were collected: Neon Color Palette were more popular among children than Underwater Scene Color Palette. As children grew older, the popularity of Neon Color Palette declined while the popularity of Underwater Scene Color Palette

rose (Figure 16). Young children liked the Pastel Color Palette over the Beach Color Palette, but as they grew older, their interest or preference shifted, and older children chose the Beach Color Palette over the Pastel Color Palette (Figure 17).

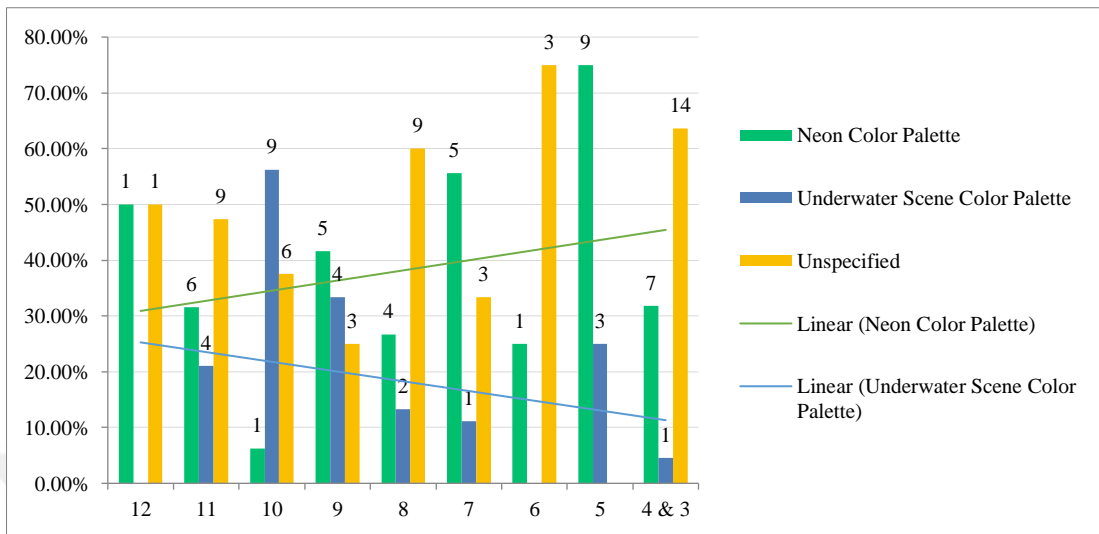


Figure 16. Question Number 7, Color Palette.

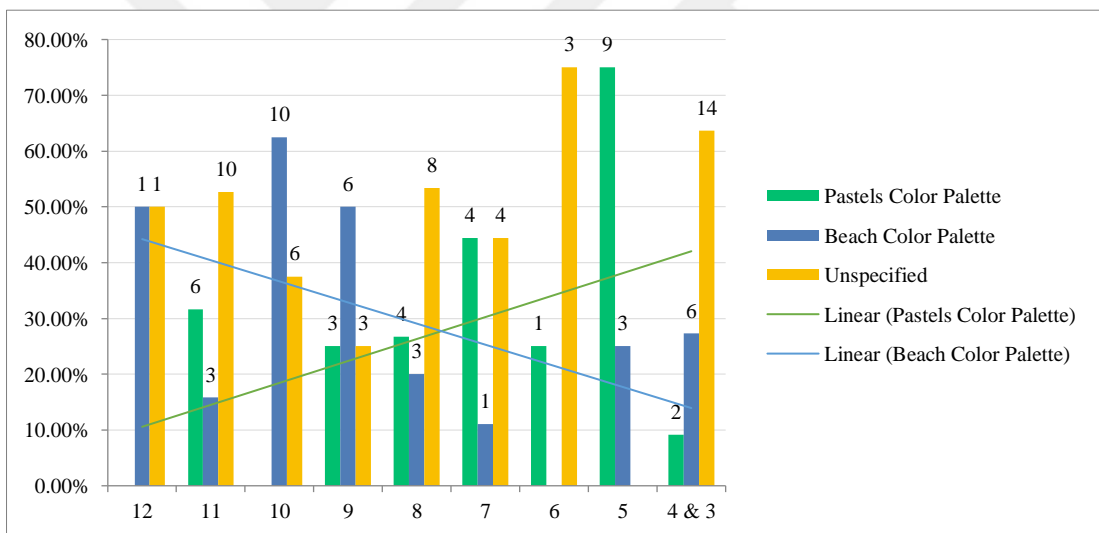


Figure 17. Question Number 8, Color Palette.

The seasonal color palettes also revealed that the most popular palette belonged to Summer Color Palette, which grew in popularity as children grew older. Following that, the Spring Color Palette came in second place, garnering support from practically all age groups (Figure 18).

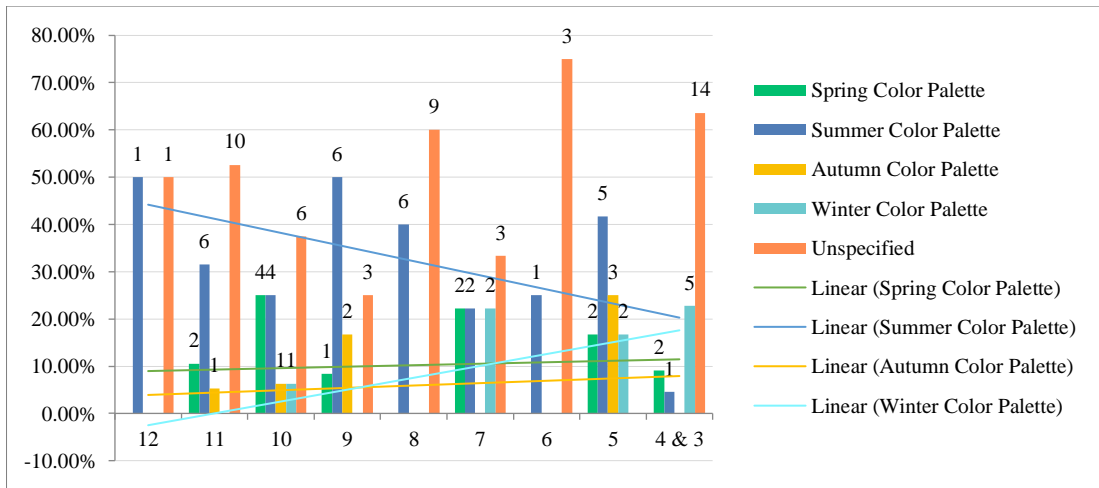


Figure 18. Question Number 9, Seasonal Color Palette.

The other section of the questionnaire asked participants to choose their favorite playgrounds, which were a combination of 2D and 3D playgrounds. Children chose the play spaces illustrated in Figure 19, from left to right respectively, as their initial top three choices from the six options offered for Figure 20.



Figure 19. First Top Three Choices. (Source: Unsplash, 2021).

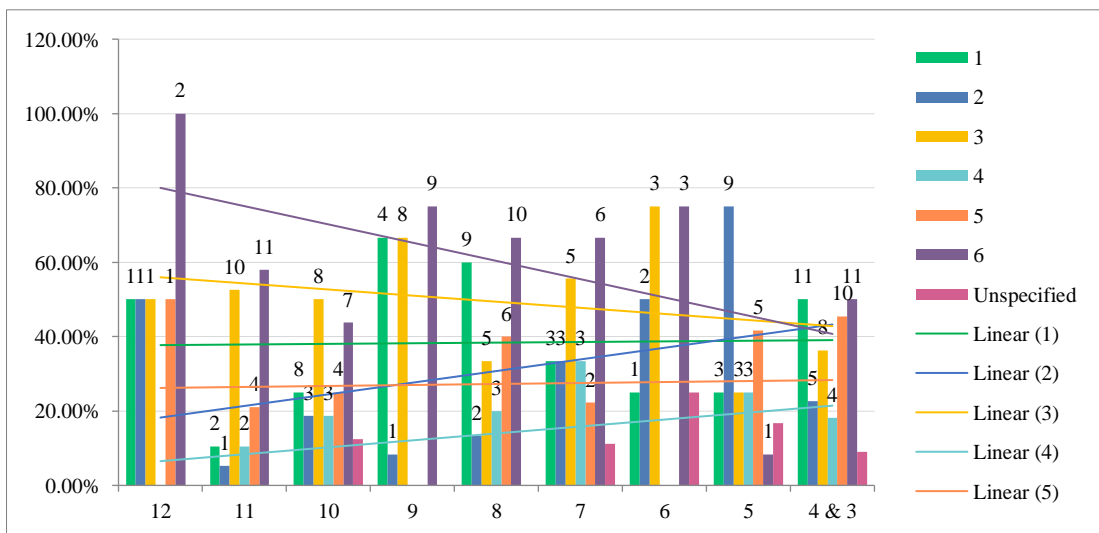


Figure 20. Question Number 10, Elements of 3D and 2D Playgrounds.

The spatial features of these three photos may be summarized by the fact that two of the examples are outdoor playgrounds, and the other, which is located inside the building, has a transparent ceiling, which it does not give the sense of completely

indoor playground. Other spatial aspects of the selected images indicate that they also include components of an adventure playground.

Additionally, children ranked the play spaces shown in Figure 21 in order of left to right as their second top three choices from the six alternatives presented in Figure 22. Again, the spatial characteristics of these three photographs shows the fact that they are all of outdoor playgrounds.



Figure 21. Second Top Three Choices. (Source: Unsplash, 2021).

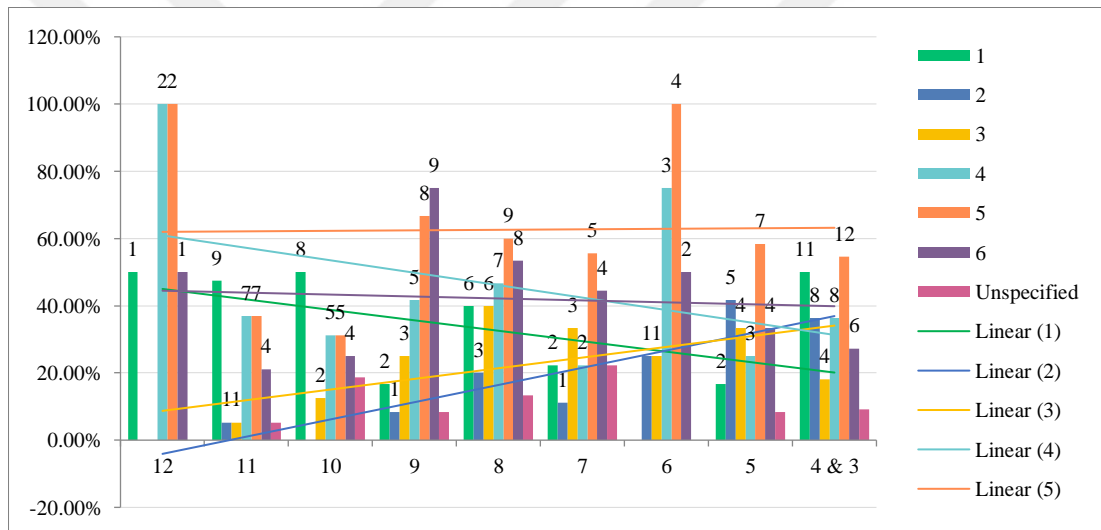


Figure 22. Question Number 11, Elements of 3D and 2D Playgrounds.

To summarize the findings of the questionnaire, it was discovered that children are still interested in traditional playgrounds, which not only amuse but also enhance the child's mind and body. Trampolines are also advised for children above the age of six to help them improve their motor abilities. Sandboxes are also beneficial for children aged 2 and above since they help to develop senses such as touch. In addition, children's interest in adventure playgrounds was explored in three questionnaire questions, and substantial votes were collected in all three instances based on children's interest in this sort of playground. Another interesting aspect was the children's interest in plays that reflected the adult world. Although the children preferred the playgrounds placed inside, the majority of the playgrounds located outdoors were preferred in the other two questions. Another outcome of this study revealed the majority of children's

preference for 3D playgrounds. Finally, with the author's assistance, the design teams analyzed the major aspects in each question based on the children's ideas individually and utilized it for design recommendations.

Following the study's main objective, which was a social responsibility project and social service, two mixed-age playgrounds were designed for underprivileged children in a mixed-age context. This study examined playground design principles for children of mixed ages. The designed playgrounds facilitate social interaction not only between peers, but also between children of different ages. Additionally, the playgrounds for children of different ages provide a safe environment for children to engage in constructive and responsible risk taking. Furthermore, they are comprehensive enough that children of varying ages may participate in different play stages that lead to the development of cognitive and social abilities and meet their needs. Additionally, designed playgrounds offer environments that children may physically alter to fulfill their play requirements (adventure playground area) and also are adaptable to the specific demands and requirements of children with exceptional disabilities. Each playground offers a different play area, with each component functioning in harmony with the others. Moreover, children are able to see and hear their friends, as well as older and younger children, while playing.

5.2. Design Process

Following the analysis of the survey and the evaluation and measurement of the site, the design process began in two different groups, each with an alternative designs and the following considerations: the type and number of play structures for each age group, the location of each structure on the playground, the condition of each structure's maintenance, the height, material, detail, and color of each structure.

Due to the fact that this project was a responsibility project with had a sponsorship, we designed two alternatives that were both relevant to our findings. These projects will be assessed based on the financial requirements of the project's sponsor and constructed in accordance with their financial priority.

The site (Figure 23 to Figure 25) designated for this project is located in the southeast side of Karşıyaka Sevgi Evleri Çocuk Yuvası (Figure 21), with natural features such as trees, bushes and a circular flower box which is shown on Figure 26. The criteria for choosing outdoor space for the playground was because, as Baek and colleagues mentioned (2015), studies indicate that the variety of greenspaces and natural amenities is critical for children's play. Children use a variety of aspects

throughout various sorts of active play. Children aged 5 to 6 years old climb trees, construct dens and shelters, and engage in role play in forests. Children engage in active play in green open spaces, which necessitates barrier-free environments (e.g., playing catch). On the other hand, areas covered with scattered bushes are employed for activities such as hide-and-go-seek (Fjørtoft and Sageie, 2000).



Figure 23. A Grassy Area with Trees and Buildings in the Background of the Project's Site.



Figure 24. A Grassy Area with Trees and Bushes in the Site of Project.



Figure 25. The Playground's Location. (Source: Google Earth, 2021).



Figure 26. Circular Flower Box.

The following results are accomplished in figure 27 and figure 28. When planning the site layout, the position of play equipment was prioritized to ensure that children interact safely while playing.

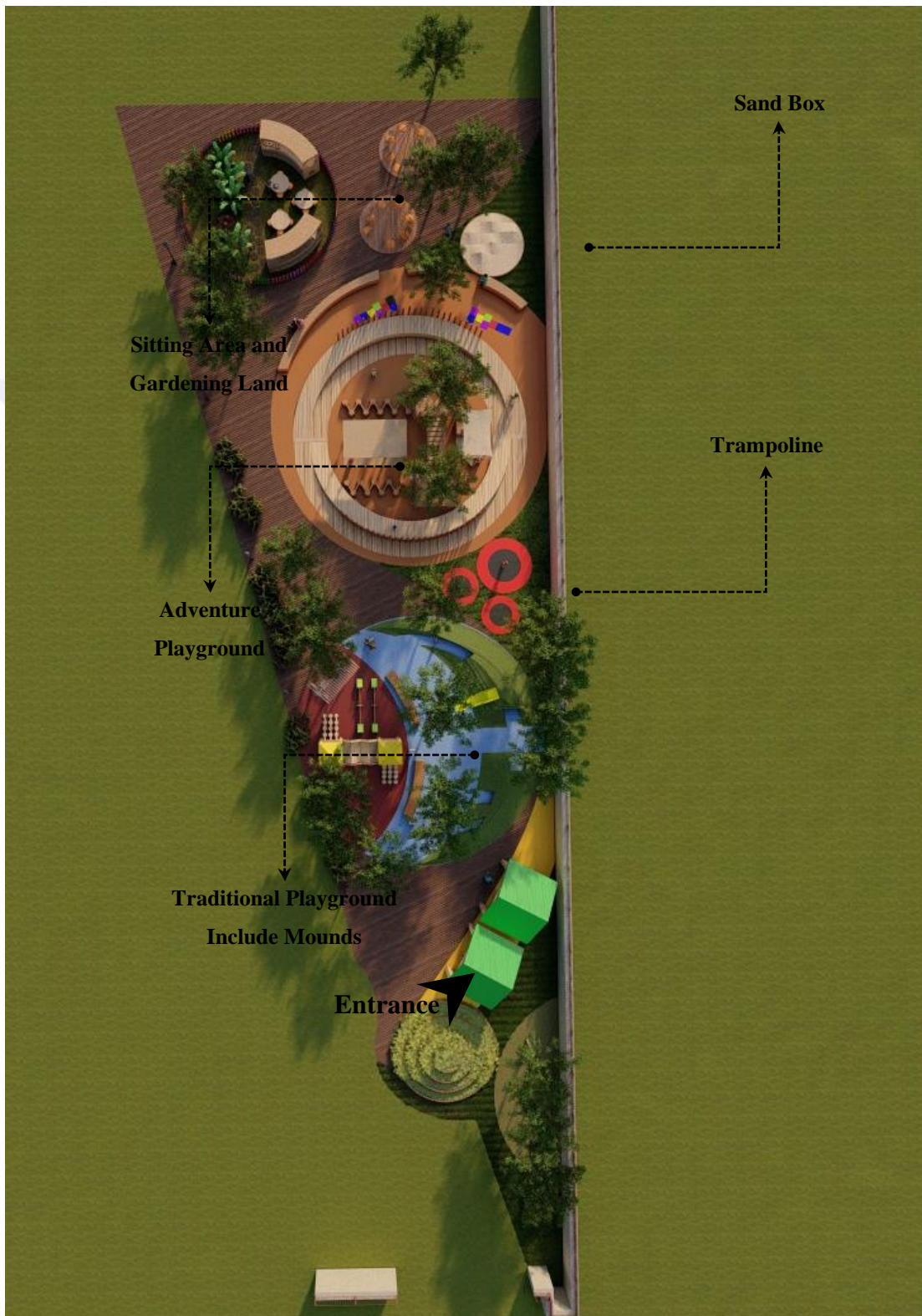


Figure 27. Playground Alternative 01

That is why each play has a distinct location and each component works in harmony with all the others. And children may readily take advantage of one another, allowing them to see and hear their peers as well as older and younger children while they play.

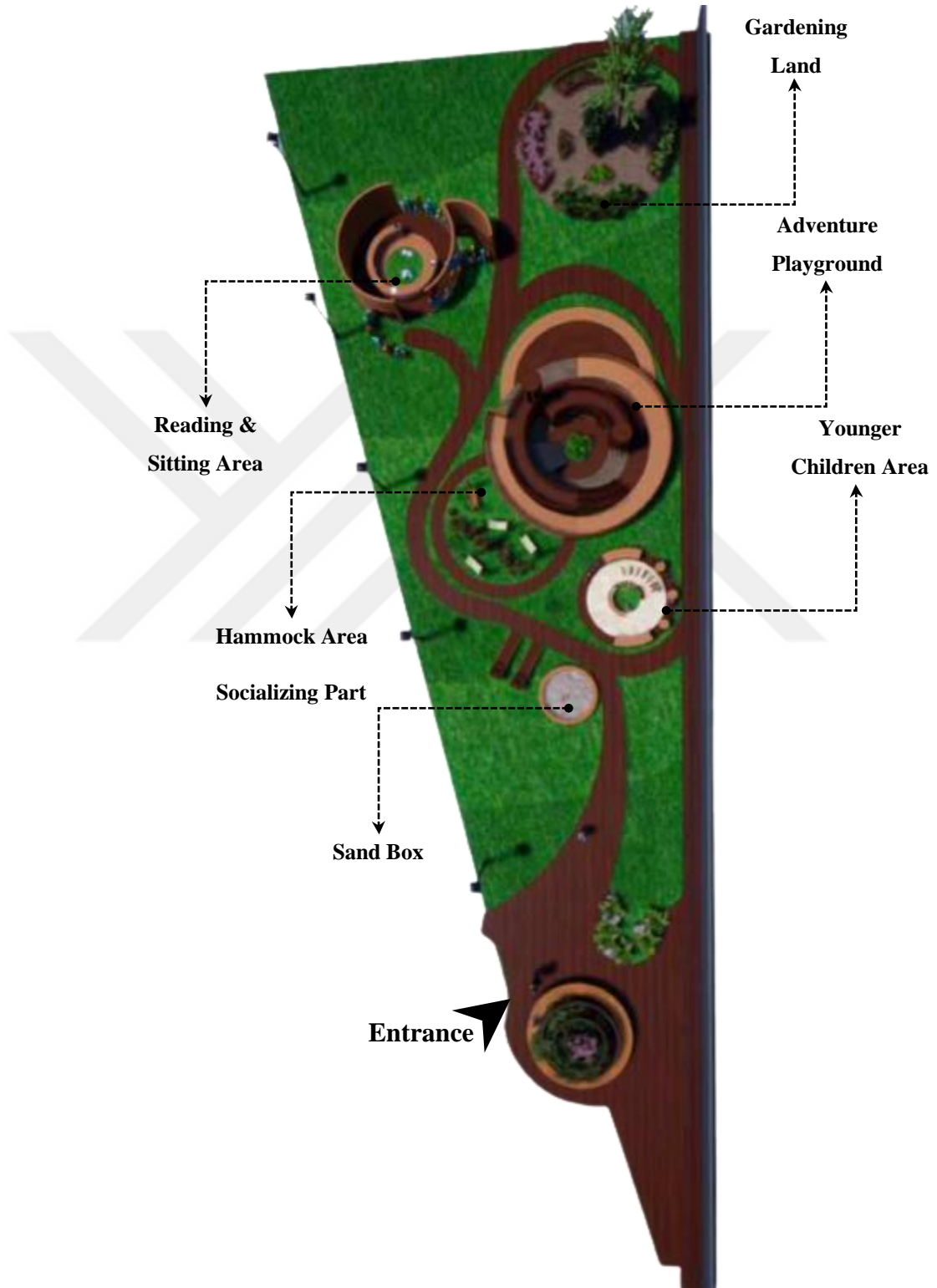
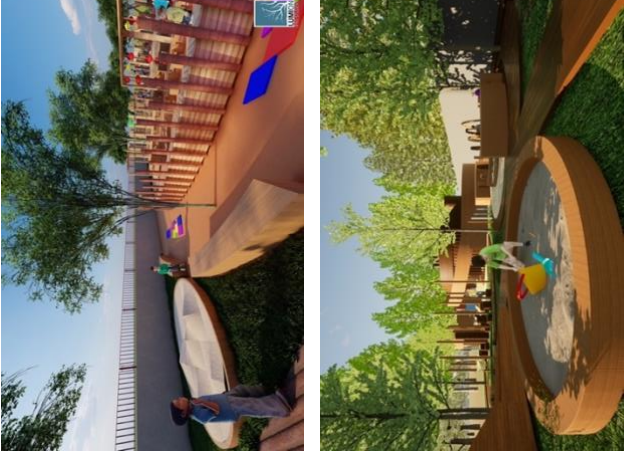



Figure 28. Playground Alternative 02

Table 2 outlines the design accomplishments, play type, age group, and dimensions of the play based on findings.


Table 2. Playgrounds' Design Assessments.


Play Area/ Equipment	Age Group	Dimension	Design Criteria and Discussion	Renders
Younger Children Area with Shape Sorting Cube & Tic Tac Toe	2-4 & 5 and older	Cognitive Social Toys	<p>The goal of designating a part for the Shape Sorter was to enable the younger children to increase their hand-eye coordination, tactile development, fine motor, and problem-solving abilities, as well as their language knowledge (e.g., being able to identify and name shapes).</p> <p>The Tic Tac Toe board is considered to aid in the development of children's strategic thinking. They can predict their opponents' next move via observation and develop strategies to block them.</p>	 

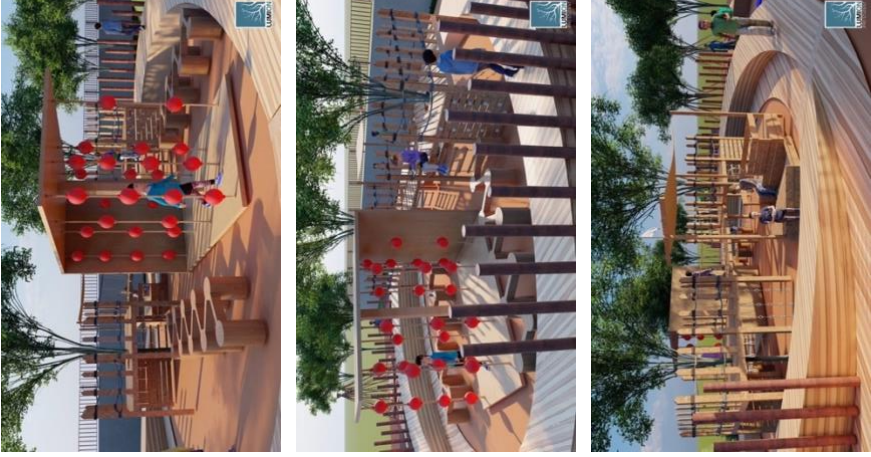
Play Area/ Equipment	Age Group	Dimension	Design Criteria and Discussion	Renders
Sandbox	2-5	Cognitive Social Toys	<p>This component was created for Improve finger and hand muscular strength and coordination, which are required for handwriting, a variety of sports, and self-sufficiency duties like buttoning clothes and tying shoes. To put it simply, to expand their sensory repertoire. These sandboxes are designed with a lid and protection to avoid damage and deterioration in all weather conditions</p>	

Play Area/ Equipment	Age Group	Dimension	Design Criteria and Discussion	Renders
Traditional Playground	4-8	Cognitive Behavioral Social Toys	<p>The area of the playground designated for traditional playground equipment, which includes Seesaw, Swing, Tree House, and Mounds. Apart from other equipment are beneficial for socializing, improve motor skills, Mounds also entice children to climb, and they aid in the development of motor skills, lower body strength and coordination, and a sense of balance. Climbing, rolling, and sliding up and down hills teaches children about their bodies and promotes proprioception development. Additionally, playing on mounds promotes problem-solving, anticipating what will happen next, and taking calculated risks. The designed mounds contain tunnel underneath them, which adds excitement to children's play.</p>	

Play Area/ Equipment	Age Group	Dimension	Design Criteria and Discussion	Renders
Gardening Land (Socializing Area)	4 and Older	Cognitive Behavioral Social Toys	This area is designed to improve sensory exploration, motor skill development, and a sense of responsibility. By counting, measuring, and observing the sprouting process, they will learn mathematics and science at the same time.	
Trampoline	6 and Older	Cognitive Toys	These equipment are assigned to children aged six and above to help them enhance their motor skills, balance, and coordination. They are also good for improving energy levels after long periods of sitting.	

Play Area/ Equipment	Age Group	Dimension	Design Criteria and Discussion	Renders
Socializing Areas (Reading Area & Hammock Area)	7 and Older	Cognitive Behavioral Social Toys	This section is created for children not only to socialize but also to experience new dimensions. While listening to nature and the sounds of other children, they can also enjoy the fresh air and also, they may develop the ability to focus when they are studying	

Play Area/ Equipment	Age Group	Dimension	Design Criteria and Discussion	Renders
Adventure Playground	7 and Older	Cognitive Behavioral Social Toys	<p>The goal of designing this area was to foster learning via exploration and creativity by enabling children to set their own rules in play.</p> <p>Aside from playing with ropes and climbing spots on this adventure playground, children may utilize light and shadow to build their imagination play, as well as connect socially with other children and older children. Kids will spend time creating structures in their play to help them work through challenges, and this frequently necessitates the assistance of peers.</p> <p>They would create their own community via play, activities, and relationship growth.</p> <p>Other advantages include problem solving, teamwork, collaboration, experimenting, mathematical and spatial abilities, and much more!</p>	

Play Area/ Equipment	Age Group	Dimension	Design Criteria and Discussion	Renders
Adventure Playground	7 and Older	Cognitive Behavioral Social Toys	<p>The goal of designing this area was to foster learning via exploration and creativity by enabling children to set their own rules in play.</p> <p>Aside from playing with ropes and climbing spots on this adventure playground, children may utilize light and shadow to build their imagination play, as well as connect socially with other children and older children. Kids will spend time creating structures in their play to help them work through challenges, and this frequently necessitates the assistance of peers.</p> <p>They would create their own community via play, activities, and relationship growth.</p> <p>Other advantages include problem solving, teamwork, collaboration, experimenting, mathematical and spatial abilities, and much more!</p>	

CHAPTER 6: CONCLUSION

This chapter concludes the thesis. Additionally, it analyzes future study suggestions for researchers and provides designers with a set of playground design standards for mixed age, as well as restrictions that could not be managed during data gathering.

User experience is one of the most important design principles. As a result, in order to create a playground, we must first identify our target audience. For users to have access to good design, the designer must have a direct relationship with them and understand their needs. Understanding particular demands while designing for children can assist designers in creating a good product that promotes mental activity and creativity.

The purpose of this research is to determine the effect of a mixed-age playground design on children's play habits. A questionnaire was conducted to children of various ages to get information about their imaginary playground. According to this study's findings, younger children may learn a great deal just by listening to or overhearing older children, even when they are not engaging with them. They increase their vocabularies and breadth of thinking by hearing the language and ideas of older children, which are more complex than their own but not so much so that they are out of reach. Additionally, mixed-age playgrounds have enormous benefits for older children; these playgrounds benefit older children by allowing them to expand their own understanding through explanations to younger children, and older children develop compassion and nurturing skills through assisting younger ones.

The other issue which considered in this study after conducting survey was about children creativity, which educational environments may foster young children's creativity in three ways: the creative environment, creative programs, and creative instructors and instructional methods. Among these, the facilitation of children's play is critical to the creative environment. And, as previously indicated, creativity becomes more apparent when adults pay more attention to children's cognitive processes than to the outcomes they acquire in many realms of doing and knowing.

That is why mixed-age playground design solutions in Karşıyaka Sevgi Evleri Çocuk Yuvası feature different areas for various activities, each focusing on a distinct stage of play in children, in order to develop and strengthen children's cognitive, behavioral, and social abilities. The layout, positioning, and design of these places

have been carefully considered to ensure that children of all ages may play comfortably and securely throughout the playground. Different benches and places to sit were incorporated in the designs to allow children to observe other children during play.

This study investigated playground designs and questioned how should a playground for children of different ages be designed? How can playgrounds be designed with children's preferences in mind? As you can see in the design part, we designed two alternative according to the surveys result and we are convinced that because mixed-age playgrounds benefit both younger and older children by fostering peer learning, we must pay attention to the location of different play spaces that have the necessary potential for visual and auditory interactions, and we can design playgrounds for different ages by considering play stages. Also, we feel that playgrounds developed by designers who draw inspiration from children's imaginations may have an impact on children's creativity.

Among the most major challenges discovered throughout this investigation, it should be mentioned that this research was undertaken during the Covid-19 pandemic, which precluded the author from conducting a survey; instead, the questionnaire was done by instructors at the Karşıyaka child protection center, which means the author did not keep track of the poll. Additionally, the emergence of economic inflation and economic troubles as a consequence of the outbreak of Covid-19 caused the implementation of this project to be postponed, and as a result, the observation part of this research was discontinued.

Another limitation of this research was the unequal distribution of children per age group, making it difficult to provide estimates. This study may be undertaken after the ending of Covid-19, using a larger sample group comprised of a considerable and almost equal number of children in each age range.

The significance of this study was to understand imaginary playground of children to enhance their creativity and also, gaining a better understanding of mixed-age playground which not only cause to enhance abilities, such as mental capabilities, cognitive and motor skills, social and emotional skills, but also, boosts their creativity, provide emotional support for younger children as well as information on their specific needs. This research demonstrated that designers must learn about children from professionals such as psychologists and be aware of their true needs. We identified and offered different ideas for designing playground and environmental plays for young children. For designers working in the mentioned field, the design principle of

playground equipment for developing various abilities might be a suitable guideline.

The studies conducted for this thesis have identified a number of additional areas for further research. These include the following: How can playgrounds in various regions of the city be designed to satisfy the requirements of children and adults? What guidelines and suggestions should designers keep in mind when designing a playground for children and adults, so that the environment developed fits the requirements of various ages in a safe and dynamic setting? How do the designers intend to avoid bullying of young children on the playground?.



REFERENCES

- Aaron, D. and Winawer, B. P. (1965) *Child's Play*. First Edition. New York: Harper & Row.
- Amato, P. R. and Ochiltree, G. (1987) *Interviewing Children about Their Families: A Note on Data Quality*. Journal of Marriage and the Family, Vol. 49(3), pp. 669-675.
- Amouzegar, Z., Sadeghi Naeini, H. and Jafari, R. (2010) *Design Principle of Playgrounds' Equipments and Spaces for Children: An Interaction Education Approach*. Procedia Social and Behavioral Sciences, Vol. 2(2), pp. 1968-1971.
- Anon. (2020) *Playcubed*. [Online]
Available at: <https://www.playcubed.co.uk/news/how-does-play-change-as-children-grow>. (Accessed 15 January 2022).
- Anon. *unsplash*. [Online]
Available at: <https://unsplash.com/s/photos/playground>. (Accessed 15 June 2021).
- Baek, S. Solhyon, R. Samina, P. Jiyoung, E. Leonard H., Y. Li, R. James, N. (2015) *Park Design and Children's Active Play: A Microscale Spatial Analysis of Intensity of Play in Olmsted's Delaware Park*. Environment and Planning B: Planning and Design, Vol. 42(6), pp. 1079-1097.
- Bailey, D. B. Jr., Burchinal, M. R., and McWilliam, R. (1993) *Age of peers and early childhood development*. Child Development, Vol. 64(03), pp. 848-862.
- Barbour, A. C. (1999) *The Impact of Playground Design on the Play Behaviors of Children with Differing Levels of Physical Competence*. Early Childhood Research Quarterly, Vol. 14(1), pp. 75-98.
- Bell, A. (2007) *Designing and Testing Questionnaires for Children*. Journal of Research in Nursing, Vol. 12(5), pp. 461-469.
- Bodrova, E. and Leong, D. J. (2001) *Tools of the Mind: The Vygotskian approach to early childhood education*. First Edition. Geneva: International Bureau of Education.
- Bodrova, E. and Leong, D. J. (2015) *Vygotskian and Post-Vygotskian Views on Children's Play*. American Journal of Play, Vol. 7(3), pp. 371-388.
- Bowers, L. (1979) *Toward a Science of Playground Design: Principles of Design for Play Centers for All Children*. Journal of Physical Education and Recreation, Vol. 50(8), pp. 51-54.
- Brett, A., Moore, R. C. and Provenzo, Jr., E. F. (1993) *The Complete Playground Book*. First Edition. United States of America: Syracuse University Press.

- Briskin, S. La Botz, M. Brenner, J. S., Benjamin, H. J., Cappetta, CC. T., Demorest, R. A., Halstead, M. E., Koutures, C. G., La Bella, C. R., LaBotz, M., Loud, K. J., Martin, S. S. and Weiss Kelly, A. K. (2012) *Trampoline Safety in Childhood and Adolescence*. *Pediatrics*, Vol. 130(4), p. 774–779.
- Brody, G. . H. (2004) *Siblings' Direct and Indirect Contributions to Child Development*. *Current Directions in Psychological Science*, Vol. 13(3), pp. 124-126.
- Brosterman, N. (1997) *Inventing Kindergarten*. First Edition. New York: Harry N. Abrams.
- Bulgarelli, D. and Bianquin, N. (2017) *3 Conceptual Review of Play*. In: S. Besio, D. Bulgarelli and V. Stancheva-Popkostadinova, eds. *Play Development in Children with Disabilities*. Warsaw: De Gruyter, pp. 58-70.
- Chia, M. (2007) *PRIDE for PLAY: Personal Responsibility in Daily Effort for Participation in Life- Long Activity for Youths. A Singaporean Context*. *Journal of Sports Science and Medicine*, Volume 6, pp. 374-379.
- Cohen, P. A., Kulik , J. A. and Kulik, C. L. C. (1982) *Educational Outcomes of Tutoring: A Meta-Analysis of Findings*. *American Educational Research Journal*, Vol. 19(02), pp. 237-248.
- Craft, A. (2003) *Creative Thinking in the Early Years of Education*. *Early Years*, Vol. 23(2), pp. 143-154.
- Creswell, J. W. (2003) *Research Design: Qualitative, Quantitative, and Mixed-Method Approaches*. Third Edition. Thousand Oaks, California: Sage Publications.
- Curtis, H. S. (1917) *The Play Movement and Its Significance*. Washington: McGrath Publishing Co.
- Dattner, R. (1969) *Design for Play*. First Edition. New York: Van Nostrand Reinhold Co.
- Dewey, J. (1997) *Democracy and Education*. First Edition. New York: Free Press.
- Drew, W. F., Christie, J., Johnson, J. E., Meckley, A. M., and Nell, M. L. (2008) *Constructive Play: A Value-Added Strategy for Meeting Early Learning Standards*. *YC Young Children*, Vol. 63(4), pp. 38-44.
- Ember, C. R. (1973) *Feminine Task Assignment and the Social Behavior of Boys*. *Ethos*, Vol. 01(04), pp. 424-439.
- Fjørtoft, I. and Sageie, J. (2000) *The Natural Environment as a Playground for Children*. *Landscape and Urban Planning*, Vol. 48(1), pp. 83-97.
- Frost, J. L. (1979) *The American Playground Movement*. *Childhood Education*, Vol.

54(4), pp. 82-176.

Frost, J. L. (1992) *Play and Playscapes*. Second Edition. Albany, New York: Delmar Publishers.

Frost, J. L. (2012) *Evolution of American Playgrounds*. Scholarpedia, Vol. 7(12), p. 30423.

Frost, J. L., Brown, P.-S., Sutterby, J. A. and Thornton, C. D. (2004) *The Developmental Benefits of Playgrounds*. First Edition. Olney, Maryland: Association for Childhood Education International.

Frost, J. L., Wortham, S. and Reifel, S. (2011) *Play and Child Development*. Fourth Edition. New Jersey: Pearson.

Garvey, C. (1990) *Play*. First Edition. Cambridge: Harvard University Press.

Grant, H. (2017) *The Guardian*. [Online] Available at: <https://www.theguardian.com/cities/2017/jul/19/junk-play-urban-adventure-playgrounds-austerity-london>. (Accessed 17 January 2022).

Gray, P. (2011) *The Decline of Play and the Rise of Psychopathology in Children and Adolescents*. American Journal of Play, Vol. 3(4), pp. 443-463.

Gray, P. (2011) *The Special Value of Children's Age-Mixed Play*. American Journal of Play, Vol. 3(4), pp. 500-522.

Gray, P. (2013) *Free to Learn: Why Unleashing the Instinct to Play Will Make Our Children Happier, More Self-Reliant, and Better Students for Life*. First Edition. New York: Basic Books.

Gray, P. O. (2002) *Psychology*. Fourth Edition. New York: Worth Publishers.

Grob-Zakhary, R. (2014) *Vimeo*. [Online] Available at: <https://vimeo.com/91862112>. (Accessed 28 February 2022).

Hershey, M. R. and Hill, D. B. (1976) *Positional Response Set in Pre-Adult Socialization Surveys*. Social Science Quarterly, Vol. 56(4), pp. 707-714.

Hirsh-Pasek, K., Golinkoff, R. M., Berk, L. E. and Singer, D. (2008) *A Mandate for Playful Learning in Preschool: Presenting the Evidence*. First Edition. New York: Oxford University Press.

Homan, E. (2017) *The University of Manchester*. [Online] Available at: <https://documents.manchester.ac.uk/display.aspx?DocID=43717>. (Accessed 15 January 2022)

Huizinga, J. (1955) *Homo ludens: A Study of Play-Element In Culture*. First Edition. Boston: The Beacon Press.

- Johnson, J. E., Christie, J. F. and Wardle, F. (2005) *Play, Development, and Early Education*. First Edition. Boston: Pearson.
- Johnson, J. E. and Ershler, J. (1982) *Curricular Effects on the Play of Preschoolers*. In: D. J. Pepler and K. H. Rubin, eds. *The Play of Children: Current Theory and Research*. Basel: Karger, pp. 130-143.
- Konner, M. (2010) *The Evolution of Childhood: Relationships, Emotion, Mind*. First Edition. Harvard University Press.
- Kristensen, T. (2004) *The Physical Context of Creativity*. *Creativity and Innovation Management*, Vol. 13(2), pp. 89-96.
- Krueger, N. (2021) *ISTE*. [Online] Available at: <https://www.iste.org/explore/iste-blog/preparing-students-jobs-dont-exist>. (Accessed 07 December 2021).
- Kudrowitz, B. M. and Wallace, D. R. (2010) *The Play Pyramid: A Play Classification and Ideation Tool for Toy Design*. *International Journal of Arts and Technology*, Vol. 3(1), pp. 36-56.
- Lancy, D. F., Bock, J. C. and Gaskins, S. (2010) *Putting learning in context*. In: D. F. Lancy, J. C. Bock and S. Gaskins, eds. *The anthropology of learning in childhood*. Second Edition. AltaMira Press, pp. 3-10.
- Le Blanc, G. and Bearison, D. J. (2004) *Teaching and Learning as a Bi-Directional Activity: Investigating Dyadic Interactions Between Child Teachers and Child Learners*. *Cognitive Development*, Vol. 19(04), pp. 499-515.
- Malaguzzi, L. (1993) *History, Ideas, and Basic Philosophy: An Interview With Lella Gandini*. In: C. Edwards, L. Gandini & G. Forman, eds. *The Hundred Languages of Children : The Reggio Emilia Approach-Advanced Reflections*. Second Edition. Greenwich: Ablex Publishing, pp. 49-97.
- Mellou, E. (1996) *Can Creativity be Nurtured in Young Children?* *Early Child Development and Care*, Vol. 119(1), pp. 119-130 .
- Moore, R. C. (2006) *Playgrounds*. In: *Safe and Healthy School Environments*. s.l.:Oxford University Press, pp. 86 - 103.
- Parten, M. (1932) *Social Participation among Pre-School Children*. *Journal of Abnormal and Social Psychology*, Vol. 27(3), pp. 243-269.
- Piaget, J. (1945) *Play Dreams and Imitation in Childhood*. London: Taylor & Francis.
- Rubin, K. H., Bukowski, W. M. and Parker, J. G. (1983) *Peer Interactions, Relationships, and Groups*. In: P. Mussen & E. M. Hetherington, eds. *Handbook of*

Child Psychology, Socialization, Personality and Social Development. New York: Wiley, pp. 693-774.

Rubin, K. H., L. Maioni, T. and Hornung, M. (1976) *Free Play Behaviors in Middle- and Lower-Class Preschoolers: Parten and Piaget Revisited*. *Child Development*, Vol. 47(2), pp. 414-419.

Rudolph, N. (1974) *Workyards: Playgrounds Planned for Adventure*. First Edition. New York: Teachers College Press, Columbia University.

Runco, M. A. (1996) *Want To Read Rate This Book 1 of 5 Stars2 of 5 Stars3 of 5 Stars4 of 5 Stars5 of 5 Stars Creativity From Childhood Through Adulthood: The Developmental Issues*. First Edition. California: Jossey-Bass.

Runco, M. A. (2003) *Education for Creative Potential*. *Scandinavian Journal of Educational Research*, Vol. 47(3), pp. 317-324.

Russ, S. W. (2003) *Play and Creativity: Developmental Issues*. *Scandinavian Journal of Educational Research*, Vol. 47(3), pp. 291-303.

Sharp, C. (2004) *Developing Young Children's Creativity: What Can We Learn from Research?* *National Foundation for Educational Research*, Vol 32, pp. 5-12.

Smilansky, S. (1968) *The Effects of Sociodramatic Play on Disadvantaged Preschool Children*. Second Edition. New York : Wiley.

Smith, T. P. (2002) *Age Determination Guidelines: Relating Children's Ages To Toy Characteristics and Play Behavior*. First Edition. U.S. Consumer Product Safety Commission (CPSC).

Solomon, S. G. (2005) *American Playgrounds: Revitalizing Community Space*. First Edition. Hanover: University Press of New England.

Stone, S. J. and Burriss, K. G. (2019) *Understanding Multiage Education*. First Edition. New York: Routledge.

Tegano, D. W., Moran, J. D. and Sawyers, J. K. (1991) *Creativity in Early Childhood Classrooms*. First Edition. Washington DC.: NEA Professional Library, National Education Association.

Thelen, M. H. and Kirkland, K. D. (1976) *On Status and Being Imitated: Effects on Reciprocal Imitation and Attraction*. *Journal of Personality and Social Psychology*, Vol. 33(06), pp. 691-697.

Trautner, T. (2018) *Michigan State University*. [Online] Available at: <https://www.canr.msu.edu/news/just-a-swinging-sliding-and-climbing>. (Accessed 15 January 2022).

Trilling, B. and Fadel, C. (2012) *21st Century Skills: Learning for Life in Our Times*. First Edition. Jossey-Bass: San Francisco.

Tulley, G., 2007. TED. [Online] Available at: https://www.ted.com/talks/gever_tulley_5_dangerous_things_you_should_let_your_kids_do#t-316647. (Accessed 28 February 2022).

Vygotsky, L. S. (1979) *Interaction Between Learning and Development*. In: M. Cole, V. John-Steiner, S. Scribner & E. Soubberman, eds. *Mind in Society: The Development of Higher Psychological Processes*. First Edition. Harvard University Press, pp. 79-91.

Vygotsky, L. S. (1979) *Mind in Society: Development of Higher Psychological Processes*. First Edition. Harvard University Press.

Whiting, B. B. and Edwards, C. P. (1973) *A Cross-Cultural Analysis of Sex Differences in the Behavior of Children Aged 3 through 11*. *Journal of Social Psychology*, Vol. 91(2), p. 171-188.

Wood, D., Bruner, J. S. and Ross, G. (1976) *The Role of Tutoring in Problem Solving*. *Journal of Child Psychology and Psychiatry*, Vol. 17(02), pp. 89-100.

Zukow-Goldring, P. (2002) *Sibling Caregiving*. In: M. H. E. Bornstein, ed. *Handbook of parenting: Being and Becoming a Parent*. First Edition. Lawrence Erlbaum Associates Publishers., pp. 253-286.

APPENDICES

APPENDICES A: QUESTIONNAIRE

Name:

Age:

Gender:

1. Choose the items that you want to have/play with on a daily basis at your playground.

Blocks and Legos



Swings and Slides



Trampoline



Sand



Water Fountain



Adventure Playground Elements



Pretending Playgroud



Pretending Playgroud



2. With whom do you prefer to play with?

Youngers



Peers



Older



Adults



3. Which one do you prefer: indoor or outdoor playgrounds?

Indoor

Outdoor

4. Which of the following colors do you like for the playground?

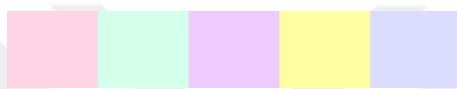
Neon Color Pallet



Underwater Scene Color Pallet



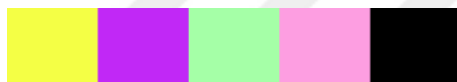
Pastel Color Pallet



Beach Color Pallet



Spring Color Pallet



Summer Color Pallet



Fall Color Pallet



Winter



5. Choose your Favorites. (You may check multiple items.)



6. Choose your Favorites. (You may check multiple items.)



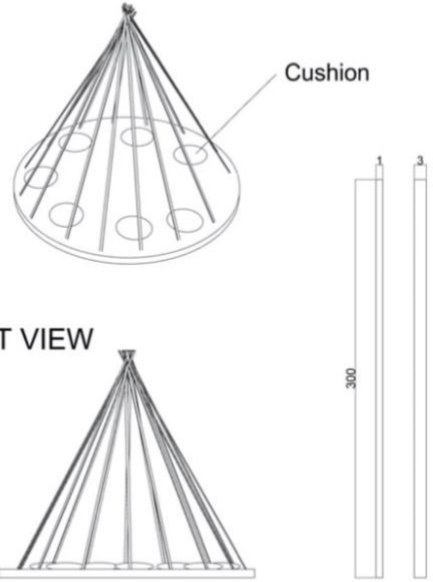
7. Now it's time to draw your imaginary playground.

APPENDICES B: ALTERNATIVE I- TECHNICAL DRAWINGS

TOP VIEW



PERSPECTIVE



FRONT VIEW



RIGHT VIEW

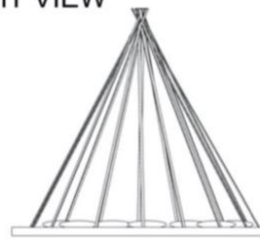
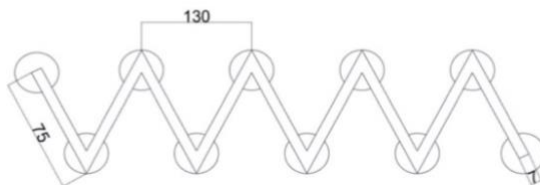


Figure 29. Socializing Part, Sitting Area

TOP VIEW



PERSPECTIVE



SECTION

FRONT VIEW



RIGHT VIEW



Figure 30. Benches in Adventure Playground

APPENDICES C: ALTERNATIVE I- RENDERS



Figure 31. Traditional Playground and Mounds View.



Figure 32. Traditional Playground with a View of the Trampoline.



Figure 33. View to the Traditional Playground.



Figure 34. Adventure Playground and Trampoline View



Figure 35. Adventure Playground View.



Figure 36. Sitting and Socializing Area.



Figure 37. Sandbox View.

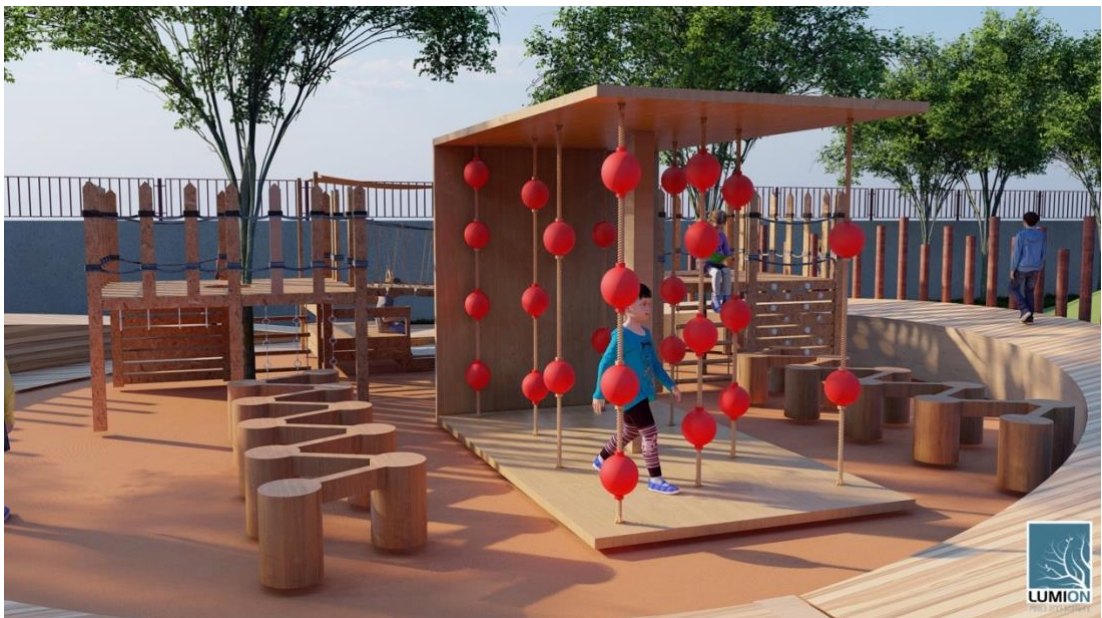


Figure 38. View of Adventure Playground with Benches.

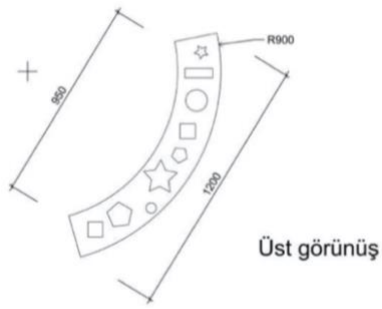


Figure 39. View of Adventure Playground.



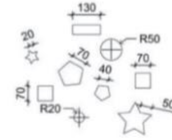
Figure 40. Holistic Perspective.

APPENDICES D: ALTERNATIVE II- TECHNICAL DRAWINGS



Üst görünüş

NOT:
Ürünün üzerine serbest yapı taşlarına uygun delikler açılacak.
(Toplam 1 grup üretilecek)

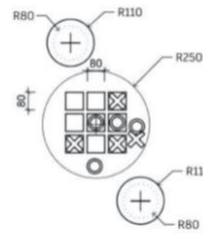


Serbest Yapı Taşları



Ön görünüş

Figure 41. Shape Sorter Details



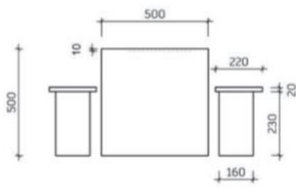
Üst görünüş

NOT:
Oturaklar alt ve üst olmak üzere
2 parçadan oluşacak.
Hem X hem de O şeklinden 5'er
tane üretilecek.

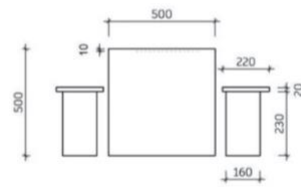
(Toplam 1 grup üretilecek)



Oyun Parçaları



Ön görünüş



Yan görünüş

Figure 42. Tic Tac Toe Details

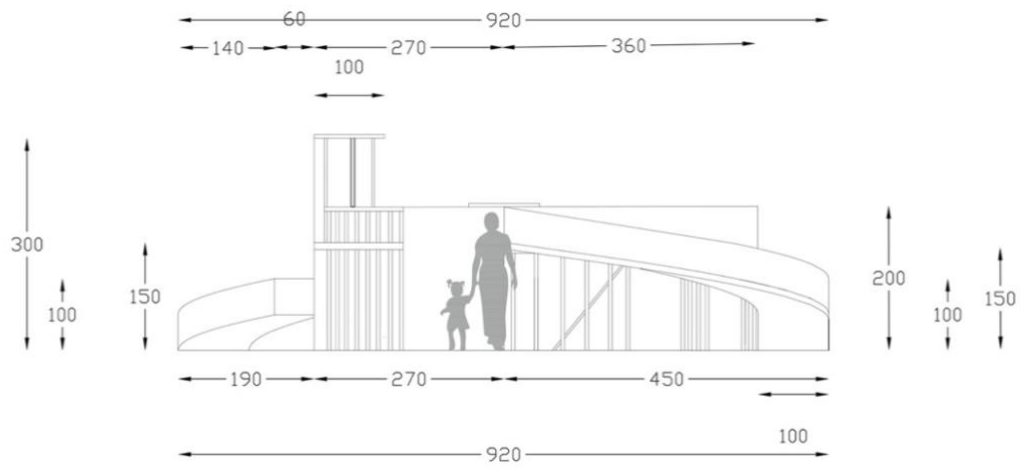


Figure 43. Adventure Playground Section

APPENDICES E: ALTERNATIVE II- RENDERS



Figure 44. Flowerbox.



Figure 45. Sandbox View.



Figure 46. Other View of Sandbox.



Figure 47. Tic Tac Toe Table.

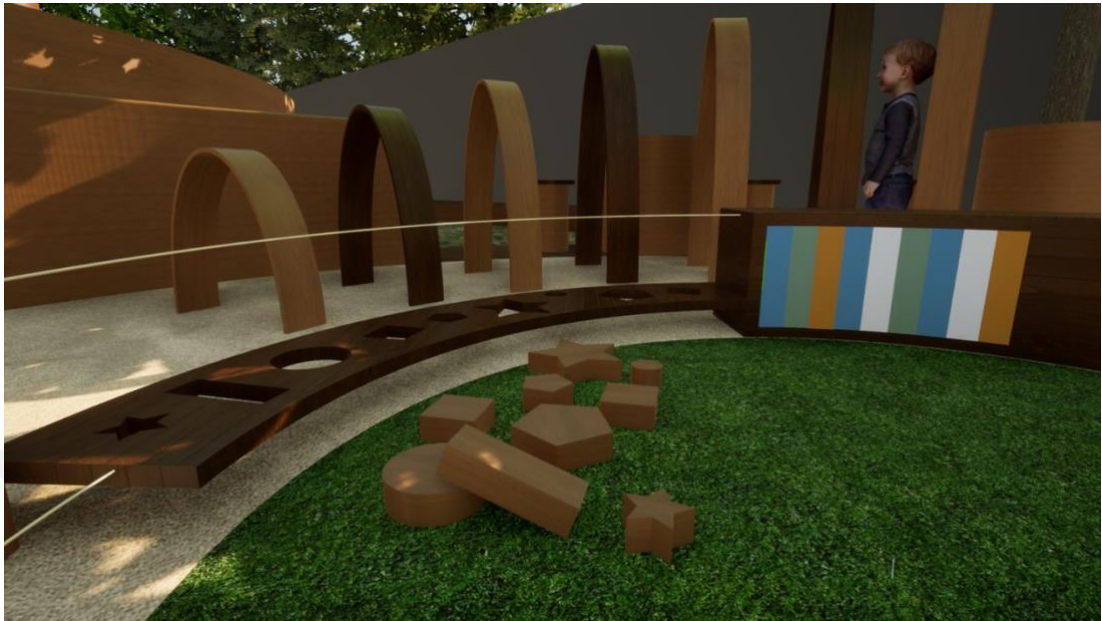


Figure 48. Shape Sorting Element.



Figure 49. The Part that Extracted from Children Imagination.



Figure 50. View to the Central part of Adventure Playground.



Figure 51. Adventure Playground View.



Figure 52. Interior Space of Adventure Playground.



Figure 53. Exterior Space of Adventure Playground.



Figure 54. Gardening Area.



Figure 55. View to the Reading and Socializing Area.



Figure 56. Reading and Socializing Part.



Figure 57. View to the Central Part of Adventure Playground.