ISTANBUL TECHNICAL UNIVERSITY ★ GRADUATE SCHOOL

BUILDING RESILIENCE THROUGH LEARNING LANDSCAPES: FOCUSING ON CHILDREN AND POST-DISASTER AREA

M.Sc. THESIS

Nasim Naeimi Shishavan

Department of Architecture

Landscape Architecture Programme

January 2024

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Thesis Advisor: Asst.Prof. Dr. Aysegül Akçay Kavakoğlu

JANUARY 2024

ISTANBUL TEKNİK ÜNİVERSİTESİ ★ LİSANSÜSTÜ EĞİTİM ENSTİTÜSÜ

ÖĞRENME PEYZAJLARI ARACILIĞIYLA DAYANIKLILIK İNŞA ETMEK: ÇOCUKLARA VE AFET SONRASI ALANA YÖNELİŞ

YÜKSEK LİSANS TEZİ

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Mimarlık Anabilim Dalı

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OCAK 2024

Nasim Naeimi Shishavan, a M.Sc. student of İTU Graduate School student ID 502181614, successfully defended the thesis entitled “BUILDING RESILIENCE THROUGH LEARNING LANDSCAPES: FOCUSING ON CHILDREN AND POST-DISASTER AREA”, which she prepared after fulfilling the requirements specified in the associated legislations, before the jury whose signatures are below.

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Date of Submission : 05 JANUARY 2024
Date of Defense : 17 JANUARY 2024

To My Family,

FOREWORD

I want to express my greatest gratitude to my supervisor, Asst. Prof. Dr. Ayşegül Akçay Kavakoğlu, especially for her guidance, motivating comments, and criticisms throughout the whole study. Further, I would like to thank jury members Assoc. Prof. Dr. Melih Bozkurt and Asst.Prof. Dr. Türkan Nihan Hacıömeroğlu for their valuable discussions and helpful comments.

I extend my profound gratitude and heartfelt appreciation to my beloved family: my mother, Fatemeh Bina; my father, Nader Naeimi Shishavan; my sisters, Nasrin and Samira; and especially my dear brother, Behnam. Their unwavering love and support have been a constant source of strength and encouragement throughout my journey.

Finally, I want to express my sincere gratitude to all my professors and friends at the Istanbul Technical University Department of Architecture.

January 2024

Nasim Naeimi Shishavan
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ABBREVIATIONS

ABPRS	**:** Address-Based Population Registration System
STEM	**:** Science, Technology, Engineering and Mathematics
ERT	**:** Empathy, Responsibility, and Teamwork

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BUILDING RESILIENCE THROUGH LEARNING LANDSCAPE: FOCUSING ON CHILDREN AND POST-DISASTER AREA

SUMMARY

This thesis focuses on the potential impact of learning landscapes in urban and post-disaster areas on fostering resilience for children. The study uses basic learning landscape techniques to enhance learning experiences and adapts playful learning programs for diverse cities practically. The research envisions the widespread adoption of playful learning as a natural part of urban spaces and daily life for families and communities. This study examines how children learn and absorb knowledge from their environment. The examination elaborates on factors that promote child development and playful learning, emphasizing physical, cognitive, and socio-emotional aspects. The case study method is adapted to conduct a detailed analysis of various types of playgrounds to understand their impact on the overall learning landscape. The 42 cases are analyzed to provide insights into how the design and implementation of playful learning environments can contribute to the holistic development of children. The analysis opened a door towards navigating learning landscapes and their practical implementation, like exploring how playful learning environments and STEM learning opportunities can promote resilience and coping strategies. This study offers practical games and strategies to elevate the quality of play and playgrounds, ultimately contributing to the creation of safe outdoor spaces conducive to learning and exploration as a result of the literature review and case study analysis. Furthermore, the outcomes of this study contribute to the literature in the field in terms of guiding policymakers, designers, and organizations involved in post-disaster recovery, aiming to create child-friendly, resilient urban environments.

ÖĞRENME PEYZAJLARI ARACILIĞIYLA DAYANIKLILIK İNŞA ETMEK: ÇOCUKLARA VE AFET SONRASI ALANA YÖNELİŞ

ÖZET

Bu tez, kentsel ve afet sonrası alanlardaki öğrenme manzaralarının çocukların dayanıklılığını nasıl artırabileceği üzerinde durmaktadır. Çalışma, çeşitli şehirler için oyunbaz öğrenme programlarını pratik olarak uygulayarak öğrenme deneyimlerini geliştirmek için temel öğrenme manzara tekniklerini kullanmaktadır. Araştırma, oyunbaz öğrenmenin kent alanlarının ve günlük yaşamın bir parçası olarak geniş çapta benimsenmesini öngörmektedir. Bu çalışma, çocukların çevrelerinden nasıl öğrendiklerini ve bilgiyi nasıl içselleştirdiklerini incelemektedir. İnceleme, çocuk gelişimini ve oyunbaz öğrenmeyi teşvik eden faktörleri, fiziksel, bilişsel ve sosyo-duygusal yönlerini vurgulayarak açıklamaktadır. Vaka çalışması yöntemi, çeşitli oyun alanlarının genel öğrenme manzarası üzerindeki etkilerini anlamak için detaylı bir analiz yapmak üzere adapte edilmiştir. 42 vaka incelenerek, oyunbaz öğrenme ortamlarının tasarımı ve uygulanmasının çocukların bütünsel gelişimine nasıl katkıda bulunabileceğine dair içgörüler sunulmaktadır. Analiz, oyunbaz öğrenme ortamlarının ve STEM öğrenme fırsatlarının dayanıklılığı ve başa çıkma stratejilerini nasıl teşvik edebileceğini keşfetmek gibi, öğrenme manzaralarını ve onların pratik uygulanmasını keşfetme yolunu açmıştır. Bu çalışma, oyun ve oyun alanlarının kalitesini yükseltmek için pratik oyunlar ve stratejiler sunmakta, sonuç olarak, literatür taraması ve vaka çalışması analizinin bir sonucu olarak öğrenmeyi teşvik eden ve keşfi teşvik eden güvenli dış mekanlar yaratmaya katkıda bulunmaktadır. Ayrıca, bu çalışmanın sonuçları, post-afet iyileşmesinde yer alan politika yapıcıları, tasarımcılar ve kuruluşları yönlendirme açısından alanda literatüre katkı sağlamaktadır, çocuk dostu, dayanıklı kentsel ortamlar yaratmayı amaçlamaktadır.

1. INTRODUCTION

Humans possess a natural inclination for learning. As individuals progress through childhood and beyond, they embark on a journey of discovery, actively engaging with their surroundings to comprehend the intricacies of the world (Robinson, 2019). Through playful interactions and immersive experiences, children construct their understanding of the environment and their place within it. In various situations, especially in the wake of disasters, socio-economic rights (Kneafsey et al., 2013) are frequently neglected, with children's rights to play being the most significant (Kucukali, 2015). Several well-documented studies have examined the performance of supplying play opportunities in the aftermath of natural disasters. Children are left without homes, schools, or any familiar environment in post-disaster events like earthquakes and floods, these disasters are often coupled with the tragic loss of family members. Furthermore, some of them are forced to relocate from their settled communities and seek temporary shelter (Sarı et al., 2023). These various aspects and effects of natural disasters can significantly impact children, increasing their vulnerability to stress disorders linked to trauma. Play opportunities for this particular group should be given priority because post-traumatic stress disorder is often more prevalent after earthquakes. Children can learn important skills like creativity, problem-solving, and social interaction by playing in appropriate environments (Trawick-Smith et al., 2011), including safe outdoor areas. These skills are especially crucial for children experiencing challenging or traumatic events as they learn to cope and develop resilience (Stuntzner & Hartley, 2014). Moreover, the accessibility of play features for reducing stress levels and relieving stress disorders is critical and plays an important part in enhancing future mental toughness (Masten, 2012). The concept of creating learning landscapes for children in the aftermath of disasters inside/outside their living camps can provide a sense of normalcy and support their well-being. Although caregivers and community members have the necessary function of promoting the well-being of children and recovery by promoting the use of these environments and providing emotional support during difficult times, through

increased research and understanding of the effectiveness of playful learning environments, we can ultimately improve care and support for children during challenging experiences (Stein et al., 2012). Additionally, research indicates that when various learning landscape areas are provided with safe and available outdoor spaces, children are capable of developing their skills in these areas (Kernan, 2010). This highlights the significance of finding and offering secure outdoor areas after a disaster to protect children's well-being and safety (Marsh, 2017). These areas not only support physical well-being but also enhance mental health and help with emotional healing. Furthermore, establishing educational settings can greatly assist young children in exploring and studying fields like science, technology, engineering, and mathematics (STEM) (Gok, 2021).

Regarding these, the research domain in this study emerges from the intersection of learning landscapes, playful learning, and post-disaster areas in general.

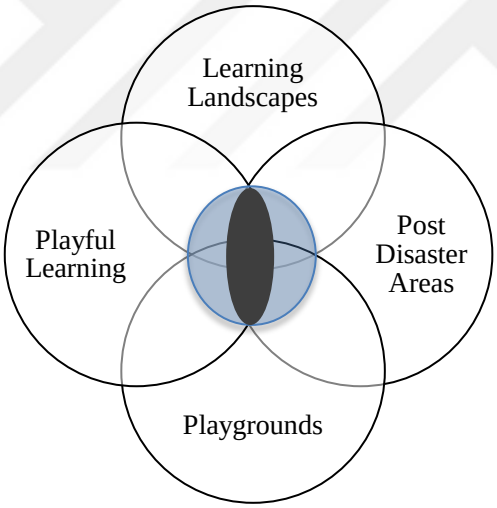


Figure 1.1 : Research Domain of the Study.

1.1 Problem Context

Studying how social and environmental variables impact children's physical and mental development is essential (Farokhi & Hashemi, 2011). The most vulnerable age groups are children between 3 and 18 who are experiencing post-disaster trauma, which needs special help and support from the government and caregivers. On the other hand, the earliest requirement for help from the government and other private aid

groups is to provide first aid like food and places to stay, like Post-disaster temporary shelter camps, and this means that some of the children's rights could be neglected during first aid or slip in the second place (Seballos et al., 2011). The essential support of children should be covered by researchers and various studies by space and environmental specialists after a disaster like an earthquake (Capozzoli, 2002). This means architects and landscape designers could have an effective contribution to children's well-being post-disaster. One of the approaches to support children in post-disaster areas is to provide opportunities for recovery by playing and learning in a safe and supportive space (Kahn Jr & Kellert, 2002).

Children need to sense normalcy and have coping skills to express their feelings and show their emotions through recovery after trauma, which is possible by creating a suitable environment like learning landscape playgrounds (Shackell et al., 2008). Moreover, by promoting caregiver-child interaction in these spaces, playful learning landscapes can facilitate the development of strong bonds within families and communities, which is key to building resilience. Playful learning landscapes can be a key tool for boosting the well-being and resilience of children post-disaster(Shackell et al., 2008). While learning landscapes help children deal with their trauma after an earthquake, they also support children to connect with new situations and communities (Cilliers & Cornelius, 2019). After experiencing an earthquake, children can be impacted both physically and mentally, highlighting the importance of offering them the necessary support for a speedy recovery. Utilizing play as a means of learning becomes invaluable in aiding children, as it provides a secure environment for them to engage in activities and gain knowledge (Van Vliet & Karsten, 2015). Moreover, the learning landscape environment promotes social interaction among children, fostering connections and diminishing feelings of isolation (Jansson et al., 2022). Through play and games, children can express themselves, boost their confidence, and develop problem-solving abilities (Kovacs, 2015). It's essential to feel confident in supplying these spaces for children's play with accessibility in the aftermath of the healing and recovery process.

While some studies have produced encouraging outcomes, there is still an absence of studies evaluating the efficiency of these environments in fostering resilience and well-being, despite the significant advantages of playful learning landscapes for children

following disasters. Furthermore, it is important to examine the participation of key individuals, such as caregivers and community members, in promoting the utilization of these spaces and aiding in the well-being and recovery of children. Understanding how caregivers and other community members can encourage the utilization of these environments and support the well-being and recovery of children is also vital. Children's comfort in these environments can be greatly helped by caregivers by providing emotional support and promoting participation in activities (Simmons, 1994). Understanding the effectiveness of playful learning environments will ultimately lead to better care and support for children during challenging experiences. It's thought that giving children the right play environments encourages them to spend more time outside (Kos & Jerman, 2013). According to research, children can develop critical skills and abilities like creativity, problem-solving, and social interaction by playing in outdoor environments such as alleyways or around their living areas (Wilson, 2018). This aligns with the idea that children can learn from and through their environment, including the outside of their living areas (Ennew & Swart-Kruger, 2003). The discussion of creating playful learning landscapes for young individuals in the post-disasters is highly relevant to this idea of learning through play and the environment. Children can learn crucial skills and coping mechanisms while gaining a sense of normalcy in the wake of traumatic events by being given safe and encouraging outdoor spaces for play and learning (Leventhal & Brooks-Gunn, 2000).

1.2 Aim of the study

This study's primary aim is to look at the playful learning landscape’s potential in post-disaster areas to support children's well-being. Playful learning landscape elements and principles are elaborated to understand how these landscapes support children after facing traumatic events such as earthquakes. Accordingly, accessible and safe outdoor games that help children develop coping skills and build resilience are investigated. As underlined in the related literature, the identification and evaluation of games and activities used in post-disaster settings are crucial to both safely and practically fostering kid's growth and well-being. Regarding this, the study tries to classify the games by studying their learning goals. The study categorizes the playgroups and evaluates their impact on children's development in public places that have the ability to foster playful learning. Each group with its various types teaches some essential

skills to children, and children gain these skills while playing with each type of group. Most games' goals are to support them during their recovery aftermath and help them develop mentally and physically. Regarding these, the below research questions are used during the examination.

1. What are the common characteristics and variations in play groups observed in public places that can be transformed into playful learning environments?

2. How do different play group categories impact the cognitive, physical, and socio-emotional development of children in public spaces?

3. What factors influence the effectiveness of specific play group categorizations in enhancing children's learning and development in diverse public settings?

4. How do playful learning landscapes contribute to the overall well-being of children living in post-disaster areas, particularly in terms of supporting their emotional recovery and resilience-building?

5. What are the key elements and principles of playful learning landscapes that effectively support children's well-being and coping mechanisms in post-disaster settings, specifically in the context of earthquakes?

6. How can games and activities used in post-disaster settings be classified based on their learning goals, and what impact do these classifications have on children's development and recovery processes?

7. What essential skills do children gain through different types of playgroups in public places that are transformed into playful learning environments, and how do these skills contribute to their mental and physical development during the recovery period after a disaster?

1.3 Significance of the Study

This study's significance lies in its ability to advance our knowledge of how the learning landscape fosters children's resilience (Ginsburg et al., 2011), coping skills, and opportunities for playful learning in challenging life events, particularly those affected by disasters or post-disaster recovery efforts (Masten & Obradovic, 2008). This study provides a classification of outdoor and indoor activities to support children during recovery from disasters in safe and secure areas in/near the post-disaster areas.

This classification can be used as a guide while planning and designing learning landscapes for post-disaster areas. Another significant point of this study is the children's ages. The study focuses on 3–12-year-old children, who most of the time cannot defend themselves and are the most vulnerable part of society in this disaster (Norris et al., 2002). Moreover, this study identifies children's need to develop mentally and emotionally during their recovery process(Peek, 2008). Children experience a massive post-disaster event that needs expert help to overcome the difficulties of trauma and gain normalcy. Post-disaster effects of this kind of harsh event last in the long term, and the most vulnerable parts are children between 3 and 12 years old. Children form a major part of society's future, which means that their well-being and healthy development are required for Turkey's future society. All these efforts and work to establish secure and encouraging surroundings for children after disaster for their well-being, physical development, and mental development, which includes mental, emotional, and physical health (May et al., 2021). The learning landscape and playful learning goal here are to promote learning activities based on play to ensure the well-being of kids and give them chances to develop resilience and cope with challenges in different harsh events (Hirsh-Pasek, 2009). These opportunities guide children to achieve important skills such as problem-solving, critical thinking, communication, and collaboration (Tang et al., 2020). These skills are essential for their future success and can help assist with reducing the effect over time of disasters on their growth. This emphasizes the significance of including external resilience elements like access to nature and green spaces (Braubach et al., 2017). Nature has been associated has numerous health advantages, including lowering tension, anxiety, and depression (Barthel et al., 2015). Thus, incorporating outdoor spaces into playful learning settings can enhance children's mental well-being (Jachyra & Fusco, 2016) and promote their overall health during the phase following a disaster. Victims of earthquake disasters faced many difficulties, such as losing family members and homes and maybe moving to an unfamiliar environment after the disaster, but among all victims, children were disrupted by their simple rights to education and social growth due to school closure and community displacement (Rogers & Sawyers, 1988). This disruption impacts their mental and physical health. They could have faced various feelings such as anger, fear, stress, and being unconfident, especially in the case of losing their parents or loved ones. In summary, this study aims to increase comprehension of how the learning Landscape fosters

resilience, coping skills, and STEM learning opportunities for children affected by disasters. The findings hold significant implications for policymakers involved in disaster relief efforts, emphasizing the importance of establishing secure and supportive environments that prioritize the well-being and development of children. The results show us the location has a high risk of natural disasters, and lots of people, especially kids, are involved in this problem. 21% of the population are children between 0 and 18 (Sarı et al., 2023), which makes disaster areas suitable for studying children's problems to bring partly helpful solutions for children's well-being. The impact of a disaster will show in the future, which is why research tries to be helpful during children's development after the earthquake by using playful learning and learning landscape spaces (Nobutoshi Nawa1, 2020). Most of the public areas in an earthquake location were not suitable or safe for children's activities, which meant researchers needed innovative solutions, such as mobile playgrounds or games that could be played everywhere near their camps with limited requirements. The findings from this study provide essential information for policies and playground programs that focus on children's specific play requirements, especially those affected by disasters. Ultimately, this research has the potential to improve outcomes for countless children impacted by disasters.

1.4 Methodology

In this thesis, qualitative methods are used to understand how learning landscapes and playful learning can impact child development in post-disaster areas. Due to the aftermath of the earthquake, the affected area is currently inaccessible, making it impossible to find public areas that are both secure and suitable for kid's playgrounds. Regarding this problem, this study gathers significant information to utilize all available materials in the area, along with external resources, to gather the necessary data for developing playgrounds, and using learning landscapes in public spaces for the renewal of urban areas. After the literature review case study method is used to reveal the potential of the learning landscapes. The objective is to enlighten the content of learning landscapes in relation to children's resilience to support the establishment of child-friendly playgrounds that promote playful learning in post-disaster areas. disaster. Playful learning environments can help child development by promoting resilience, coping strategies, and STEM learning opportunities. The research aims to

highlight the value of secure outdoor settings for kids' cognitive, emotional, and physical growth after disasters and also provides various game types for learning in indoor and outdoor playgrounds.

The first section of the thesis is assigned to the problem context, aims and goals, research questions, and methodology. In this section, the topics of study are allocated to better understand the way of research and which topics are expected in the following sections.

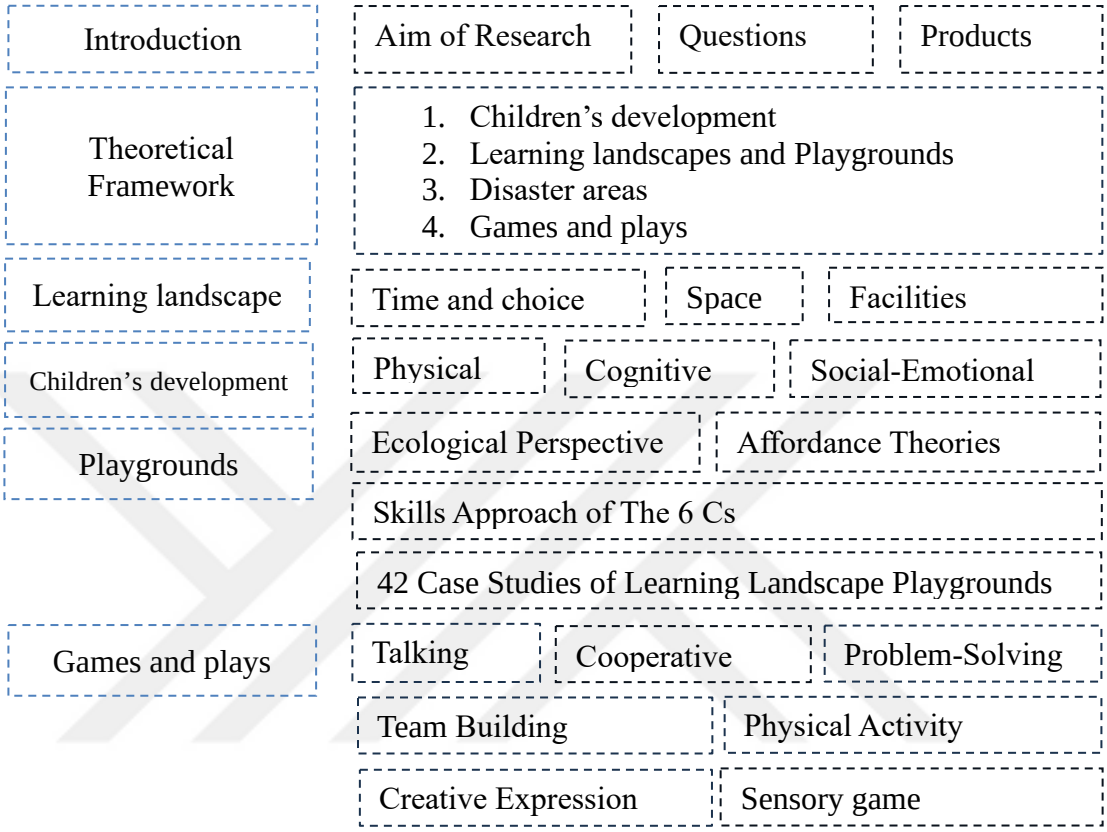
The second section is about the background and framework of the study. This section refers to the learning landscape and everything related to play and playful learning. Additionally, the section continues with important examples of learning landscape projects, and this part focuses on children's learning skills, the 6Cs skills. This section continues with studies focusing on children's physical, mental, and socio-emotional development. Overall, this section has been completed with child development stages and theories.

The third section focuses on game typologies and studies, refers to Herrington et al. ‘s Seven Cs and playgrounds, and continues with the study of the education system in Turkey and world expenditure on education. Further, it continues with different types of playgrounds from several design aspects and environments.

The fourth section studies different types of games for building resilience after a disaster. All games are related to child development and building resilience. Also, all of them are playable everywhere with the least material in the area possible for children after a disaster or wherever children are present with their friends and parents. These games are gathered from different studies into seven categories. The last section is the conclusions of the research and continues with case studies of worldwide playgrounds

related to the learning landscape and section finishes with all references mentioned in the thesis.

Table 1.1 : Diagram of the methodology research process.



2. THEORETICAL FRAMEWORK

2.1 Learning Landscapes Types and Elements

Learning landscapes is definable from different perspectives. one of the aspects is the concept of situated learning, which emphasizes that knowledge is not independent but developed through activity, context, and culture which obtained (Brown et al., 1989). Based on the principle of appropriate peripheral participation, situated learning, suggests that learning occurs through engagement in valid activities (Lave & Wenger, 1994). This approach places a strong emphasis on the necessity of social connection and involvement in every day playing for successful learning (Chunxian, 2020). Another aspect of learning landscape is the idea of landscapes of practice, which describes how different communities of practice interact and belong to broader landscapes, rather than relying just on their local practices (Pyrko et al., 2019). The interconnection of multiple groups and the impact of a larger context on education and knowledge development are recognized by landscapes of practice (Pyrko et al., 2019). Learning landscapes are created in the educational sector to help children's cognitive development and self-regulation (Lave & Wenger, 1991). These learning environments give students the chance to participate in trustworthy activities and advance their comprehension in a welcoming and culturally diverse setting (Bjerstedt, 2016). Learning landscapes can also be explored in this situation of specific disciplines. For instance, in architectural education, expansive learning processes can be used to sensitize students to the natural and cultural values of landscapes (Kurjenoja et al., 2021).

In this project, the focus will be on exploring a specific aspect of the educational learning landscape. Learning landscapes encompass a diverse array of elements and factors that influence the educational experience. The term "learning landscape" refers to the environment or the environment in which learning occurs. It encompasses various factors, physical, social, and cultural elements that can influence how well

people learn (Hassinger-Das et al., 2018). Understanding the learning landscape, which refers to the various factors that can affect learning outcomes, is crucial for researchers. Salih et al. (2022) found that in adjacent pocket parks on college grounds, a variety of landscape features, environmental conditions, and access have a substantial impact on the social learning experience (Salih et al., 2022). Similarly, Torres et al. (2017) emphasized how geospatial technology might improve students' comprehension of the diversity of landscapes and the intricate interactions between physical and human elements (de Lázaro Torres et al., 2017). Derex et al. (2012) examined how the landscape influences social learning, highlighting the importance of processing information for social learners (Derex et al., 2013). Additionally, Salih et al. (2022) highlighted the impact of university campus landscapes on students' emotions and learning experiences, emphasizing the role of landscape elements in fostering positive emotional experiences and academic achievement (Salih et al., 2022). For instance, a student's motivation and engagement may be impacted by physical surrenderings, like the furniture and design of the classroom or the accessibility of learning resources (Hill & Epps, 2010). Similar to this, social interaction and opportunities for collaborative learning can increase knowledge and foster critical thinking abilities about social issues. Additionally, children's beliefs, values, and behaviors in the context of learning are greatly influenced by cultural circumstances (Banks, 2015).

Research and academic works typically focus on societal and socioeconomic factors and the financial situation within a child's family when examining learning circumstances. One effective way to reduce the gap between children from different financial backgrounds is for the government to invest in public schools and primary education for kids. However, government investment spending on public schools is not enough to close the gap completely. According to Plass the connection between socioeconomic status (SES) and educational success is nearly strong which makes academic success influenced by SES variables. These factors are further intercrossed with the educational level, ethnic demographics, and geographical location of the school. McLoyd (1998) further emphasized that long exposure to poverty caused more disadvantaged IQ, academic attainment, and socio-emotional well-being more severely than temporary financial hardships. Furthermore, children with low-income backgrounds are struggling with limited learning resources, and health challenges, and

mostly experience cognitive stimulation in their living environments. These mentioned factors lead children to lower cognitive abilities and lower school performance (McLoyd, 1998). In addition, Ramburuth & Härtel (2010) highlight the significance of recognizing and effectively addressing the diverse learning and transitional needs of students who come from lower socioeconomic backgrounds. They also mentioned that children with low-income backgrounds deal with issues that children with high-income backgrounds are not going to face, especially at higher educational levels. These issues can be mentioned as economic opportunities, academic performance, and fairness in society, which provide an inequity context in the future. It is crucial to consider this and examine the various aspects of socioeconomic status when studying the educational outcomes of students who come from low socioeconomic backgrounds (Ramburuth & Härtel, 2010). Reardon and Portilla studied children from kindergarten through grade 12 to understand their performance in math and reading, and results showed children with different situations, such as a low-income background, and different racial and ethnic groups, have difficulties managing school and learning. These results highlight the requirement to address income disparities as equally important as racial and ethnic disparities in educational outcomes (Reardon & Portilla, 2016). It should be considered to narrow the gap between children with different financial resources; educational funding is not enough. A society with high mobility rates and chances for higher-level education had better schools, less financial inequity, fewer life-standard differences, more social funds, and more stable families (Chetty et al., 2014). All the factors mentioned, side by side, create an environment to support educational success for all children. Because learning opportunities and various educational accessibilities are not equally divided within society, governments spend massive amounts of money on their educational systems, like public schools, to try to reduce the gap between them. The dedicated budget of the educational system for each government is different. However, by studying the annual GDP of education, as governments become more advanced, they typically allocate a higher budget for education. Several studies showed that developed countries mostly have higher investment rates in education than other countries. Hanushek and Woessmann (2012) analyzed 165 countries to study the connection between each nation's GDP and its educational achievements. They found that higher levels of economics bring better education outcomes and educational achievements (Hanushek & Woessmann, 2012). In addition, Barro and Lee (2013) examined the link between economic growth and

education in 146 countries from 1950 to 2010. Also, they discovered a favorable effect of economic growth on educational achievement (Barro & Lee, 2013). Recent studies of 139 countries' statistics and analyzed data by Psacharopoulos and Patrinos (2018) have shown the same result and highlighted the importance of government investment in education as a key driver of economic development. This is because they recognize the importance of education in promoting economic growth, reducing poverty, and improving overall societal well-being (Psacharopoulos & Patrinos, 2018).

However, by confirming the fact that investment in education shows a positive correlation with government development (Rivkin et al., 2005). However, in terms of children's access to education, it's critical to concentrate on the disparity between low- and high-income children. Children only attend public school for 20% of their awake time; the remaining time is left without learning opportunities and formal education (Alliance, 2014). Children from high and low-income families have been provided with different contexts for after-school activities; for example, high-income families have access to better after-school activities, extra classes, and learning resources, which is a step forward for children. However, children with poor backgrounds do not have these opportunities and may face difficulties in accessing after-school activities (Plass & Jones, 2005). The limitations of parents' finances and their life expenses can impact their access to learning opportunities and after-school academic pursuits. This disparity in access to educational resources after school or even inside the school influences the achievement of high- and low-income children. Children spend their after-school hours in public areas like supermarkets, bus stops, or where the parents are occupied by their daily lives. This raises the question of how we can utilize after-school time and how children can learn outside of school in public spaces. Is it feasible to transform public spaces to provide learning opportunities for children?

This research toward transforming everyday public spaces into learning opportunities by learning landscape. Several research studies have shown the positive impact of green school grounds in creating opportunities for children and various play chances to engage in physical activity and improve different sides of their health and

development (Dyment & Bell, 2008) likewise, the number of accessible parks and For the sake of fostering children's physical development, open areas are necessary. (Dyment & Bell, 2008). Providing play elements and learning chances in public spaces such as a supermarket, increasing the interaction between caregiver and child, or creating life-size human board games in daily public places like near the bus stop, transforms public places into the center of playful learning (Hassinger-Das et al., 2018). On top of that, the concept of a critical pedagogy of place stands behind the idea of using public places for learning. Gruenewald, emphasizes different aspects of space, to show the impact of social experience, place-based education, and critical pedagogy. It encourages researchers and designers to dig more about the type of place for different educational purposes and consider what will be left for future generations (Gruenewald, 2003). By using public spaces for educational matters, it is possible to create an approach to learning equity. Furthermore, Alderton et al. noted that having neighborhood open spaces for everyone that are easily accessible and of high quality has a good impact on kids' mental health outcomes. Interesting public areas for kids with a minimum distance from the child's home provide a higher chance of representing the capability and skills of the child. In this condition, children are not faced with difficulties in development or at least have a low chance of showing such a performance (Alderton et al., 2022). This also shows that providing better access to public open spaces in a neighborhood can improve the children's well-being and development. To effectively use public places for learning, The needs of children must be considered during the planning and design phases. The child-friendly concept in collaborative social planning models has been shown a positive impact on the renewal of public spaces and their popularity in society (Dai & Li, 2022). Additionally, to create a space that is conducive to learning and play, it is crucial to consider children's needs and preferences while constructing public spaces. This benefits not just the growth of children but also the neighborhood's social benefits. (Andal, 2022) ("Research on Child-Friendly Public Space Based on Embodied Cognitive Science", 2022).

2.2 Learning Landscapes in Relation to Playful Learning

Learning landscapes are critical to creating playful learning environments to increase student happiness and engagement (Kangas et al., 2017). By providing students with

the ability to navigate dynamic spaces, detect various features, and negotiate interactions, these environments enhance their educational experiences (Woods et al., 2020). Playful learning emphasizes the complexity of the learning landscape by embracing social networks, resources, and nonhuman actors in addition to physical spaces (Cox et al., 2022). Additionally, playful learning environments allow students to make mistakes and create an environment without worrying about the consequences, contributing to a pleasant learning experience (Manzano-León et al., 2021). Playful learning in higher education refers to a broad range of instructional strategies, pedagogical tools, and tactics, including role-playing, games, and storytelling, which create a dynamic and productive learning environment (Caspar et al., 2021). Furthermore, playful learning emphasizes the possibility of joyful and original knowledge co-creation within higher education, challenging the conventional performativity-based learning model (Koeners & Francis, 2020). It also uniquely humanizes educational methods and structures, supporting efforts toward sustainable education (Jensen et al., 2022). Playful learning goes beyond conventional classrooms and plays an important role in various forms of learning, including self-directed learning, accidental learning, and the spread of social norms (Shelley et al., 2019). Playful learning has been found to have diverse functions in different contexts, such as language learning, highlighting its versatility and impact across various areas of life (Barabadi et al., 2022). The concept of learning landscapes about playful learning encompasses a broad spectrum of elements, including physical and social aspects, teaching techniques, and the promotion of positive and engaging learning.

2.3 Playful Learning Landscapes and Child Development

Playful learning landscapes have gained attention due to their advantages for children's growth. According to Kangas et al. (2020), playful learning is a very effective technique that supports the development of young children through child-driven educational methods (Kangas et al., 2022). Although the effect of children's playfulness on development earns attention, the effect of parental playfulness on child development is still largely unstudied (Roy & Kumar, 2022). Playful learning experiences are child-centered and support the development of children's knowledge, skills, and interests (Guarrella et al., 2023). Learning Landscapes aims to improve children's learning experiences by introducing chances for active learning and parent-

child interactions in public spaces (Bustamante et al., 2019). Playful learning uses play in early childhood education to promote young children's learning (Kangas et al., 2022). The playful environment promotes more interaction in children's play and improves learning and development (Pinchover, 2017). In addition, a focus on child-centered and playful learning is suggested to support the inclusion of continuous learning and development in educational frameworks (Cohrssen, 2021). It has been shown that parents view structured activities as inherently playful and effective learning tools, underscoring the need for a more thorough comprehension of parental playfulness and how it affects child development (Grob et al., 2017). By highlighting the value of play in education, the playful learning landscape and associated technology seek to expand students' understanding of learning environments and activities within the school context (Hyvönen, 2011). Research has demonstrated that parental playfulness moderates parent-child connections and competence, emphasizing the importance of playfulness in parenting for child development (Roy & Kumar, 2022). Research has shown that incorporating play into the learning process enhances its delivery and improves students' classroom experiences (Buldu, 2022). According to Hart and Nagel (2017), playful behaviors are essential for early childhood education since they quickly integrate into curricula and offer a variety of developmental advantages for young children (Hart & Nagel, 2017). Creating educational environments and implementing innovative play-based pedagogies are two ways to support young children's learning while promoting playful exploration (Yelland & Gilbert, 2018). Playful learning has been investigated as a signature pedagogy in higher education, providing opportunities for a more playful approach to teaching and learning (Nørgård et al., 2017). Educators must be aware of the potential of play and playfulness in teaching and learning to design meaningful and motivational playful activities and learning environments for learners (Siklander et al., 2022). Furthermore, playful experiences have been identified as essential features in parental narratives, enhancing the role of play and playfulness in the experiences of children on the autism spectrum (Román-Oyola et al., 2018). Developing instructive teaching guides for clinicians working with children, including those with autism, can be enhanced by understanding the impact of playfulness as an intervention strategy and its varied use for different child presentations (Maye et al., 2020).

2.3.1 Theories about children development

Theories of child development offer valuable insights into the understanding of this complex process. The chapter provides an overview of several theories, including psychoanalytic, behaviorism, cognitive-developmental, and ecological perspectives are explored, each offering unique perspectives (Marcia, 2002). In particular, the chapter delves into how these theories can be applied to support the recovery of children after experiencing trauma. While each theory presents unique viewpoints, they complement one another in comprehending child development. Constructivist Self-Development is the theory concept that has become popular in recent years (Baltes et al., 2006). This framework provides a comprehensive understanding of how trauma can affect an individual's psychological development and adjustment.

The quality of early relationships at home influences later relationships with peers, friends, and partners (Mandich et al., 2003). Child development involves a continuous interaction between biology and the environment, progressing throughout life. For children who have been exposed to trauma, the learning landscape plays a significant role in their recovery. Also, Psychoanalytic theories emphasize the deep internal functioning of the mind and the symbolic meanings of behavior. Learning theories highlight the role of external influences and the immediate environment on behavior. Both perspectives contribute to our understanding of development, focusing on different aspects. These ideas can be included in trauma treatment to enable a more comprehensive strategy for meeting the needs of impacted children.

Social learning theories, based on the groundbreaking research of Bandura and Walters, aim to reveal how children learn from their environment and act through their learning from their natural environment. At first, theories are based on common behaviors like anxiety and anger. However, after a while, they started to study more complicated aspects of this viewpoint, like how humans learn from society and the environment around them. This is an understanding of how the development of emotions works and what the rules are for mainly thinking and talking, controlling behavior, expressing feelings, and judging their abilities (Bandura & Walters, 1977). The method known as social interactions discovered an essential perspective of children's understanding which is the strong connection between their social and environmental situations. As other researchers delved into the study of cognitive functioning in naturalistic settings, they too recognized this contextual nature of

thought. These insights led to discussions of contextualism, a general epistemology, and its implications for understanding cognitive development. When the context shifts dramatically, such as in a post-disaster environment, children's social learning experiences can be severely disrupted. Traumatic events can cause lasting disruptions to cognitive processes and emotional regulation. It is important to utilize social learning strategies carefully designed for affected children. Using learning landscapes and playful learning approaches may help mitigate post-disaster trauma in children by providing them with opportunities to engage with their environment and connect socially with others while also developing coping skills and self-regulation techniques. Learning landscapes provide an immersive experience where children can learn through exploration, discovery, experimentation, and creativity within a safe space under adult supervision. Playful learning is characterized by a combination of play and learning, where children can learn through enjoyable and engaging activities. Both approaches aim to present a positive and supportive space for kids to develop resilience and strengthen their psychological well-being.

The following are the four levels of Piaget's theory;

From infancy till age two, the early stage of cognitive development begins and is called sensorimotor, which means having both sensory and physical activities. Babies learn through their eyes and ears, which makes the baby connect the physical and her or his senses to achieve experience (Piaget, 1970).

The preoperational level the second stage in Piaget's hypothesis is the period between the ages of 2 and 7 (Piaget & Inhelder, 1956). During this stage, children are capable of more complex mental activities beyond simply associating sensory experiences with motor actions. They can also use language, symbols, and drawings to represent and reflect upon the world around them (Yussen & Santrock, 1982). During this stage, kids are usually between 2 and 7 years old. They memorize the symbols, pictures, and words. Also, they can decide what is right or what is wrong with normal things in front of them. But they can struggle with some ways of solving problems. During this stage, children develop a more logical and systematic way of thinking. They can engage in logical reasoning but are only able to do so with specific examples or objects. For instance, children at this stage are not able to grasp abstract concepts required for subjects like algebra and math (Steinberg et al., 2010).

The official operational level, which lasts from the age of 11 to 15 till maturity, is the final level. In this phase, people develop the ability to think abstractly and logically, allowing them to think abstractly and transcend the confines of time and space by using hypothetical, symbolic, and representative ideas.

The **ecological** perspective offers a comprehensive framework for understanding human development by integrating Darwinist theory (Rogers, 1972) and Gestalt principles (Hochberg, 1957) to elucidate perceptual processes. This viewpoint puts stress on that we can't fully understand how people develop in different situations and conditions and they are not the same. The perspective is focused on the significance of children's environments like home, and school and also how their relationships are changing their experiences as they grow up. Moreover, incorporating nature-based activities and playful learning into post-disaster recovery programs can help support children's healing processes. Resilience theory, which is related to the ecological perspective, emphasizes the importance of identifying risk and protective factors at every level of ecological systems, including schools, families, and communities, to promote positive mental health outcomes for children (Bronfenbrenner, 1979). Incorporating ecological and resilience theories into post-disaster recovery programs can help promote the adaptive and transformative capacities of societies in coping with disasters. Furthermore, applying lenses of social-ecological systems to disaster studies acknowledges the complex interdependence between humans and their environments in both pre- and post-disaster contexts (Reisberg et al., 2020). Physical activity programs are effective in promoting emotional recovery among children exposed to natural disasters. Social resources such as community support systems and social networks have also been proposed as mechanisms for increasing resilience and promoting positive mental health following a disaster. The incorporation of affordance theories, ecological perspectives, and resilience theories into post-disaster recovery program design can provide a more holistic approach to supporting children's healing process by considering their immediate environment, relationships, perceived opportunities, intentions, and interactions with their surroundings.

The concept of **affordance theories** holds significant implications for psychology and environmental design, shedding light on how individuals perceive and interpret their surroundings based on the potential actions they afford. Unlike viewing the

environment as static objects, affordance theories emphasize the functional and action-oriented aspects of perception. They assert that affordances are not predetermined but rather dependent on an individual's goals and capabilities. By adopting an affordance perspective, researchers and designers gain a nuanced understanding of individuals' interactions with their environment, enabling the creation of environments that facilitate desired actions and behaviors. This perspective also recognizes the dynamic and reciprocal relationship between individuals and their surroundings (Gibson & Rader, 1979).

With an emphasis on how perception actively influences behavior, affordance theories provide a language to describe how people and their environment interact. (Heft, 1988). According to these theories, the environment presents individuals with opportunities for action based on their perceptual abilities and the properties of the environment(Miller & Halpern, 2014). Affordances are not inherent properties of objects but rather perceived and interpreted by individuals based on their intentions, goals, and skills. By considering affordances, researchers bridge the gap between perception and action, acquiring an understanding of how people perceive and engage with their environment (Reisberg et al., 2020). Affordance theories offer important insights into how play and playful learning might aid children in their recovery in the setting of post-disaster rehabilitation. Research suggests that exposure to natural settings and engaging in playful activities positively impact children's psychological well-being following disasters(Taylor et al., 2001).

Understanding affordance theories is essential for understanding how the environment influences how people behave, especially in post-disaster situations. These theories offer a structure for studying how individuals navigate and utilize their surroundings, emphasizing the functional significance of environmental features and their influence on behavior (Wells & Evans, 2003). Affordances are context-dependent, varying based on individual characteristics and goals, highlighting the dynamic interplay between individuals and their environments. Incorporating affordance theories into research and practical applications yields deeper insights into human behavior, enabling the design of environments that support desired actions and promoting optimal interactions between individuals and their surroundings (Sheridan et al., 2014). In the aftermath of disaster recovery, affordance theories guide the utilization of natural landscapes and playful learning to facilitate children's healing. The environment is an essential part of promoting kids’ recovery, as exposure to nature and purpose-designed

settings such as therapeutic parks or gardens provide visual cues and sensory experiences that aid in their emotional and psychological recovery.

In essence, affordance theories provide a thorough view of how people interact with their environments by emphasizing how perception is active and dependent on a person's intentions and goals as well as the functional characteristics of the environment (Hartig et al., 1991). By considering affordance theories in research and practical applications, a deeper understanding of human behavior can be achieved, facilitating the design of environments that support desired actions and promoting optimal interactions between individuals and their surroundings. Furthermore, incorporating nature-based activities and playful learning into post-disaster recovery programs plays a crucial part in assisting children's healing, harnessing the potential of the environment to foster their well-being and recovery(Barker & Wright, 1954)

2.3.2 Children's developmental stages

The requirements of development of children vary depending on their specific stage of development during childhood. Some states may see faster cognitive development, while others may involve more rapid physical or social growth. As children progress through each stage, their interests, attention, and motivation to learn will shift accordingly. Consequently, the relationship between learning and physical space will differ in each developmental stage of childhood (Santos et al., 2014). A comprehensive understanding of this interaction requires a detailed examination of the various developmental periods of childhood and their associated components. The growth of a child is usually identified by age groups, and the most commonly used grouping categorizes childhood development into the following stages: prenatal, newborn, toddler, middle childhood, and adolescent. The stage before birth spans from birth to around nine months, during which a single cell undergoes various transformations and forms a living organism with cognitive and behavioral abilities (Yussen & Santrock, 1982).

The **Early Childhood** stage begins at the final stage of infancy and lasts until the child is approximately five to six years old, during which children strive to become more

independent and enhance their learning abilities such as recognizing letters and following instructions. This stage typically ends with the completion of the first grade (Maureen et al., 2020). The stage of development known as middle childhood is from 6 to 11 years old. During the development, children focus on developing essential skills like reading, writing, and math. Children in this period are more motivated for different achievements and they are ready to expand their knowledge. Additionally, their ability to control their actions and emotions improves (Eccles, 1999).

Adolescence is a developmental stage that starts around 12 years old and ends around 18-19 years old. Physical changes such as height, weight, and sexual characteristics take place in this period. The search for independence and identity formation are the major features of this growth time. During this time, adolescents frequently invest more time away from their parents. In terms of cognitive development, thinking becomes more abstract, logical, and idealistic (Kroger, 2005). Moreover, scholars have claimed that the developmental process of children is not concluded by the adolescent phase (Jeste et al., 2010). Learning is a continuous process that persists throughout the lifespan. Each developmental period encompasses the integration of biological, cognitive, and socioemotional aspects of growth (Depp et al., 2010).

2.3.3 Physical, cognitive, and socio-emotional development of children

Children's growth and development are significantly impacted by early childhood education (Currie, 2009). This includes the growth of all motor abilities, like running and jumping or finger counting (Gonzalez et al., 2019). This development is defined by hormonal, physical, and social growth, critical thinking, and behavioral changes which include before birth until teenage years (Romano et al., 2014). Research has shown various factors impact children's success in school, such as academic achievement, and thinking skills (Ashdown & Bernard, 2012). External problems pursue children's aggression and other behavioral issues, and this directly relates to academic disappointment. Furthermore, these issues play a strong role in adolescent misconduct and in-school failure (Romano et al., 2015). It's crucial to address these external problems, during early childhood education to enhance academic success. Children's physical abilities, like big and small movements, are important for how they learn to talk. Research from Gonzalez and their team in 2019 found that how well children move around is connected to how well they speak, starting from when they're

babies until they're little kids. During this phase of a child's life, their motor skills and language abilities go through quite a journey. Digging into how these two things connect, reveals a lot about children's growth (Gonzalez et al., 2019). As Ashdown and Bernard found back in 2012, showing children how to manage their emotions and cope with others improves their emotional development, well-being, and school performance. Including lessons about these skills during early education programs, can create a positive difference in outcomes (Onchwari & Keengwe, 2011). Education for kids of any age is essential for their well-being as they grow older. It helps them with school success, moving their bodies, coping with others, and handling their feelings. All of this sets them up for a successful future.

Children's development is a multiple process that includes several areas of growth at the same time such as physical, cognitive, and socio-emotional areas (McDevitt et al., 2012). It's essential to understand how each section impacts the learning process, to be able to create suitable space for children and support them. Physical development includes physical changes in children's bodies. It encompasses both fine motor skills like handwriting and gross motor abilities like running and jumping. (Papalia et al., 2007). For instance, if a student has difficulties with gross motor skills or has an issue with their vision that goes undetected, then these challenges may affect their ability to participate in physical activities, interact with classmates during recess, or even sit still during class. Ultimately, understanding the importance of early childhood experiences can help parents and caregivers provide children with the best possible start in life (Elango et al., 2015).

Physical development: Physical development plays a critical impact on how well children learn. To comprehend physical development, it's important to study the process from a different viewpoint and look closer (Abed & Shackelford, 2022). An essential component of physical development through adolescence is brain growth, as the brain tolerates these changes to shape the cognitive and emotional processes in a child's life. These developmental changes help adolescents gain more control over their emotions and behavior (Yussen & Santrock, 1982). Moreover, height and weight are other key components of physical development during adolescence. Rapid increases in both height and weight serve as indicators for proper nutrition intake, ensuring healthy body function within growing children. It's also noteworthy that

motor skills improvement significantly influences learning capacity among children (Kail & Ferrer, 2007). The capacity for motor skills like small and big movements helps children to do physical activities like exercise or outdoor play. Physical development is essential for children's growth, That's why is important to focus on archives in their full potential (Read, 2019).

Cognitive development: Piaget's cognitive-developmental Stage theory describes a process of intellectual development, making it one of the most prominent and prevalent views in the field today (Piaget, 1956). This theory can be beneficial for gifted education as it provides insights into how children develop intellectually, which can inform curriculum design and teaching strategies. Another family of cognitive theories that relate to cognitive development is sociocultural theories associated with Vygotsky's work. These theories represent an approach to understanding learning that emphasizes social interaction and cultural context (Grove, 2000). The core premise is that social interactions shape thinking processes by enabling learners to learn from others' experiences through collaboration, mediation, and guidance.

Socio-Emotional development: According to studies, a child's relationship with the school and long-term school adjustment is negatively impacted by delays in early childhood social-emotional development (McCabe & Altamura, 2011). Therefore, the early childhood curriculum should include aspects of acquiring social and emotional skills to promote positive attitudes and educational performance in kids. Effective classroom environments should aim to promote both academic and socioemotional development by producing rigorous academic experiences whilst offering socially supportive learning spaces (Papalia et al., 2000). Early childhood education is one way to facilitate growth in physical coordination, cognitive abilities, language development, and social-emotional skills, among other developmental facets. The intense growth period during this time means that children's socio-emotional development should be supported and encouraged through interactions with educators, parents, and peers (Kail, 2007).

2.4 How Children Learn: Skills Approach of the 6 Cs

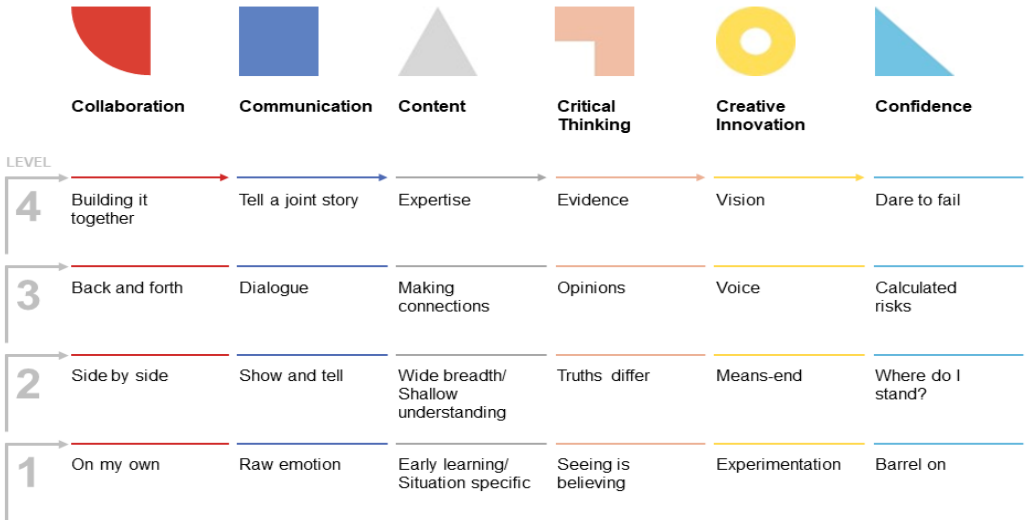
Roberta Michnik Golinkoff and Kathy Hirsch-Pasek,(Hirsh-Pasek et al., 2015) learning scientists, have curated the 6 Cs list as a way of helping children acquire valuable skills that will make them successful. The relationship and harmony between

teamwork, communication, subject understanding, critical thinking, creative invention, and confidence is one of their most significant insights. Golinkoff and Hirsch-Pasek's research underscores how developing these interconnected competencies can help prepare children for life-long success. The Cs connect with other essential skills such as computational thinking or information literacy. For instance; to face the Fourth Industrial Revolution effectively requires adopting the "21st-century.

- **Collaboration:** Collaboration recognizes the significance of social engagement and cooperative work. This includes people who work together toward a common goal and integrate in an effective way to improve their skills and knowledge together (Bikdeli et al., 2020).
- **Communication:** Communication encompasses essential skills such as speaking, writing, reading, and listening, which play a crucial role in our daily lives. According to Hogan et.al's research, listening skills form the foundation of language development in children.(Hirsh-Pasek et al., 2015) Decision-makers must incorporate interactive activities that improve students' listening abilities as a step toward nurturing effective communication skills. Beyond language mastery, Savignon et al and Littlewood found that communicative skills remain crucial for children throughout life.
- **Content:** In today's rapidly changing world, simply mastering content is no longer enough. Children need specific and different skills to handle the unpredictability of their future jobs. This is why caregiver educators use new methods of teaching to be prepared and develop many abilities and this is not just about writing, reading, social studies, and science (Ribner et al., 2020).
- **Critical thinking:** In the modern world, children need to develop critical thinking abilities from a young age to succeed in both their academic and personal lives (Duncan et al., 2007). Children need to learn this skill because it enables them to make wiser decisions. They can do this by looking for the other sides and from another view, looking at the evidence, and finding a new way of solutions, to make them judge better in different situations. Collaboration is another crucial skill that kids should learn as they grow up. Developing effective communication and teamwork abilities helps students work together with others effectively through sharing ideas, etc (Miller & Halpern, 2014).

- **Creative innovation:** Creative innovation involves combining content knowledge with critical thinking to generate new ideas, perspectives, and solutions (Kamenetz, 2018). Encouraging children to be creative means they can think in unique ways, explore different ways, and use their knowledge and skills in unique and clever ways. Play and creative activities, especially in language and art, are important for developing creative thinking.
- **Confidence:** Confidence refers to having belief in one's abilities and having a positive self-perception. Having confidence means being brave enough to take risks, keep going when things get hard, and accept new situations (Dweck, 2015). When we help children feel confident, it helps them bounce back from challenges, stay motivated, and be open to new chances.

Table 2.1 : Four Levels of Understanding 6 Cs (Hirsh-Pasek et al., 2020).



LEVEL	Collaboration	Communication	Content	Critical Thinking	Creative Innovation	Confidence
4	Building it together	Tell a joint story	Expertise	Evidence	Vision	Dare to fail
3	Back and forth	Dialogue	Making connections	Opinions	Voice	Calculated risks
2	Side by side	Show and tell	Wide breadth/ Shallow understanding	Truths differ	Means-end	Where do I stand?
1	On my own	Raw emotion	Early learning/ Situation specific	Seeing is believing	Experimentation	Barrel on

3. MAPPING THE CHARACTERISTICS OF PLAYFUL LEARNING LANDSCAPES

The characteristics of Playful Learning Landscapes involve integrating playful learning opportunities into urban spaces to facilitate children's development and learning experiences (Bustamante et al., 2018). This approach emphasizes the convergence of urban design and developmental science to create environments that support playful learning. Transdisciplinary learning and computational play are essential components in this mapping process, as they contribute to the identification of characteristics that promote playful learning (Gravel et al., 2022). Additionally, playful exploration and engagement are highlighted as crucial elements within the playful learning environment, fostering implicit learning and exploration (Verver et al., 2019). It's important to comprehend the spectrum of play and the relation of learning for Creating an engaging and effective playful learning space in public places. Play can be performed in different ways for kids including free play, guide play, or a mix of both play to understand the relationship between learning and play (Zosh et al., 2018). Utilizing natural elements (trees, plants, and rocks) in children's play environment was found to be positive and impacts on child well-being and early childhood development (Dankiw et al., 2020). Moreover, the redesign of public places to integrate playful learning elements enhances curiosity and eagerness to learn, and this acts as a play space for all in a public environment and uses urban spaces in a useful way (Carroll et al., 2019). The incorporation of playful elements into architectural design and public space has been demonstrated to encourage spatial, literacy, self-confidence, and self-esteem skills through play (Schlesinger et al., 2020). The uniqueness of creating an environment that involves nature and games based on nature and learning benefits students and is an essential requirement for schools (Miller et al., 2022). Additionally, games-based learning spaces provide opportunities for playfulness, and this increasingly boosts students' self-confidence and self-esteem in their learnability in a new and technology-based place (Lu & Lien, 2020).

3.1 Parameters, Constraints, and Contextual Matters

Playful Learning Landscapes (PLL) are planned and implemented with many parameters that determine their success in mind. Spatial limits, budget issues, and other practical factors all play a role in implementing PLL properly. Factors such as geographical planning, economic concerns, and community interaction all impact the design and implementation of PLL (Pesch et al., 2022). PLL projects seek to combine playful learning methodology with community spaces to provide children, families, and communities with chances for playful learning (Schlesinger et al., 2020). The convergence of education and city planning is an important aspect of PLL, highlighting the need for collaboration between different sectors to create effective learning environments (Hadani et al., 2021). Considering factors such as signage, visual arts, and the science of learning, it is necessary to effectively incorporate playful activities in non-traditional settings (Hassinger-Das et al., 2018). Budget considerations are crucial in designing and implementing PLL. Economic factors and sustainable business development play a significant role in creating and testing new teaching concepts based on playful learning (Zimmermannová et al., 2021). Science teachers need to play a role in budget planning for instructional resources to improve learning outcomes, highlighting the significance of financial planning in educational initiatives (Oyier et al., 2017). Creating engaging learning environments can be challenging due to various limitations and complexities. Constraints such as regulations, safety, and community concerns play a significant role in shaping these landscapes. Additionally, the local context, cultural factors, and educational policies play crucial roles in implementing Playful Learning Landscapes. Cultural factors and educational policies have an impact on shaping the development of playful learning landscapes. For instance, the focus on performance and assessment in higher education can foster a learning culture characterized by fear of failure, avoidance of risk, and extrinsic goal-oriented behaviors (Nrgrd et al., 2017). Furthermore, safety concerns and regulatory constraints need to be carefully navigated. It is important to prioritize safety when creating playful learning environments, as they promote creativity, risk-taking, and learning from failure (Whitton, 2018). Furthermore, involving community members and stakeholders in the planning and design process can aid in addressing regulatory

constraints and ensuring that the Playful Learning Landscapes follow local contexts and cultural considerations.

3.2 Playground in relation to Playful Learning Landscapes

Playful Learning Landscapes (PLL) have gained popularity as an innovative way to provide learning opportunities for children outside of standard educational settings. PLL aims to transform daily urban spaces into environments that promote playful learning experiences for children and families (Yogman et al., 2018; Bustamante et al., 2018; Gaudreau et al., 2021; Shah et al., 2023; Schlesinger & Hirsh-Pasek, 2019; Bustamante et al., 2020). PLL seeks to provide opportunities for parents and children to participate in discussion and playful learning by leveraging cities and neighborhoods as learning landscapes, ultimately improving developmental outcomes in children (Yogman et al., 2018). This initiative combines urban design and developmental research to build places that enhance high-quality caregiver-child interactions and learning opportunities (Bustamante et al., 2018; Bustamante et al., 2020). Furthermore, PLL focuses on the significant time children spend outside school to provide evidence-based, playful learning experiences produced in the developmental and educational sciences (Gaudreau et al., 2021; Schlesinger & Hirsh-Pasek, 2019). The transformative potential of PLL lies in its ability to enhance social interaction and conversational exchanges between parents and young children, thereby promoting early learning (Shah et al., 2023). PLL targets shifting the focus from play to learning by offering skill-building activities in community places, allowing children to explore factual knowledge while playing (Schlesinger & Hirsh-Pasek, 2019; Verver et al., 2019). Furthermore, PLL seeks to promote intergenerational conversations and behavioral change within communities, emphasizing its ability to influence social dynamics and learning behaviors ("When I was little, I loved to play," Describe play experiences using a community-based lens," 2019). This approach acknowledges the value of exploiting commonplace environments, such as playgrounds, to generate active learning opportunities that can substantially impact children's development (Pitsikali & Parnell, 2019; McNamara et al., 2014).

To transform traditional playgrounds into playful learning landscapes, educational features that change the purpose and experience of the playground are required. The

Playful Learning Landscapes (PLL) initiative aims to integrate child development insights into everyday spaces, treating learning as a public health issue (Hassinger-Das et al., 2018) and combining playful learning pedagogy with community spaces to create opportunities for children, families, and communities (Schlesinger et al., 2020). By seeing play as a spectrum, new hypotheses and research may be devised to better understand the function of play and playful learning in the development of diverse skills throughout childhood and beyond (Zosh et al., 2018). This initiative has transformed public spaces into venues for playful learning interactions, such as parks and grocery stores (Bustamante et al., 2018). Furthermore, the introduction of playful learning experiences involving both free and teacher-directed play has been explored to enhance vocabulary development and promote the learning of young children (Weisberg et al., 2013; Buldu, 2022; Kangas et al., 2020). Additionally, the presence of natural elements in the playground environment has been associated with a greater degree of risk in children's play, which is essential for their development (Sandseter, 2009; Kos & Jerman, 2013). Moreover, the use of technology, such as sound-augmented toys, is shown to encourage physical activity and playful learning, creating an enjoyable atmosphere for active involvement and cooperation (Daz et al., 2016). Educators play an important part in creating meaningful and motivating playful activities and learning environments for students, highlighting the potential of play and playfulness in teaching and learning (Siklander et al., 2022). Therefore, transforming traditional playgrounds into dynamic learning landscapes entails merging educational elements, environmental elements, technology, and community spaces to create playful learning interactions and enhance child development.

Transforming public spaces into playful learning spaces requires an understanding of the common characteristics and variations in playgroups. By understanding these common characteristics and variations, designers can transform public spaces into dynamic, inclusive, and engaging playful learning environments. This approach encourages learning through play, supporting children's holistic development.

Common Characteristics

- **Different age groups:**

Playgroups often consist of children across various age ranges. Consider activities that cater to different developmental stages (Commerford & Robinson, 2017).

- **Varied Interests:**

Children have different interests. A successful playful learning space should consider various spectrums of activities and provide diverse opportunities for play and movement (Kangas, 2010; Kiviranta, 2015). (such as art, music, science, and physical activities)

- **Social Interaction:**

In playgroups, a space is provided for socialization. Designing open spaces that make children eager to collaborate, teamwork, and communicate (Golinkoff & Hirsh-Pasek, 2016).

- **Inclusive Design:**

The playground accessibility for children with different capabilities (for example Children with disabilities), should be considered from different perspectives such as physical and cognitive inclusivity (Prellwitz & Skär, 2007).

- **Safety:**

Public places for utilized by children must be extremely safe. All equipment should be age-appropriate, the surface of the playground needs to be unharmable (cushioned surfaces), and all required signs, rules, and guidelines (Valentine & McKendrck, 1997).

- **Flexible Spaces:**

  Design ideas in space should be capable of changing and adapting for various activities. The flexibility of the environment and play equipment should be suitable for various play preferences and different group sizes (Gu et al., 2004).

- **Natural Elements:**

Integrate nature into the play space. Natural elements (such as plants, water, sand, etc.) increasingly enhance the play experience in play. On the other hand, playing along

with nature Pleasants the learning experience for children and provides an opportunity for eco-friendly and child-friendly space (Herrington & Brussoni, 2015).

- **Creative Expression:**

Foster creativity through art installations, storytelling corners, or interactive exhibits that encourage imaginative play (Piscitelli & Penfold, 2015).

Variations:

- **Themed Play Zones:**

Create distinct zones based on themes like science, art, or nature. These themes provide a variety for children to explore their interests and also this allows them to make decisions and spend time on their interests (Moore, 2014).

- **Technology Integration:**

Integrates technology carefully in the play space, such as educational screens along with playing or making a reality experience with technology. Using technology could involve the five senses of a child such as hearing, sight, smell, taste, and touch through play (Roussou, 2004).

- **Seasonal Adaptations:**

Modify the environment based on seasons. For example, water features for summer and snow activities for winter. Design the playgrounds (and play equipment) in an adaptable way for the different weather situations to the fullest extent (Ergler et al., 2016).

- **Community Engagement:**

Involve the local community in the design process. Consider cultural elements that can be integrated into the play environment (Sanoff, 1999).

- **Educational Installations:**

Integrate educational components into play structures, turning them into opportunities for learning about shapes, numbers, or science concepts (Statham & Brophy∗, 1991).

- **Storytelling Corners:**

Design cozy corners for storytelling or reading, promoting literacy in a playful setting (Wood et al., 2014).

- **Interactive Art:**

Incorporate interactive art installations that encourage hands-on exploration and creativity (Piscitelli & Penfold, 2015).

- **Fitness and Movement Areas:**

Include spaces that promote physical activity and motor skill development, such as climbing structures, balance beams, or sports areas (Tortella et al., 2016).

- **Multisensory Experiences**:

Consider activities that engage multiple senses, enhancing the overall learning experience (Stoffers, 2011)

- **Parental Involvement Spaces**:

Include areas for parents to engage with their children, fostering family interactions and bonding (Ginsburg et al., 2007).

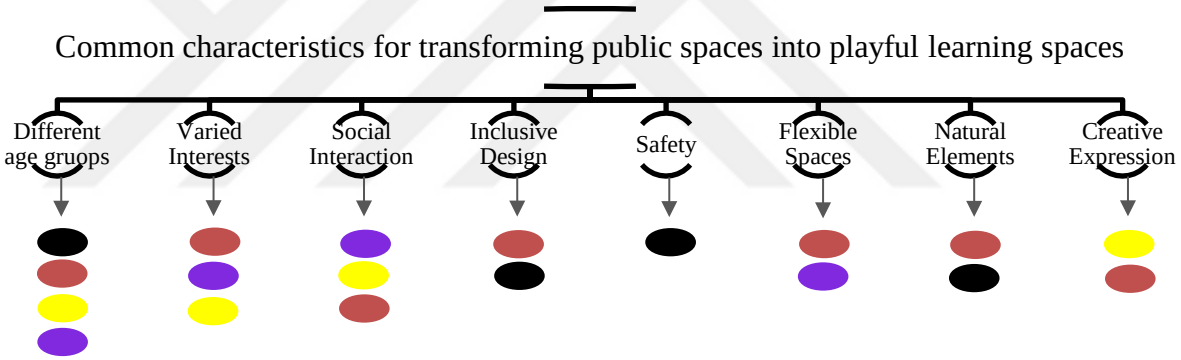


Figure 3.1 : Common characteristics.

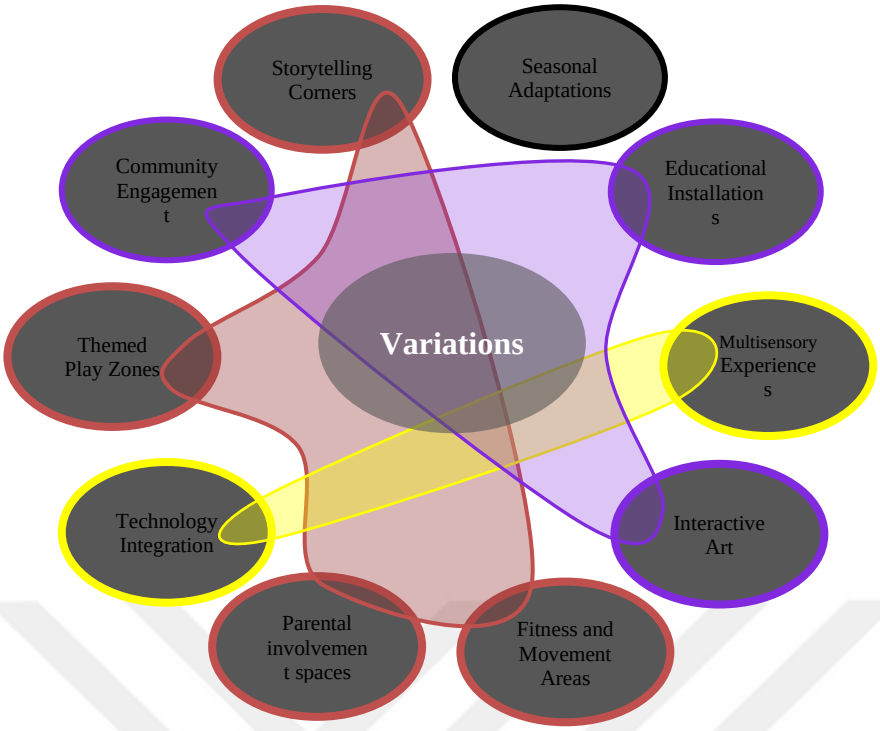


Figure 3.2 : Variations.

3.3 Game Typologies in Relation to Playful Learning Landscapes

By classing game groups in this thesis, and studying different types of playgrounds related to the learning landscape, the researcher analyzed common characteristics and variations of transforming public space into a playful learning playground.

On the other hand, by understanding child development, and learning skills (the 6 cs) study the affordance's effect of each space on children. This brings the light knowledge of how learning landscape spaces enhance child development in different situations. Moreover, by considering the ecological theory, the researcher finds a quite understanding of how play spaces impact children's development.

The effect of each playgroup highly depends on the nature and structure of the play and the group type. Playgroups are capable of having a significant impact on the cognitive, physical, and socio-emotional development of children in public spaces.

Structured Educational Playgroups:

Cognitive development play characteristics:

The characteristics of playgroups for cognitive development often focus on educational activities, and this enhances cognitive skills such as problem-solving, critical thinking, and language development. The cognitive play activities challenging activities include stimulating memory, logic, and creativity.

Physical development play characteristics:

structured playgroups incorporate physical activities that promote motor skills and coordination. This includes play activities such as arts and crafts, building blocks, and most importantly outdoor activities.

Socio-emotional Development play characteristics:

In structured-based playgroups and games, children learn to share and collaborate with others and follow the rules during the game. Following game rules and collaborating directly affect the children's behavior in their social life and this means the contribution of developing social skills, emotional regulation, and a sense of cooperation.

Free Play or Unstructured Playgroups:

Cognitive Development free play characteristics:

Free play opens the ways of imagination and creativity and allows children to foster cognitive skills such as abstract thinking and problem-solving. Children in free play are capable of self-directed learning and exploration. This encourages them to open new pass ways of self-learning and enhance their cognitive skills.

Physical Development free play characteristics:

Unstructured playgroups provide plenty of opportunities for physical activity, helping with the development of gross and fine motor skills. children join the activities like running, climbing, and even some unexpected adventure forms of active play.

Socio-emotional Development free play characteristics:

In free-play settings, children learn to navigate social interactions independently. In this type of play children develop communication skills, discuss roles in play scenarios, and learn how to show the feeling of empathy and cooperation.

Table 3.1 : Children's development in public space through play.

	Structured Educational Playgroups	Free Play or Unstructured Playgroups
Physical development	Promote motor skills and coordination, arts and crafts, building blocks, and most importantly outdoor activities.	plenty of opportunities for physical activity, helping with the development of gross and fine motor skills, unexpected adventure forms of active play.
Cognitive development	Educational activities, Problem-solving, Critical thinking, stimulating memory, logic, and creativity.	imagination and creativity, abstract thinking and problem-solving, capable of self-directed learning and exploration, self-learning and enhancing their cognitive skills.
Socio-emotional Development	learn to share and collaborate with others and follow the rules during the game, developing social skills, emotional regulation, and a sense of cooperation.	navigate social interactions independently, develop communication skills, discuss roles in play scenarios, empathy, and cooperation.

Mixed-Age Playgroups:

Cognitive development in mixed-age playgroups provides interaction with peers of different ages and makes unique learning opportunities. Older children may mentor younger ones, fostering a sense of responsibility, while younger children may benefit from exposure to more advanced activities. Mixed-aged groups also in physical development facilitate a range of physical activities that most group ages are capable of playing and promote a diverse set of motor skills. Moreover, children in mixed-age playgroups often develop a broader range of social skills. Socio-emotional development is enhanced in older children as leadership skills and younger children benefit from observing and interacting with more experienced peers.

Specialized Playgroups (e.g., Art, Music, Sports):

Specialized playgroups (cognitive development) can enhance specific skills related to the focus of the group. For example, art playgroups may foster creativity, while music playgroups can contribute to auditory processing and rhythm recognition. Depending on the specialization, physical development may be targeted toward specific skills. For instance, sports playgroups may focus on coordination, balance, and teamwork. Children (socio-emotional development) in specialized playgroups may develop a sense of identity and belonging within a particular interest group. This can contribute to self-esteem and social confidence.

The impact of playgroups on children's development in public spaces is multifaceted and depends on the characteristics of the playgroup. A well-designed and balanced playgroup environment can contribute positively to cognitive, physical, and socio-

emotional development. Check **Figure EK 3.** Child development and play types and **Table. 3.2** Child development and play.

Table. 3.2 : Child development and play.

	Age Range	Cognitive Development (CD)	Physical Development (PD)	Socio-Emotional Development (SED)	Structured Educational Playgroups (SEP)	Free Play or Unstructured Playgroups (FPP)
1	Infancy (0-2)	Rapid brain development	Rapid physical growth	Attachment to caregivers, developing trust	_____	_____
2	Early Childhood (2-6)	Language development, egocentrism	Improved coordination and balance	Formation of basic emotions, developing sense of self	Structured learning through play, social interaction	Opportunities for imaginative play, social interaction
3	Middle Childhood (6-12)	Concrete operational thinking	Steady growth in height and weight	Formation of self-concept, peer relationships become significant	Educational playgroups, cooperative learning	Opportunities for team sports, cooperative play
4	Adolescence (12-18)	Abstract thinking, developing identity	Puberty, rapid growth spurts	Formation of personal identity, complex peer relationships	Learning-focused groups, leadership development	Opportunities for independent exploration, socialization

3.3.1 Time and choice

The dimension of time and choice in children's play have significant roles, focusing on providing enough play time and opportunities for the child's creativity for playing. According to research, families and kids want more play in their daily lives. Nowadays, this is kind of tricky to achieve, because of the busy schedules of children and the distractions of different forms of technology also parents are busy balancing their work-life (Weisberg et al., 2013). Active learning involves children on what they're learning, which is more effective than passive learning where they simply listen and memorize. This method, as compared to passive learning, encourages children to actively question and reflect on what they have learned. Active learning lets children be in charge and make choices about what they're doing, thus emphasizing the importance of their choices in the educational process (Fisher et al., 2010). The research (Gleave, 2009) emphasizes the difficulties in integrating play into children's daily lives and highlights the need to set aside time for play. Moreover, the findings of (Ginsburg et al., 2007) emphasize the value of play for children's growth and interaction between parents and kids. Also, (Bergen, 1988) deals with the theoretical and practical features of the play, highlighting the essential of letting children take the lead in play and ensuring they have sufficient time for it.

3.3.2 Space and facilities

Space and facilities are significant factors in enhancing physical activity and child development health. Children's play behavior and well-being are significantly influenced by the way play areas are designed (Endicott et al., 2010; Herrington & Brussoni, 2015; Neshteruk et al., 2018; Pawlowski et al., 2019; Woolley & Lowe, 2013). Children who play in natural environments with only natural materials benefit from better growth and mental and physical health. Furthermore, for a better understanding of the importance of space and facilities, Herrington et al. (2006) describe the seven Cs as guidelines that identify the characteristics of outdoor play areas. The seven Cs help foster children's development by integrating the special aspects of playing outdoors. Additionally, the 7Cs describe the play affordances that affect the shape of children's play experiences. The 7 Cs are known as Character, Context, Connections, Change, Challenge, Choice, and Control (Herrington & Lesmeister, 2006).

Character

Character refers to outdoor play space qualities and features that include the physical environment, like the natural elements, the design of the space, and any structure or equipment built. Overall, the character of outdoor play space influences the availability of play opportunities and environment (Allen & Marotz, 2000; Dudek, 2012, 2014).

Context

The setting and surroundings of the outdoor play space include the location, neighborhood or natural environment, and different cultural/historical importance. The context factor provided additional meaning and a stronger relationship to the play experiences (Maufette et al., 1999; Moore & Wong, 1997).

Connections

Connections point to the relationships and interactions of children in outdoor play spaces. Connections include the bonding between children and relevance with adults and nature. The play space persuades social interactions, cooperation, and opportunities for children to connect with nature (Herrington & Oliver, 1999).

Change

Outdoor play spaces should be flexible and able to evolve in nature, allowing the play environment to be adaptable and change over time. It includes seasonal changes, making changes to the play environment, or adding new play setups. The feature of

changing and evolving play space can increase children's play experiences and Keep children interested and involved (Herrington & Studtmann, 1998).

Challenge

The challenge in outdoor play means having things tricky and interesting for children in the playground. It helps children learn better and solve problems more easily when they have things to figure out and new skills to practice. This offers suitable challenges in the area and opportunities for problem-solving skill development. This playground provides the proper balance of support and challenge, to take risks and learn during children's play experience (Blatchford, 1989).

Choice

"Choice" allows children to pick and choose what they want to do in the outdoor play area. The goal is for children should be able to make decisions while playing and control what they are experiencing. The playgrounds should offer various options and materials, allowing children to pick the activities in which they are interested and able to do (Herrington, 1997, 1999).

Control

"Control" means children can change and adjust the outdoor play area the way they like and experience control of the equipment in the playground. children can move things around, build stuff, or create their own games. Children can shape their play space, which makes them feel the place is like their own place, and this makes them more interested and involved in playing (Malone & Tranter, 2003).

Figure 3.3 : The 7 Cs of outdoor play areas (Herrington & Lesmeister, 2006) visualized by the author.

The development of different play environments, which is seen as an essential aspect in the planning of kids' play areas, is the emphasis of the seven Cs. This emphasizes the importance of providing diverse play opportunities to children and promoting physical activity and healthy development (Herrington & Brussoni, 2015).

Indoor play spaces such as kindergartens, and childcare homes have the same influence on the stage of physical activity in kids (Neshteruk et al., 2018). Active play in indoor spaces is identified as a possible approach to enhancing children's physical activity and designing inclusive indoor play spaces is highlighted as an area that requires more focus and guidelines. Nowadays, the design of indoor play spaces is intuitive rather than proven and researched methods. Developing inclusive play spaces is required to provide all of a child's requirements under various circumstances and create accessible and promote inclusivity of play environments (Endicott et al., 2010).

In the school environment, the design of an active schoolyard for playing influences children's perceptions and engagement in physical activity. Factors such as accessibility, allocated spaces, variety, and play facilities are the requirements for designing a schoolyard that enhances physical activity. Additionally, Greenness in a

play space provides comfort and joy to the schoolyard environment (Pawlowski et al., 2019). Children's play experiences greatly benefit from outdoor play areas, and play values are influenced by environmental elements including the availability of play facilities and design space (Woolley & Lowe, 2013). It's necessary to remember that play takes place in many different places in the built environment, including both designed playgrounds and other spaces that offer affordances for play. The impact of play on a child's behavior by the availability of spaces that provide social and physical opportunities. Designing play areas that support children's requirements and encourage play opportunities is informed by knowledge of the connection between various places and children's play behavior (Woolley, 2008).

3.3.3 Facilitation

Facilitation is connected directly to adults, caregivers, and the environmental factors that identify this link in inclusion and promoting positive outcomes in play experiences and promoting play as a means of learning and growth for kids (Crawford et al., 2014). The engagement among individuals with Down syndrome is enhanced by physical activity and connection with others during facilitators such as fun and rewards (Mahy et al., 2010). Caregiver's support for children's integration together is essential. Adults Specify how much guidance children need to integrate and make sure everyone can join in. The idea behind the based learning framework of the region is that adult support provides a context for children's Conscious learning to improve learning and thinking levels. This adult support promotes children's understanding and positive learning outcomes (Kirby & Gibbs, 2006). For example, guided play by adults is effective in children developing preschool vocabulary and providing deeper integration with words. In the Play Cycle, where children are in charge of their play, adults have an important part. They step in when needed, helping children in their play and making sure the playful process goes steadily (King & Newstead, 2021)

Figure3.4 : Three essential elements to encourage playful learning and child development (Hadani & Vey, 2021).

3.4 Educational System

The education system in most countries is faced with difficulties due to inequalities. The inequalities are about the economic and social status of people; most of the studies show that even a 3-year-old infant is affected by them. Children with low-income families and backgrounds are not the same as children who are born into high-income families. Low-income children experience a lack of developmental skills (Dickinson et al., 2019). Governments focused on this issue by facing it in formal education spaces like preschools and elementary schools to narrow the gap between low- and high-income children. In 2021, Figure 3.3 displays the total government spending on education for each country. The level of spending on education differs greatly between

countries. Some countries allocate a significant amount of their GDP to education, while others spend much less. This data is essential to understand the priorities and investments of different governments in the education sector. Analyzing this information can provide insights into the potential connection between government spending on education and the overall development and well-being of the population in a country.

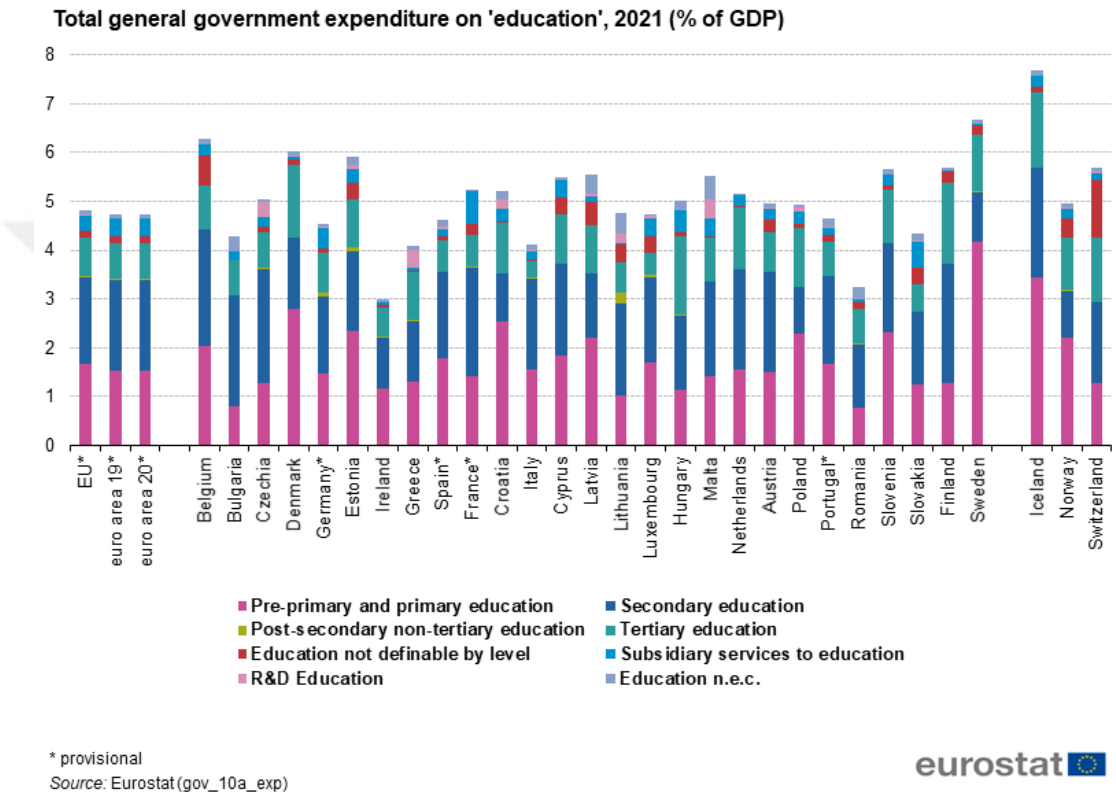


Figure 3.5 : Total general government expenditure on education, 2021 (% of GDP) - *Source:* Eurostat

Education expenditure statistics, 2021

Education expenditures in Turkey increased by 27.1% in 2021 compared to 2020 and reached 344 billion 341 million TL. Education levels with the highest increase in

education expenditures in 2021 compared to the previous year; It was higher education with 37.7% and secondary school with 28.3%.

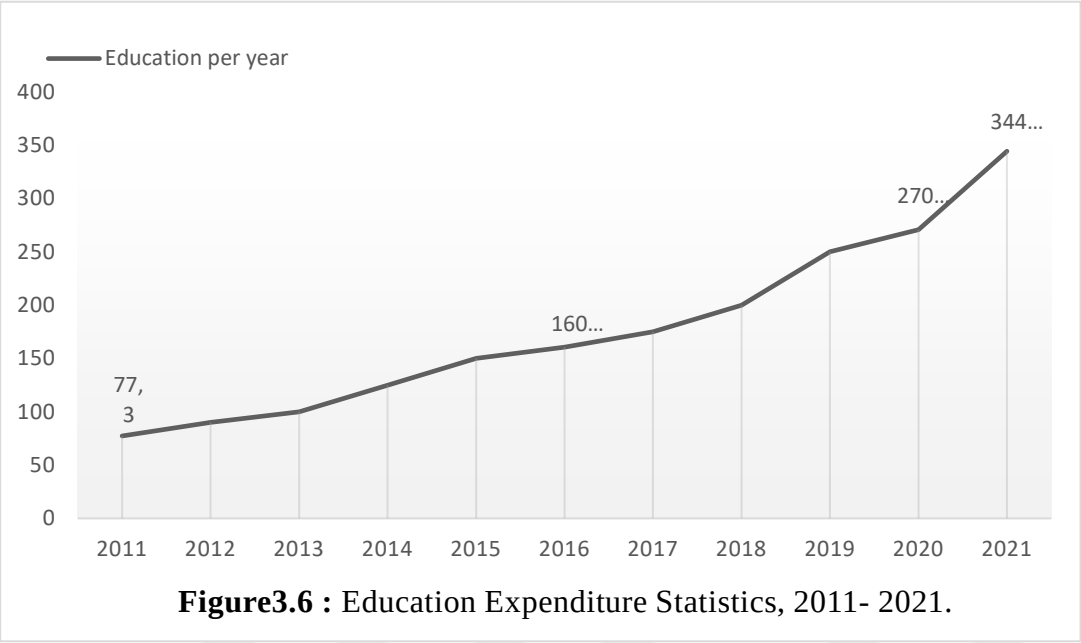


Figure3.6 : Education Expenditure Statistics, 2011- 2021.

The education level with the greatest cost per student in 2021, according to education levels, was higher education, at 28 thousand 597 TL. Figure3.3. While the education expenditure per student was 12 thousand 311 TL in 2020, it was 15 thousand 500 TL in 2021.

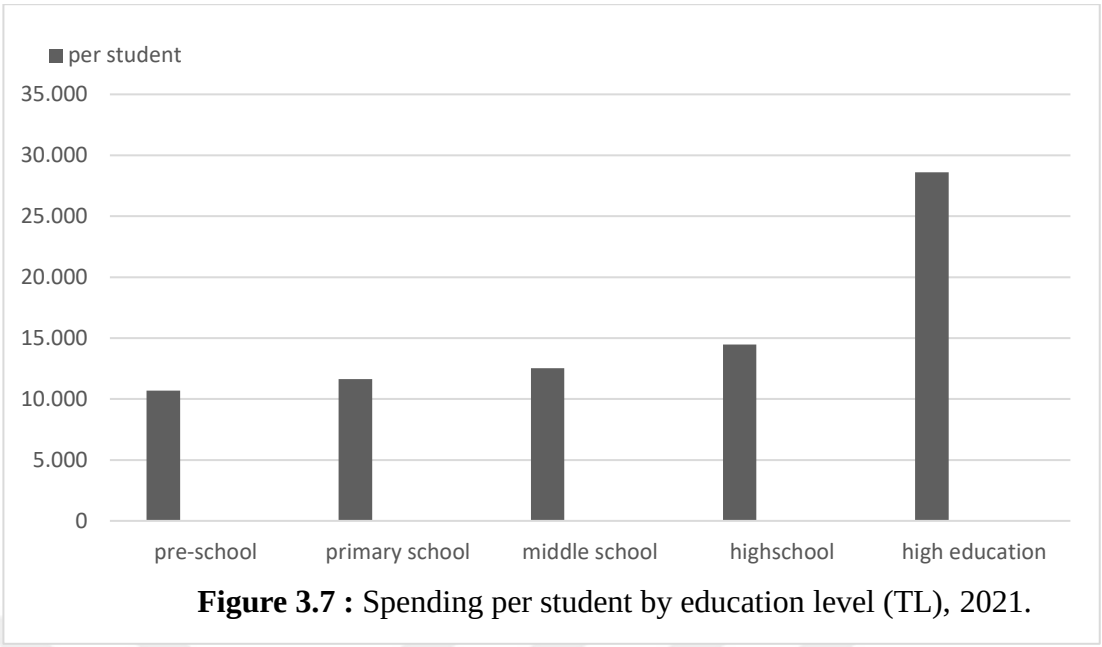


Figure 3.7 : Spending per student by education level (TL), 2021.

However, a child spends eighty percent of their waking time out of school. (Hassinger-Das et al., 2018), which means that the solution is not going to help close the gap between them. Children spend just 20% of their awake time at school (Wagner et al., 2002), and most of this time, they are not getting an education. On the other hand, the discrepancy in family income of each child could not provide a preschool education or after-school classes. The main question could be how could use this precious 80% out of school to teach and should have considering efficient financial way. Children who are raised in low-income communities are often faced with limited learning environments like libraries, and museums (Haden, 2010) or a lack of books at home and meaningful conversations to grow cognitive and social development. Consequently, these children face significant disadvantages compared to their more privileged peers.

3.5 A Brief Review of Educational Projects: Learning Every Day In Public Spaces

Designers and landscape architects come up with new kinds of public space designs to bring education everywhere in public spaces. They develop this design idea to use public spaces like bus stops, supermarkets, streets, and even inside public

transportation as learning spots. The idea of everyday learning in public became a learning landscape by using games and keeping children's minds active in these places for learning, which became playful learning spaces. In the following, to better understand the learning landscapes, the researcher studies some important projects in public spaces that are used as learning and play spaces for children.

- **Parkopolis: Human-sized game board (STEM)**

More than just a game,(Bustamante et al., 2020) this is how researchers describe the Parkopolis project. This case aims at life-size STEM board games to enhance kids' STEM abilities. Children learn about science, technology, engineering, and math in this place by playing games. Playing activates the child's brain, so with an active mind, children can learn and memorize more easily without any distractions. Figure 3.5

Figure3.8 : Parkopolis (Bustamante et al., 2020).

- **Urban Thinkscape**

Activating public spaces for playful learning, this project tries to take places and turn them into opportunities for children and caregivers to talk to each other and integrate during playing and learning together. In this project, they turned every possible place into a corner of learning such as bus stops, supermarkets, and streets where people walk. This project aims to transform city spaces into opportunities for playful learning.

Designers add a couple of activities like puzzle walls, stories, hidden figures, and jumping feet in an empty public spot close to the bus station transforming the area into a location for education and recreation.

Figure 3.9 : Urban Thinkscape (Hassinger-Das et al., 2020).

- **SMART Parks Toolkit**

Smart parks are emerging as a key component of smart city development, creating intelligent and effective settings by combining several technologies including the Internet of Things (IoT)(Barriga et al., 2020). These parks leverage advanced technologies to improve energy efficiency, optimize resource allocation, enhance safety and security, and provide seamless connectivity (Qayyum et al., 2021). Smart parks are an integral part of the smart city ecosystem, leveraging advanced technologies to create intelligent and efficient environments. These parks encompass various domains such as smart parking, healthcare, agriculture, and energy management, and rely on technologies such as those mentioned above here to optimize resource allocation, enhance safety and security, and improve overall efficiency.

Figure 3.10 : SMART Park. Credit: Nick Cuccia The UCLA Luskin Center for Innovation

- **Talk It Up / Supermarket Speak**

Transforming supermarkets into engaging and educational spaces for children. Researchers started in Philadelphia and Wilmington grocery stores, incorporating colorful signs to encourage parent-child interactions while shopping. Three key studies were conducted: (Hassinger-Das et al., 2018) inquired about the transformation of supermarkets into kid's museums, (Ridge et al., 2015) studied the impact of colorful signals on parent-child relations as well as the efficiency of conversation-starting signs in capturing kids' attention. Researchers observed increased parent-child interactions with colorful signs in supermarkets and positive feedback from parents. The project shows that incorporating visually appealing and educational elements in supermarkets can create spaces for learning and bonding, benefiting both families and children.

Figure 3.11 : Talk It Up / Supermarket Speak. Credit: Saxum

- **Play and Learn Library Spaces**

  Effective learning settings are facilitated in large part by library spaces and promoting various aspects of development for library users, particularly children, and students. The design and characteristics of library spaces can greatly impact users' perceptions, engagement, and overall experience (Wang et al., 2022). One important aspect of library space design is the integration of technology and flexible design to create an exciting and collaborative environment. To promote contact, play, and conversation, library settings should be welcoming, appealing, challenging, and suitable, especially for children (Wang et al., 2022). Creating spaces that offer a variety of functions, Interactions between kids of different ages can be facilitated through activities including reading, relaxation, gathering, play, and performance (Lee & Park, 2018).

3.6 Exploring the Diversity of Playgrounds

Different types of playgrounds provide various advantages and opportunities for children's development and play. Several research studies the different types of playgrounds from multiple perspectives, such as playground characteristics, equipment, and design and their impact on children's physical activity levels, security of space, social interactions, and most importantly play experiences. A systematic review shows the value of preschool playgrounds for children's development (Broekhuizen et al., 2014). The study found providing play equipment positively

affected children's activity. The study also highlighted the importance of encouraging children's physical activity and to have longer playtime to stay healthy. A research study on children in Dutch primary schools shows playful activity and fun-valued and their thoughts of activity-friendly school playgrounds emphasizing the importance of active playground characteristics, safety, caregiver interaction, and flexibility in the games and equipment (Elsje et al., 2016). All the mentioned factors are identified as essential parts of children's playground experiences measure.

First, playground safety is an essential factor to focus on. Vollman et al., 2008 studied playground equipment-related accidents in the United States, highlighted the number of injuries, and pointed out the importance of injuries reduction needs (Vollman et al., 2009). A child's play experiences in the public playground are influenceable by design and features. Sansakorn et al., 2022 explored the public playgrounds in Thailand by focusing on Safety and children's risk-taking behavior and the study shows that various types of plays and free play spaces for children provide learning opportunities to explore and engage in activities (Sansakorn et al., 2022).

The playground classification is made by using the below criteria.

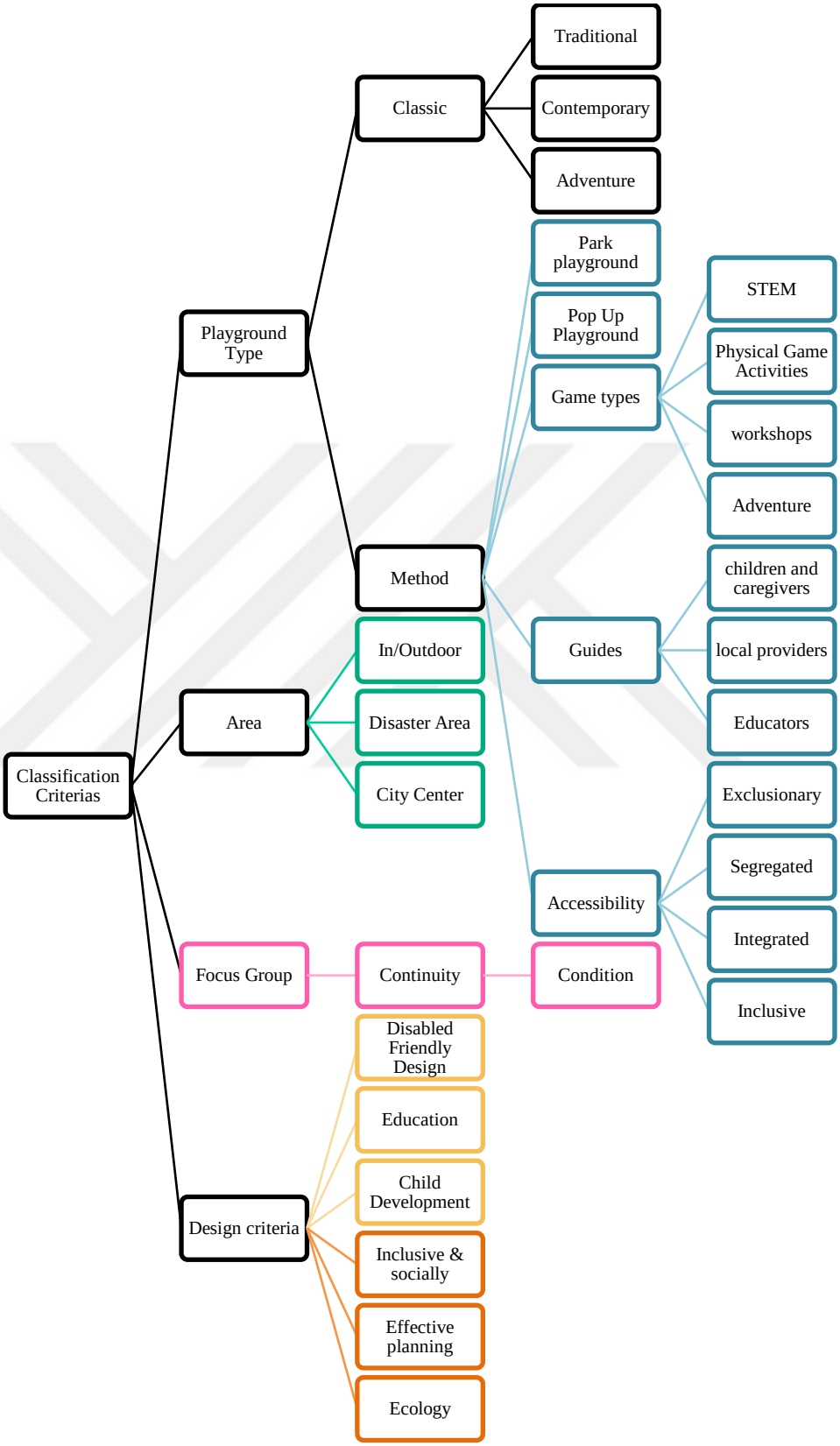


Figure 3.12 : Classification Criteria of the Playgrounds.

3.6.1 Classical Classification of Playgrounds

In several studies, playgrounds were classified classically and distinguished the playgrounds into three types: Traditional, Contemporary, and Adventure (Bloch & Laursen, 1996). The classification is based on the design and features of playgrounds, this leaves an impact on children's play experience.

- **Traditional playgrounds** are allocated by standard design and equipment. Normally, these playgrounds include swings, slides, and sometimes climbing structures (Torkar & Aljoša, 2017). The Traditional playgrounds are designed with measured and standard layouts in which there is no space for imaginative and interactive elements. children's play experiences in these playgrounds are normally focused on performing physical activities (Coe et al., 2014).

Figure 3.13 : Traditional Playgrounds (Pysander et al., 2023).

- **Contemporary playgrounds**, contrasted with traditional playgrounds, include innovative and interactive designs. These playground features contain elements like sensory play areas, various instruments, and natural materials that provide different types of play experiences, making children eager to imagine and create. These types of designs provide a context to stimulate the senses and encourage them to explore children (Czalczynska-Podolska, 2014; Hart & Sheehan, 1986).

Figure 3.14 : Contemporary Playgrounds. TOM OTTERNESS playground, Credit: MONA/Jesse Hunniford & Chris Roque/ The BRONX PLAYGROUND, Credit: Timothy Schenck/ WULABA PARK, Credit: Simon Wood

- **Adventure playgrounds** are distinguished by their focus on challenging play and taking risks. The playgrounds are designed with unusual features, structures, and materials like ropes, tires, and logs. Adventure playgrounds supply opportunities to gain problem-solving skills, decision-making skills, self-driven play, and a place to safely take risks and develop. These

playgrounds are designed to improve physical development, social interaction, and exploration (Chilton, 2018; Kozlovsky, 2008).

(A)

(B)

Figure 3.15 : Adventure Playgrounds. (A) The playground at Hever Castle/ Credit: KATE YORK, (B) Tyntesfield, Somerset/ NATIONAL TRUST IMAGES/TREVOR RA

This classification of playgrounds provides an understanding of children's different play experiences in each type of playground. Each type of playground offers something as shown in **Figure 3.14**.

Traditional playground	Structured and physical play experiences
Contemporary playground	Provide a wider range of play opportunities
Adventure playground	Prioritize risk-taking and self-directed play

Figure 3.16: Three types of playgrounds

It's essential to note that these classifications are not necessarily exclusive, and many playgrounds may combine elements from multiple types. Furthermore, the design and characteristics of playgrounds depend significantly on socioeconomic, geographic, and cultural factors. The effects of different playground designs and equipment on children's play experiences and development need further study and this research continues with study about it.

The accessibility and nearness of playgrounds are studied to find the effect on children's development and physical activity levels. The playground and park availability and children's physical activity are studied by Molina-García et al., 2021. They found that children's physical activities have increased in public parks and open spaces with playgrounds (Molina-García et al., 2021). The impact of playgrounds on children's physical development is examined by several researches. A study found that changes in the way playgrounds are designed, such as placing play equipment distanced in renovated parks, improve children's physical development (Bohn-Goldbaum et al., 2013).

3.6.2 Classification of Playgrounds Based on Accessibility

The playgrounds are divided based on accessibility and equipment into four types such as "**exclusionary**," "**segregated**," "**integrated**," and "**inclusive**." Each mentioned type of playground describes different terms for creating and designing playgrounds that promote or limit the access of children in playgrounds (Peters, 2004).

- **Exclusionary playgrounds** are limited and children with different needs cannot participate in playing, the playground doesn't have equal play

opportunities for children with special needs (Dalpra, 2022). The playground is usually faced with the absence of necessary equipment or features for children with disabilities, and limited children from engaging in play (Wenger et al., 2021). Playgrounds that exclude children with disabilities impact social injustices and limit their ability to interact with others.

Table 3.3: Exclusionary playgrounds

Exclusionary playgrounds	Playgrounds lack ramps or other wheelchair-accessible routes, which make it challenging or impossible for kids in wheelchairs to get to the play equipment.
	Playgrounds devoid of sensory play elements, such as auditory features or tactile panels, which keep children with sensory processing issues out.
	Children with physical limitations are unable to fully participate in swinging activities on playgrounds that lack inclusive swings or seating choices.

- **Segregated playgrounds**, separate children with disabilities from others, and this is mostly influenced by the educational system. In some cases, the separation continues in inclusive playgrounds and they separate children with and without disabilities, and this increases the gap between them (Wenger et al., 2021). The goal of inclusion can be undermined by segmentation, which also reduces opportunities for social integration and interaction between children with varying abilities (Paajanen et al., 2023).

Table 3.4: Segregated playgrounds

Segregated playgrounds	Playgrounds next to special education schools, where children with disabilities mostly socialize with other kids who are similarly disabled, and this reduces their chances of integrating socially with children without disabilities.
	Playgrounds that have distinct zones set aside for children with impairments, erecting physical barriers and solidifying the division between kids with varying abilities.
	Playgrounds with insufficient accessible provisions, prevent children with disabilities from using particular areas or equipment and unintentionally separate them from other children.

- **Integrated playgrounds** offer to bring children with different disabilities and abilities in a shaped play environment together. The playground provides equally accessible play and equipment for all children and is designed to be physically accessible to each child (James et al., 2022). Integrated playgrounds foster equality and social interaction by providing areas for children of various skill levels to play together.

Table 3.5: Integrated playgrounds

Integrated playgrounds	Playgrounds involving ramps and walkways designed to accommodate wheelchairs, enabling children with mobility disabilities to independently move the play area.
	Play areas include inclusive swings that can fit children with physical limitations, like bucket or harness swings.
	Playgrounds with textured surfaces, musical instruments, or quiet areas—sensory play features that are specially designed for children with sensory processing problems.

- **Inclusive playgrounds** eliminate limits of physical accessibility and aim to create a place where all children with any abilities or disabilities can included and valued (Zadeh et al., 2023). This creates an environment for children with or without special needs, for children who are not able to participate in play easily and don't have equal opportunities as others, and at the same time, they interact with other children. These playgrounds are not created just for special kids, the place provides diverse features for all children and all interests. These playgrounds take age, gender, and ethnicity into consideration, making them accessible to a variety of child populations (Yildirim et al., 2022).

Table 3.6: Inclusive playgrounds

Inclusive playgrounds	Playgrounds featuring a variety of age-appropriate play equipment that allows kids of all ages to participate in play.
	Playgrounds that eliminate gender stereotypes and encourage equal participation using gender-neutral play components and designs.
	Playgrounds in multicultural neighborhoods that represent the children's cultural and racial backgrounds, promoting inclusivity and a sense of belonging.

4. BUILDING RESILIENCE THROUGH PLAYFUL LEARNING LANDSCAPES

Helping children develop resilience is similar to Newton's first law, which says that objects keep doing what they're doing unless something makes them change. Similarly, people often resist change and prefer to stick to how things are. But not everyone handles change in the same way. Some are better at adapting and embracing new things than others. However, individuals differ in their ability to adapt and embrace change. Those with a more flexible mindset find it easier to accept new circumstances and adjust their lives accordingly (Richardson, 2002). In essence, the discussion above highlights that individuals with low resilience react defensively to change and prefer things to remain unchanged. Yet, the changes we experience in life can be sources of stress. (Carver, 1998). When confronted with a problem or a new situation, resilient individuals are open to acceptance, consider new solutions, and adapt to the circumstances to minimize the negative impact at each stage. What individuals learn during childhood and their early years becomes deeply ingrained and applicable throughout their lives. It becomes a part of who they are. Therefore, the earlier a person learns resilience, the more ingrained it becomes, enabling them to navigate any situation with resilience. By teaching children resilience skills effectively, parents are essentially providing them with a vaccine against adversity and equipping them with the mental and emotional tools to tackle life's challenges(Ang et al., 2022).

A resilient individual is capable of generating multiple solutions when faced with life's obstacles, possessing the key to healthy coping mechanisms during times of crisis. When resilience is nurtured from childhood, individuals are better prepared to navigate the toughest conditions in adulthood, demonstrating behavioral maturity(Ungar, 2005). This project focuses on introducing games that promote resilience in children aged 3 to 12. This age range is particularly crucial for developing resilience skills, and games serve as an effective educational method to introduce and reinforce the concept of resilience. All the games included in this project are designed to be played by children after experiencing trauma, facilitating their recovery process. By engaging in these games, not only will children's resilience improve, but their bond with their caregivers will also become stronger and more nurturing. It is important to select and play games based on the child's emotional state and needs(Murtazoyevna & Jamilovna,

2021). By introducing fun educational games, we can help children become more resilient, and that has a lot of advantages.

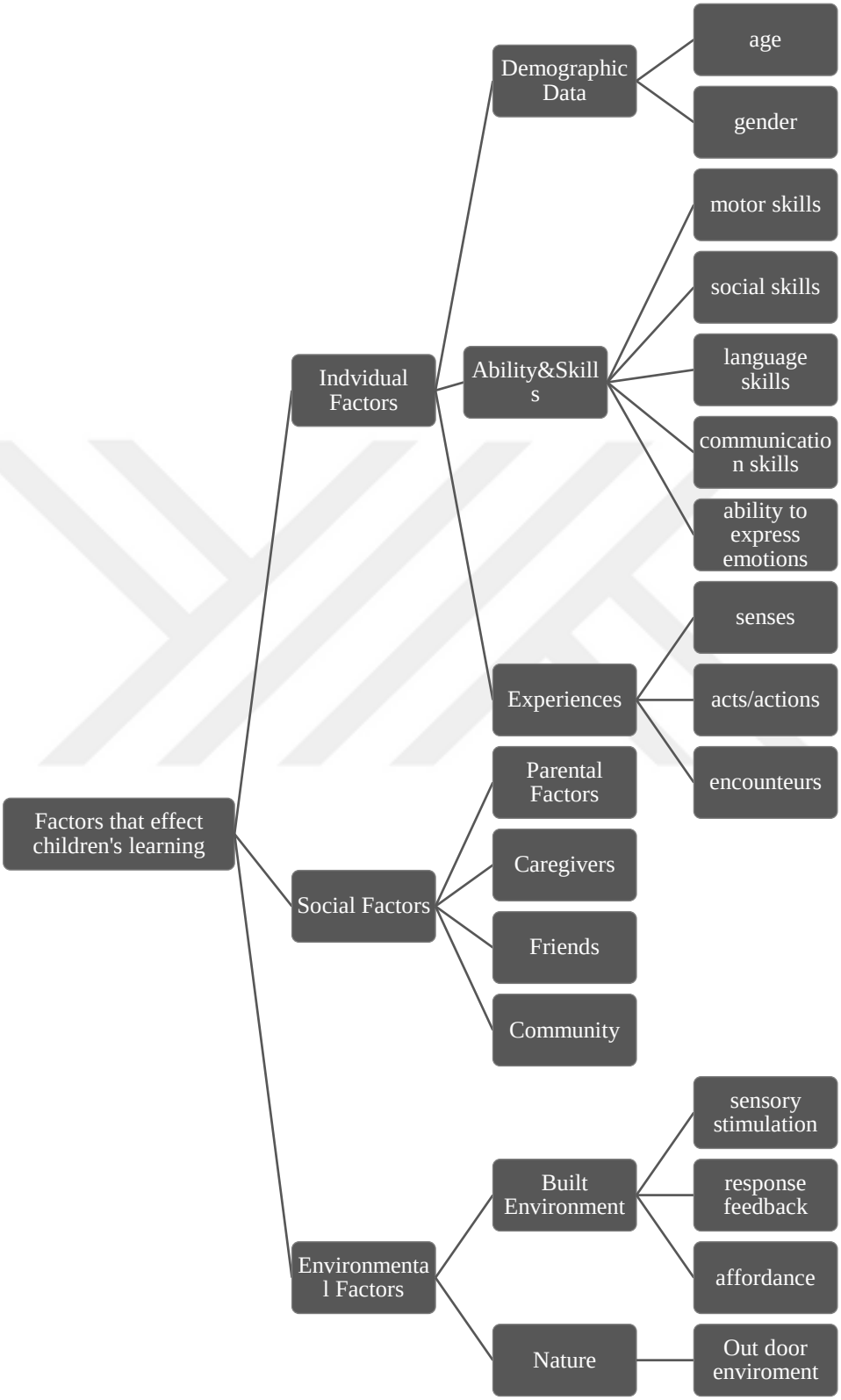


Figure 4.1 : Factors that affect children's learning.

Evaluation of the 42 cases of playgrounds carried out to provide play opportunities to children, in terms of design criteria.

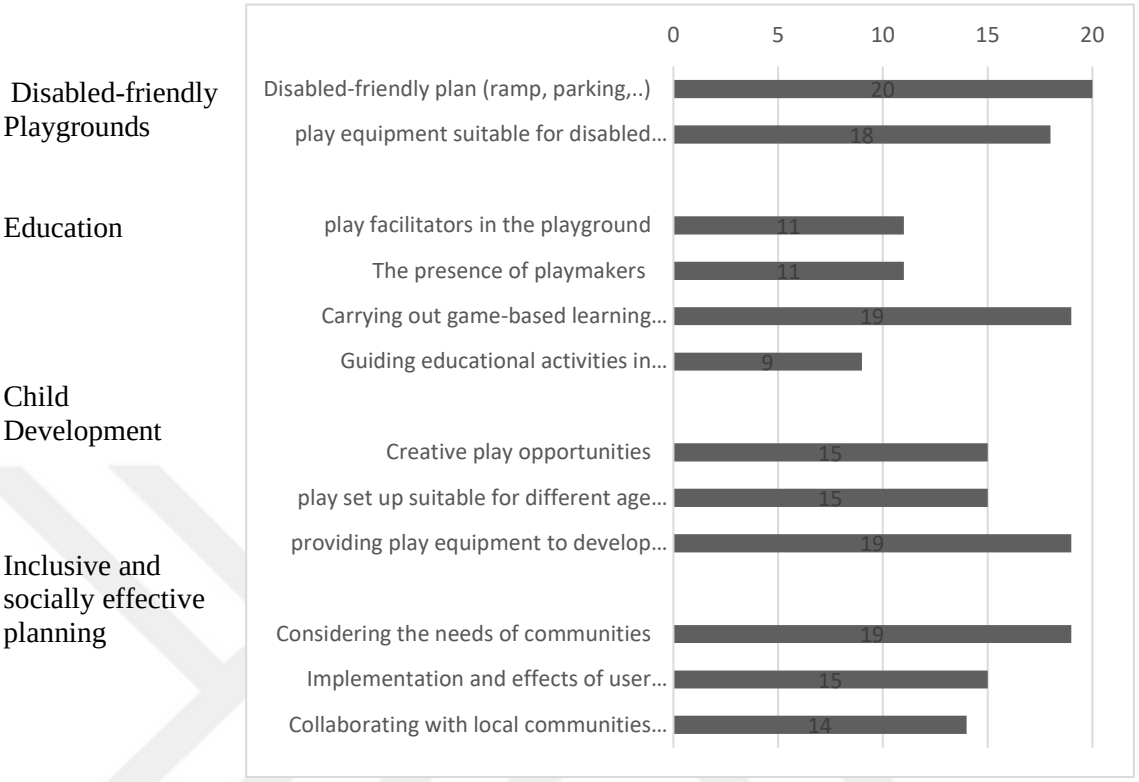


Figure 4.2 : Evaluation of 42 cases of playground.

During 42 playground analyses, several design criteria were examined to assess how well they provided opportunities for kids to play. During the evaluation, the main design criteria that were considered included disabled-friendly playgrounds, education, child development, and inclusive and socially effective planning. To make playgrounds disability-friendly, the plans and play equipment were designed in such a way that 20 of them could specifically accommodate children with disabilities. Education and child development were also taken into account, with 11 out of the 42 playgrounds having incorporated educational elements and activities that support children's learning and development while they play. This figure evaluates child development based on three criteria: creating play opportunities, providing play setups suitable for different age groups, and offering play equipment that supports physical, cognitive, and social development. Additionally, the evaluation focuses on inclusive and socially effective planning that promotes social interaction, cooperation, and inclusivity among children from diverse backgrounds and abilities. The evaluation found that 19 playgrounds incorporated features and design elements specifically

aimed at promoting social inclusion and interaction. These features include inclusive play equipment, seating areas for caregivers to encourage interaction, and signage promoting inclusive play behaviors.

The report table emphasized the importance of incorporating environmental aspects into playground design. Out of 42 playgrounds, natural elements, and green spaces were integrated to provide children with a closer connection to nature during playtime. The presence of these natural features was found to enhance the overall well-being and sensory experiences of children using playgrounds. The analysis highlighted the significance of considering diverse and inclusive design criteria in the planning and development of playgrounds. This ensures that the playgrounds cater to the varied needs of children and provide enriching play experiences for all.

4.1 Building Resilience for Children Through built-environment

Building resilience in children through the built environment involves understanding physical, psychological, and social factors that impact their health and well-being. Research shows that the built environment can influence children's physical activity levels, promote child health, and impact obesity-related factors (Chen et al., 2021; Oreskovic et al., 2009; Pedrick-Case et al., 2022). Research has explored the relationship between traffic safety and built environment characteristics in child pedestrian and cycling crashes and injuries (Amiour et al., 2022). Furthermore, coping mechanisms and parental support have been highlighted as major contributors to children's resilience (Ghanouni & Eves, 2023; Wang et al., 2021). The significance of the built environment in impacting children's quality of life is also important for creating an environment that encourages physical activity and well-being (Hitch et al., 2023). Understanding the built environment's impact on children's mode of transportation choice is also essential for developing places that encourage physical activity and well-being (Li et al., 2022). Aside from physical and psychological issues, societal and cultural variables also influence children's resilience. According to research, social and familial support is critical in developing resilience in children exposed to adversity, such as ongoing missile assaults (Pat-Horenczyk et al., 2012). Furthermore, the COVID-19 pandemic has highlighted the importance of assessing children's knowledge, attitudes, and practices around public health crises, emphasizing the importance of creating resilience to cope with such challenges (Ganaprakasam et

al., 2021). It is critical to completely grasp the interaction between physical, psychological, social, and cultural aspects to create resilience in children through the built environment. This involves designing environments that encourage physical activity, safety, and health, promote psychological resilience, and support social systems. This comprehensive approach is crucial for ensuring the well-being and resilience of children in various contexts.

The built environment, including Playful Learning Landscapes (PLL), can significantly contribute to building resilience in children. Resilience is not solely an individual construct but is also a quality of the environment and its capacity to facilitate growth (Ungar, 2013). Playful Learning Landscapes (PLL) merge playful learning pedagogy with community spaces to create playful learning opportunities for children, families, and communities (Schlesinger et al., 2020). This approach uniquely fosters learning and engagement organically within the built environment (Hassinger-Das et al., 2018). Furthermore, studies in socio-ecological resilience suggest that resilience in the built environment is fundamentally about people and systems rather than property alone (Rajkovich & Holmes, 2022). The built environment can enormously contribute to society's resilience (Malalgoda et al., 2016). The Learning Landscapes initiative marries the fields of urban design and developmental science to bring playful learning opportunities to places where children and families spend time (Bustamante et al., 2019). A playful school environment has been linked to higher child involvement in play and improved learning and development (Pinchover, 2017). Moreover, when a child is playful during play, the child can learn best through active experiences with people, materials, and ideas, all of which benefit child development (Chen et al., 2019). Free play and playful learning not only support academic achievement but also minimize children's anxiety and facilitate the development of their social skills (Hurme et al., 2022). The built environment, including Playful Learning Landscapes, can contribute to building resilience in children by providing opportunities for playful learning, fostering engagement, and supporting the development of social and cognitive skills. The environment and individual interactions related to resilience can be understood using principles that emphasize the importance of the environment in facilitating growth and positive development in children (Ungar, 2013).

It is essential to include components that support social interaction, emotional health, and coping mechanisms in playful learning landscapes to increase their resilience.

Mental health and removing obstacles to instruction have been connected to resilience, especially in educational contexts (Zhang et al., 2020). Furthermore, developing coping skills helps to reduce depression and improve coping efficacy (Cheng et al., 2012). Social engagement is essential for building resilience and positively impacting mental health (Leong et al., 2021). Research has indicated that a lack of social connections may be a risk factor for the emergence of mental health issues, underscoring the significance of fostering social interaction abilities to improve resilience (Leong et al., 2021). Research has shown that a coping flexibility intervention is beneficial in reducing work-related stress, underscoring the need to include coping skill-enhancement interventions to support resilience and emotional well-being (Cheng et al., 2012). Promoting resilience requires social engagement in a significant way. Leong et al. (2021) have identified the promotion of resilience as having beneficial effects on mental health through the enhancement of social interaction skills, which is a useful transdiagnostic strategy.

Tailoring the design of playful learning landscapes to enhance resilience involves incorporating elements that promote emotional well-being, social interaction, and coping skills. This can be achieved by introducing interventions that enhance coping strategies, encourage social interaction, and overcome obstacles to effective teaching. Ultimately, this will help create more resilient individuals in educational and community environments.

4.2 Playful Learning Landscapes in the Context of Post-Disaster Areas

There are many obstacles to overcome in post-disaster environments, such as concerns about community well-being, infrastructure, and the psychological effects on children. Since school environments are frequently disturbed and damaged, the psychological impact on children in post-disaster areas is a significant concern because deficits in their functioning may be most visible there (Pfefferbaum et al., 2015). Teenagers need to have constructive coping strategies to adapt to post-disaster situations (Herdiana, 2022). The psychological fallout that survivors of catastrophic events, like the Fukushima nuclear disaster, experience is also the subject of much research, which has highlighted the nature and frequency of these effects (Shigemura et al., 2021). In post-disaster areas, efficient resource allocation and trajectory planning can be challenging due to difficulties in determining user positions (Cao et al., 2022).

Playful Learning Landscapes are cutting-edge teaching strategies that incorporate education into the real world, establishing lively, participatory areas where kids and adults can explore and learn. Play components like games, puzzles, and interactive installations are incorporated into these areas to improve learning and foster critical thinking, creativity, and problem-solving abilities. An instance of a playful learning landscape in post-disaster areas can be highlighted, such as "Playful chalkboard walls in post-disaster areas." As part of the playful learning landscapes initiative, playful chalkboard walls were built in two Philadelphia neighborhoods for a pilot experiment. The walls functioned as a tool for educational activities and allowed kids to express themselves creatively. This strategy made learning easier and gave the neighborhoods a stronger sense of resilience and community. Interactive learning trails in communities affected by disasters: Putting interactive learning trails in communities devastated by disasters is another example of playful learning landscapes. The integration of interactive games, storytelling features, and educational signposts in the design of these pathways promotes outdoor learning and discovery. Incorporating both physical activity and educational resources enhances children's overall growth and helps them form a stronger bond with their environment. Increased engagement and participation among children, improved learning outcomes, enhanced community cohesion, and resilience-building in post-disaster areas were observed as outcomes and lessons from this example (Hassinger-Das et al., 2018). Mobile play and learning units in temporary shelters: Temporary shelters are erected in certain regions following disasters to offer impacted communities temporary accommodation. Playful learning landscapes can incorporate mobile play and learning modules under these circumstances. To provide a safe and engaging learning and playing space for children, these transportable units can be equipped with interactive activities, educational games, and books. This intervention fosters a feeling of normalcy and routine to meet children's educational needs in times of crisis and improve their psychological health. The introduction of playful learning landscapes in areas devastated by natural disasters has demonstrated benefits for social cohesiveness and community resilience. These programs increase the community's capacity to recover and flourish in the face of hardship by establishing areas where play and learning intersect. They also help people feel more united and supportive of one another.

Although there is limited research on playful learning landscapes used in communities devastated by disasters, some lessons can be learned from initiatives that have

effectively used playful learning landscapes in different settings. Involve the community in the process of design and implementation. Playful learning landscapes can adapt their design and implementation to the post-disaster community's specific requirements and preferences by including the local population (Avendano-Uribe et al., 2022; Vainio, 2020). Encourage cooperation between education, design, and disaster relief. Playful learning landscapes can effectively utilize the combined knowledge of several sectors to generate sustainable educational interventions in areas affected by disasters by bridging the gaps between them (Souter-Brown, 2014).

In post-disaster areas, it is crucial to provide children with opportunities for psychological recovery, community rebuilding, and a sense of normalcy. Play and playful learning landscapes can help achieve these goals. These installations are visually appealing and offer opportunities for children and parents to engage in playful learning in public areas. By assisting with repair and rehabilitation following a disaster, these spaces play a vital role in supporting the psychological healing of affected children (Bustamante et al., 2019). Studies suggest that the psychological impact of disasters on teenagers is not fully recognized, highlighting the need for treatments to mitigate the effects on young people (Sari et al., 2023). Moreover, research suggests that disabled children are more vulnerable to disasters and that protective factors and social networks are crucial for them (Adams et al., 2014). To ensure a fair return from schooling, schools should also assist children with disabilities in navigating the post-disaster environment (Peek & Stough, 2010). Playful learning landscapes and the availability of play spaces in post-disaster areas play a crucial role in the recovery process for children. These spaces aid in psychological healing, the rebuilding of communities, and restoring a sense of normality. This highlights the importance of providing supportive environments for children affected by disasters.

Enhancing the efficacy and sustainability of post-disaster areas requires community involvement in the design and implementation of PLL. Community empowerment requires involving survivors of disasters in the planning and design phases (Wu & Hou, 2020). By taking into account the requirements and preferences of the community, the PLL is guaranteed to align with the values and cultural heritage of the affected area (Pesch et al., 2022). In addition, community involvement fosters feelings of ownership and inclusivity, which are crucial for the long-term sustainability of these areas (Pandey, 2019). Including the community in PLL design can result in the

development of interesting projects that promote social interaction and skill development while meeting the unique requirements of children and families living in the impacted neighborhoods (Schlesinger et al., 2020). Incorporating culturally aware community co-design into the post-disaster recovery planning process is another benefit of incorporating the community. This is crucial for developing PLLs that connect with the local populace. This methodology guarantees that the PLL mirrors the distinct attributes and inclinations of the populace, therefore enhancing its efficacy and durability. In post-disaster recovery planning, community involvement is crucial for fostering community resilience. By involving the community in decision-making and problem-solving, post-disaster regions can customize PLL to meet their specific needs, thereby increasing their overall resilience. Involving the community in the recovery process strengthens the bonds between communities and municipalities, facilitating cooperation during and after catastrophes (Roberts et al., 2022).

Figure 5.2 has been designated for assessing playgrounds and play-learning areas in post-disaster zones, a critical endeavor for children's well-being and development where such opportunities are scarce. This evaluation involves scrutinizing existing playgrounds, pinpointing the need for new ones, and scouting suitable locations for their establishment. Safety and accessibility are paramount considerations, ensuring that these spaces adhere to the requisite standards, free from potential hazards, enabling children to engage in recreational activities safely. This comprehensive evaluation aims to formulate plans for enhancing playgrounds and learning areas, vital for the recovery and advancement of post-disaster communities. Additionally, it encompasses the management aspect, ensuring sustained upkeep and administration for the enduring benefit of the community. Prioritizing the assessment of these spaces not only nurtures children's physical and cognitive growth but also cultivates a semblance of normalcy, joy, and social interaction amidst recovery efforts. This holistic approach, emphasizing safety, inclusivity, engaging activities, and educational components, promises to significantly bolster the well-being and resilience of both children and communities post-disaster.

Playground design within learning landscapes brings up comprehensive development and community strength, particularly salient post-disaster. Educational playgrounds are characterized by interactive elements and informative signage, facilitating the advancement of cognitive skills through hands-on learning experiences. Adventure-challenge playgrounds promote physical growth and resilience via dynamic activities

that entail risk-taking. Themed playgrounds provide immersive settings conducive to imaginative play, fostering social interaction and cooperative abilities among children. Inclusive playgrounds, tailored to accommodate diverse abilities and foster social inclusion and empathy, play a pivotal role in fostering community unity during adversity. Community playgrounds play a vital role in the rejuvenation of post-disaster communities, offering recreational outlets and social support networks. These distinct playground classifications offer diverse avenues for holistic growth, communal cohesion, and empowerment amidst challenging circumstances, underscoring the imperative of deliberate design in enhancing the welfare and rehabilitation of vulnerable populations. In assessing the efficacy of playgrounds and educational spaces in post-disaster locales, a comprehensive approach is warranted, extending beyond visual appeal to encompass the overall user experience and its ramifications on child development, community involvement, and communal well-being. Through an analysis of 42 playground instances, it can be highlighted that playgrounds incorporating a blend of educational, adventure-challenge, themed, inclusive, and community-oriented features appeared to exhibit a potentially noteworthy influence on fostering holistic development and community resilience within post-disaster areas. These playgrounds afford opportunities for physical, cognitive, and social advancement while concurrently serving as communal focal points, Figure 5.1.

4.3 Games to Strengthen the Sense of Responsibility, Empathy, and Teamwork in Children

Children after trauma that are educational, promote resilience, and can be conducted in open spaces:

4.3.1 Talking games

Talking games involve open and honest communication, allowing individuals to express their thoughts and feelings. These games can help build resilience by promoting self-awareness and emotional regulation.

Ages 3-6: “**The good vibes game**”-A child acting in different feeling expression and other children should ask to feel him/her better, to promote empathy (Eisenberg & Fabes, 1998).

Ages 5-12: “**Telling the truth**”- A group of children or family members gather to talk about how did feel in sentences to promote honesty and open communication (Lickona, 2009).

Ages 5-12: “**Compliment circle**”- Children sit around a circle to give each other compliments by sentences, to practice kindness (Perloff, 1997).

Ages 5-12: “**Mirror**”-Children by looking at the mirror in the area give themselves positive energy and complement sentences (Selman, 1980).

- **The good vibes game**

The Good Vibes Game To play the Good Vibes game, square papers with pictures of scared, angry, sad, and sick faces must be arranged in a basket. The kid picks one of the papers, acting out the expression on it in pantomime. After that, the other kids should inquire as to why the acting kid is feeling that way and how they can make them feel better. When children are sad and express it with a sad face, others can respond by offering a hug or saying sorry. One of the goals is to teach it. In the first place, it is possible for children to not understand how to show kindness and respect to others, but after playing the game, they learn to pay attention, sense the situation, and respond. During this game, we should provide various supplies like food, dolls, toys, and other stuff that could be used for showing empathy to children. The more options there are, the more inventive the children can be in coming up with solutions to ease their friends' troubles. A bandage, for instance, could be used to represent an injury (Eisenberg & Fabes, 1998).

- **Telling the truth**

The “Telling the Truth” Game involves gathering family members or a group of children and requires each player to complete a sentence that starts with "I was scared when..." or other incomplete sentences like "I was happy when..." or "I was surprised when...". To play the game, parents or caregivers can also share their tales. This game's primary educational goal is to encourage openness and honesty in communication. By creating a safe and supportive environment for children to express their true feelings, they learn the value of telling the truth without fear. As a tip, it's a good idea to write down your child's stories as starters for future games. This can promote constant communication and foster a feeling of comfort and familiarity with expressing

emotions. The "Telling the Truth" game is an easy but powerful way to encourage openness and honesty among a family or group of children.

- **Compliment circle**

Building resilience in children involves an important aspect that may not be obvious: practicing kindness. You can do a simple activity with at least six kids. Have them sit in a circle with their legs extended. Choose one child to start with and have them give a compliment to someone else in the circle. When you receive a compliment, pull your legs in (like sitting crisscross) to show that you've already been complimented. Keep going around the circle until everyone has received praise. The trick is to encourage compliments that go beyond appearances and focus on other qualities. It may be a bit challenging for younger kids at first, but with practice, they can improve (Lickona, 2009).

- **Mirrors**

  The mirror game boosts children's self-confidence. It begins with a big mirror where children stand in a line. One by one, they face the mirror, and they start to say positive things about themselves, like " I like my eyes" or "I'm smart." This game aims to encourage players to find their strengths in different aspects of their behavior, body, etc. This game provides a space for players to improve their self-esteem and gives them confidence and courage in various situations. Importantly, it helps them build inner strength (Selman, 1980).

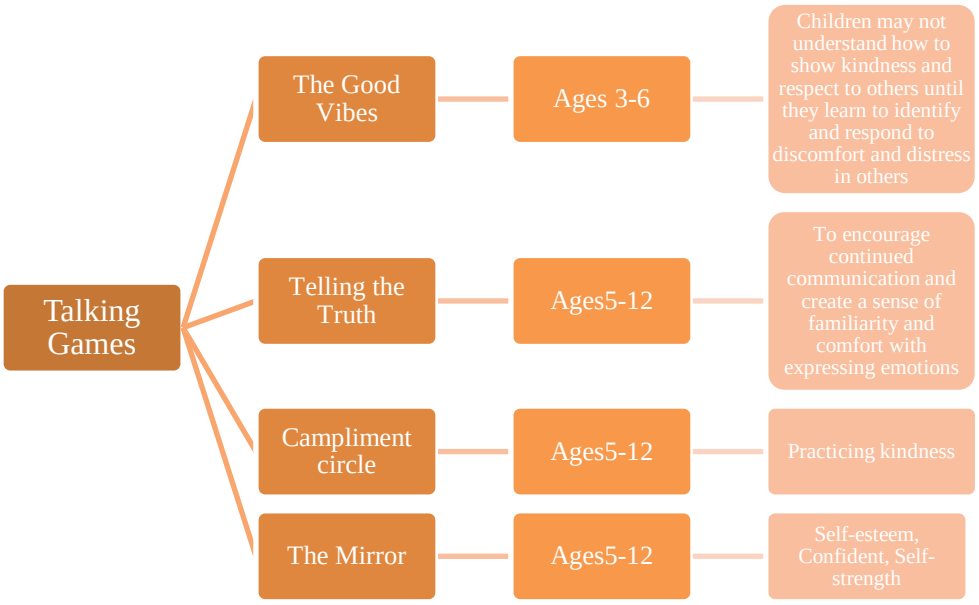


Figure 4.3 : Talking games.

4.3.2 Cooperative games

Cooperative games involve children together towards a common goal. These games encourage teamwork, collaboration, and problem-solving techniques, all of which are necessary for fostering resilience (Flood et al., 2018).

Ages 3-6: "**Parachute Game**" - Children work together to make waves or bounce objects on a colorful parachute, promoting cooperation and teamwork (Toppe et al., 2019).

Ages 3-12: "**Tarin Game**" - Encourages teamwork, resilience, and empathy as a group by making tarins from boxes.

Ages 7-12: **"Far and Near"-** Hide an item as a group and one of the children should find it by guided act or sound, to promote cooperation among children (Seif El-Nasr et al., 2010).

- **Parachute Game**

This game encourages collaboration, teamwork, and interpersonal communication. Making waves or bouncing objects on a vibrant parachute teaches Children to cooperate. Through it, they learn to take turns, improve their communication skills, and develop a sense of community acts. After trauma, cooperative games can help children rebuild trust, develop positive relationships, and regain a sense of safety and support within a group setting. Gather a group of children and a colorful parachute. Have the children hold the parachute and make waves by moving their arms up and down or bouncing lightweight objects on it (Toppe et al., 2019).

- **Train game**

First, caregivers will need several sizable cardboard boxes that can tightly fit a child inside to play this game. Once you have the boxes, instruct the child to turn their box into a train by giving them supplies like colorful paper, glue, markers, colored pencils, stickers, and other items. Encourage collaboration among the children so that they can construct multiple train cars and add exterior decorations such as wheels and windows to their train. The primary objectives of this game are to foster perseverance and teach children the satisfaction of initiating, pursuing, and completing a task. Children gain an understanding of how important it is to maintain and how peer support is necessary for success by playing this game. The game acknowledges the child's effort and allows them to feel the confidence that comes from a successful performance. It's important

to note that children might like this game and want to play it again and again. Therefore, it's crucial to avoid throwing away the boxes.

- **Far and near game**

In the Far or Near game, one child has designated the "finder" and is sent outside the playing area while the other kids hide an item inside the playground. The finder then came back and had to locate the hidden object, such as a red ball. As the finder approaches the hiding place of the ball, quick taps on a table are used to indicate proximity to the goal. As the ball is being moved away by the finder, the tapping gets softer and less frequent while getting louder and more frequent as they get closer to it. The principal educational point of the game is to enhance cooperation among children. By working together to find the hidden ball, they learn the value and joy of cooperation (Seif El-Nasr et al., 2010).

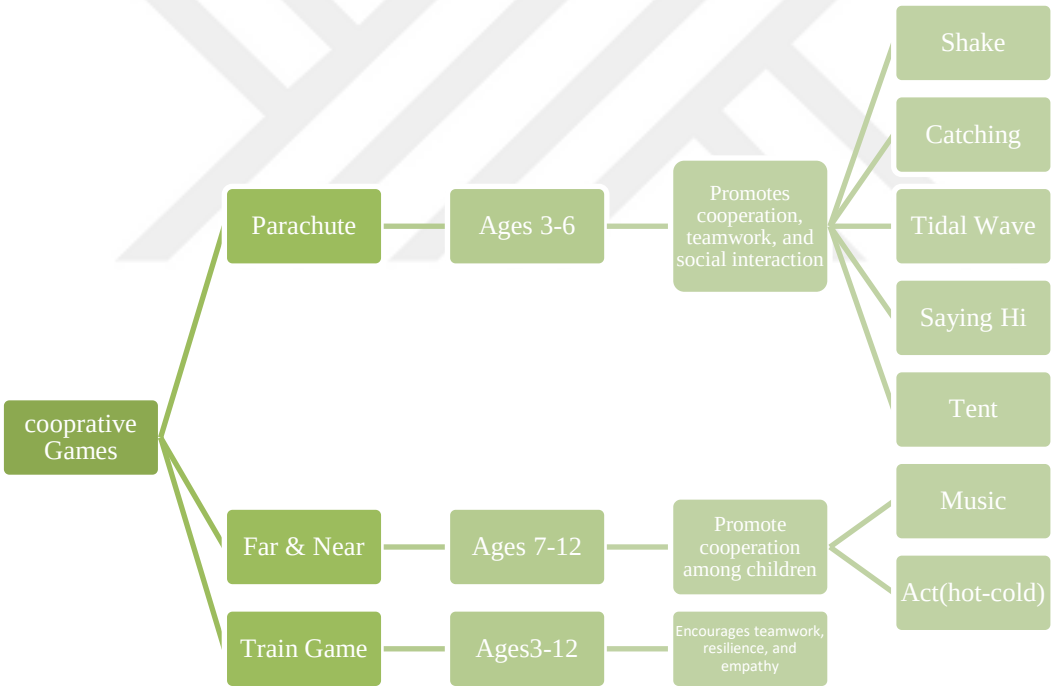


Figure 4.4 : Cooperative games.

4.3.3 Problem-solving games

Problem-solving games require individuals to critical thinking and find solutions to challenges or obstacles. These games promote the growth of problem-solving abilities and the capacity for situational adaptation, both of which are crucial for resilience (Flood et al., 2018).

Ages 3-6: "**Nature Scavenger Hunt**" - Children search for specific natural objects like leaves, rocks, or flowers, developing observation and problem-solving skills (Anderson & Krathwohl, 2001).

Ages 7-12: "**Treasure Hunt**" - Kids follow clues and solve riddles to find hidden treasures, enhancing critical thinking, perseverance, and spatial awareness.

Ages 5_12 **"Hula-hoop" -** it is equally important children learn to cooperate with others to solve problems as a team. Engaging in a game that requires teamwork creates opportunities for children to play together toward the same purpose (Durlak et al., 2011).

- **Nature Scavenger Hunt**

This game encourages kids to explore their surroundings while improving their problem-solving and observational skills. They acquire skills in critical thinking, environment analysis, and the identification and collection of particular natural objects. After trauma, engaging in problem-solving games can provide a sense of control and mastery, boosting self-esteem and promoting cognitive and emotional healing. Create a list of specific natural objects or elements for children to find, such as different types of leaves, rocks, or flowers. Give each child a list and allow them to explore the outdoor area to find the items on the list (Anderson & Krathwohl, 2001).

- **Treasure Hunt**

Treasure Hunt stimulates critical thinking, logical reasoning, and perseverance. Children follow clues, solve riddles, and navigate their surroundings to find hidden treasures. This game fosters problem-solving skills, spatial awareness, and cognitive flexibility. After trauma, participating in treasure hunts can help children regain a sense of adventure, curiosity, and excitement, and allow them to focus on positive goals and achievements. Create a series of clues or riddles that lead children from one location to another until they find a hidden treasure. Provide each child with the first clue and let them decipher the clues to locate the next one (Diamond & Lee, 2011).

- **Hula-hoop:**

Solving problems in different situations and overcoming difficulties is an important skill to learn for children to promote their resilience. Independent reasoning and problem-solving could be achieved by playing games like word puzzles or some video

games. One activity that promotes cooperation involves forming a circle with children, where a hula hoop is placed on the arm of one of the participants before the last pair is connected. The challenge is for the kids to move the hula hoop around the circle without letting go of the holders on each other. This requires a collective effort, as the children must cooperate and support each other to prevent the ring from falling off (Durlak et al., 2011).

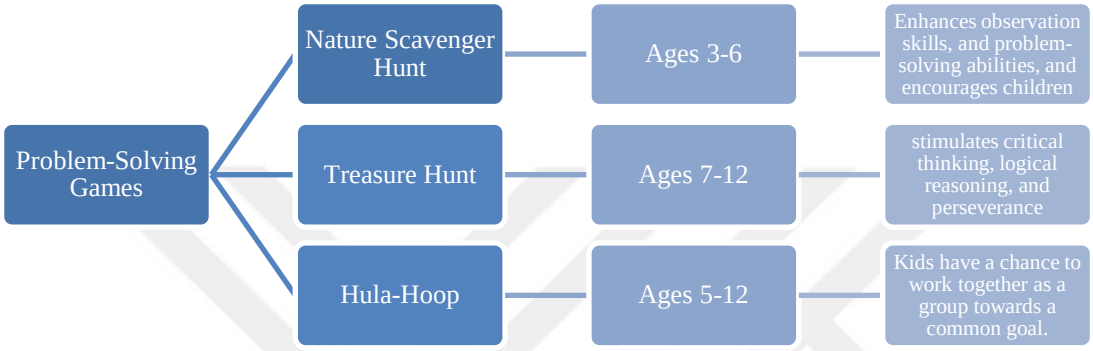


Figure 4.5 : Problem-solving games.

4.3.4 Physical activity games

Physical activity games, such as outdoor activities, help to build physical and mental resilience. Enhancing resilience helps children feel better about themselves. (Flood et al., 2018).

Ages 3-6: "**Obstacle Course**" - Set up a course with hula hoops, cones, and small hurdles for kids to crawl under, jump over, and balance on, promoting physical coordination and resilience (Stolarz et al., 2022).

Ages 7-12: "**Capture the Flag**" - Enhances teamwork, strategy, and physical endurance as two teams compete to capture each other's flags while avoiding being caught (Barnes, 2019).

- **Obstacle Course**

Obstacle courses improve physical coordination, balance, and gross motor skills. Children navigate through various challenges such as crawling under, jumping over, or balancing on objects. This playing course provides resilience, perseverance, and

confidence to children, which helps them to reconnect to their bodies, drag away the pressure they feel, and regain their control over physical powers, which in the end will promote the well-being of children. It also helps them to reconnect to their bodies, drag away the pressure they feel, and regain control over their physical powers. Set up an outdoor course using cones, hula hoops, or other objects. Include challenges like crawling under a rope, jumping over hurdles, and balancing on a beam. Children navigate through the course, completing each challenge (Barnes, 2019).

- **Capture the flag**

This game combines physical activity with teamwork and strategic thinking. Children work collaboratively, plan strategies, and engage in physical endurance to capture the opponent's flag while avoiding being caught. It promotes resilience and leadership skills and enhances communication and cooperation. After trauma, playing games like Capture the Flag aids kids in acquiring a sense of unity, building trust within a team, and experiencing a healthy competitive spirit. Divide the children into two teams and designate two “home bases” with flags. Both teams try to capture the other team's flag, run back home, and avoid being caught by other team members. This is one of the old and classic outdoor games (Stolarz et al., 2022).

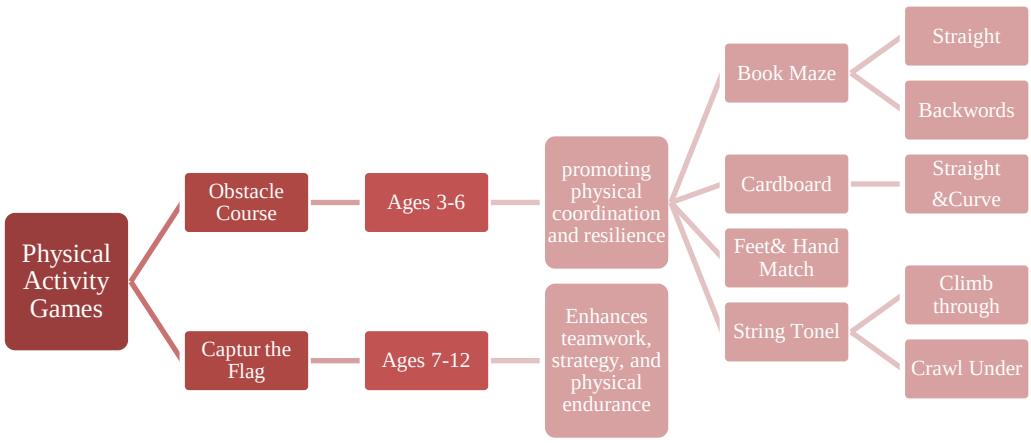


Figure 4.6 : Physical activity games.

4.3.5 Creative expression games

Creative expression games involve activities such as art, music, and writing. These games provide individuals with a creative outlet to express themselves and cope with

difficult emotions. Engaging in creative expression enhances resilience in promoting self-expression and emotional well-being.

Ages 3-6: "**Nature Art**" - Encourage children to collect natural materials and create art pieces using leaves, sticks, or flowers, fostering creativity and self-expression (Olsen & Smith, 2020).

Ages 7-12: "**Sidewalk Chalk Games**" - Kids can draw hopscotch patterns, create outdoor murals, or design their obstacle courses, nurturing creativity and imagination (George, 2017).

- **Nature Art**

Children collect natural materials like leaves, sticks, or flowers to create art pieces. It nurtures imagination, fine motor skills, and mindfulness. After trauma, engaging in creative expression through nature art can provide a safe outlet for emotions, promote relaxation, and support emotional healing and self-discovery. Allow children to collect natural materials like leaves, sticks, or flowers. Provide art supplies like paper, glue, and markers. Encourage them to use natural materials to create artwork, collages, or sculptures**.** Nature art activities encourage creativity, self-expression, and a connection with the natural world (Olsen & Smith, 2020).

- **Sidewalk Chalk Games**

Sidewalk chalk games offer children the opportunity to express themselves through drawing, design, and imagination. They can create hopscotch patterns, and outdoor murals, or design their own obstacle courses. The aims of games foster creativity, spatial awareness, and problem-solving skills. After trauma, engaging in artistic activities can serve as a therapeutic outlet, allowing children to process their experiences, express their emotions, and promote a sense of joy and playfulness. Give children sidewalk chalk and let them draw hopscotch patterns, create outdoor murals, or design their obstacle courses on the sidewalk or pavement (George, 2017).

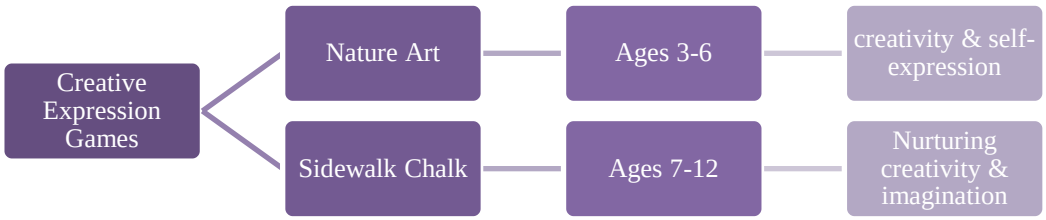


Figure 4.7 : Creative expression game.

4.3.6 Team building games

Team-building games focus on building strong relationships and promoting a feeling of community within a group. These games are designed to encourage people to bond, fostering close relationships and a feeling of unity within the team (Stoverink et al., 2020).

Ages 3-6: "**Balloon Pop Relay**" - Children pass balloons overhead or between their knees, promoting cooperation, coordination, and communication (Brownell et al., 2006).

Ages 7-12: "**Human Knot**" - Kids stand in a circle, join hands with two others, and work together to untangle the knot without releasing hands, fostering problem-solving and patience (Warneken et al., 2006).

- **Balloon Pop Relay**

Balloon Pop Relay is a cooperative game where children pass balloons overhead or between their knees. It encourages communication, coordination, and teamwork. Children learn to trust and support each other while achieving a shared objective. After trauma, participating in team-building games can help children rebuild trust, develop healthy relationships, and restore a sense of belonging and support within a group. Divide children into teams and give each team balloons. Children pass the balloons overhead or between their knees while racing to a designated finish line. The first team to cross the finish line with their balloon intact wins (Brownell et al., 2006).

- **Human Knot**

Human Knot is a game that requires solving the issue and cooperation. Children stand in a circle, join hands with two others, and work together to untangle the knot without releasing their hands. It promotes communication, patience, and teamwork. After trauma, playing games like Human Knot can help children develop problem-solving skills, enhance social connections, and improve emotional resilience by learning to navigate and overcome challenges together. Children stand in a circle, reach out, and grab hands with two other people across from them. Without letting go of hands, they

must work together to untangle themselves, forming a circle again (Warneken et al., 2006).

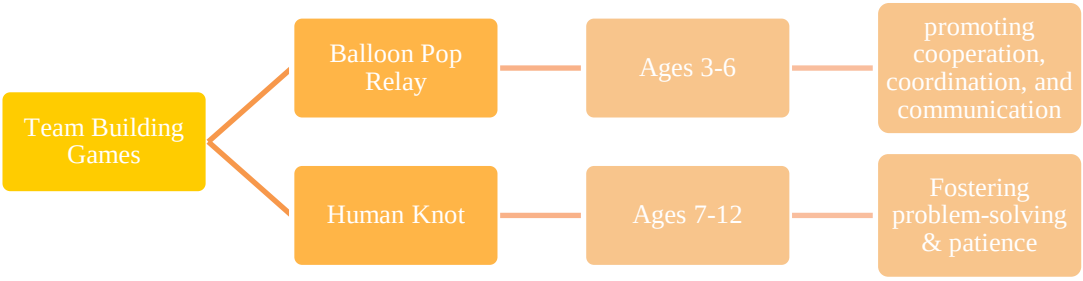


Figure 4.8 : Team building games.

4.3.7 Sensory games

Sensory games involve stimulating the senses, such as touch, sight, or sound. These games help individuals develop mindfulness and relaxation techniques, which can enhance resilience by reducing stress and promoting emotional well-being (Pusey et al., 2022).

Ages 3-6: "**Sensory Nature Walk**" - Children explore different textures, smells, and sounds in nature, stimulating their senses and providing a calming, grounding experience.

Ages 7-12: "**Blindfolded Obstacle Course**" - Kids navigate an obstacle course blindfolded, relying on their senses and trust in their teammates, building resilience and sensory awareness (Sher, 2013).

- **Sensory Nature Walk**

Sensory nature walks provide children with opportunities to engage their senses by exploring different textures, smells, and sounds in nature. It stimulates sensory awareness, mindfulness, and a connection with the environment. After trauma, sensory games can help children ground themselves, reduce anxiety, and promote relaxation and emotional regulation by focusing on their sensory experiences in a safe and nurturing outdoor environment. Take children on a guided walk in a natural

environment. Encourage them to engage their senses by feeling different textures, smelling flowers or leaves, and listening to the sounds of nature (Ozcan et al., 2022).

- **Blindfolded Obstacle Course:**

Blindfolded obstacle courses challenge children's sensory perception, trust, and communication skills. Children navigate the course while blindfolded, relying on their senses and the guidance of their teammates. It promotes sensory integration, trust-building, and problem-solving. After trauma, participating in blindfolded obstacle courses aids kids in building a stronger sense of trust, improves sensory processing, and enhances their ability to rely on their instincts and the support of others. Set up an outdoor obstacle course with various challenges like crawling, climbing, and stepping over objects. Blindfold one child at a time and have their teammates guide them through the course using verbal instructions (Sher, 2013).

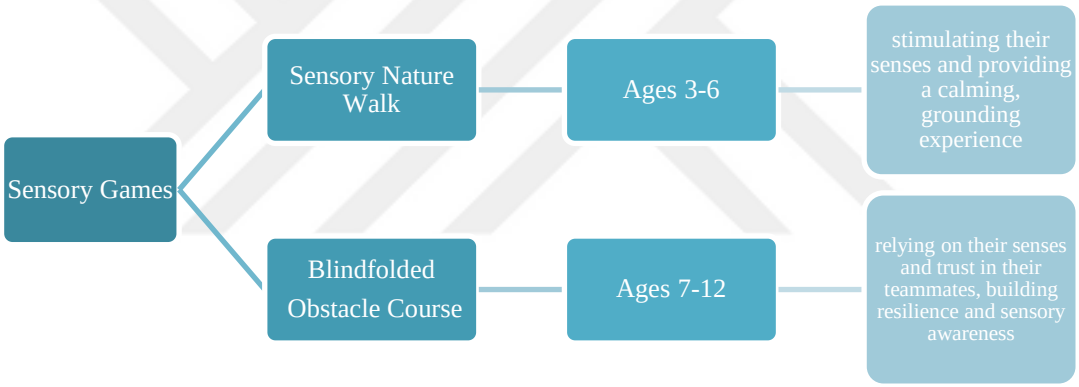


Figure 4.9 : Sensory games.

The effects and benefits of these games might be different for each kid. However, the important point is consideration of their personal needs, preferences, and caring developmental stage. It's essential to be guided by professionals or trauma specialists in different circumstances.

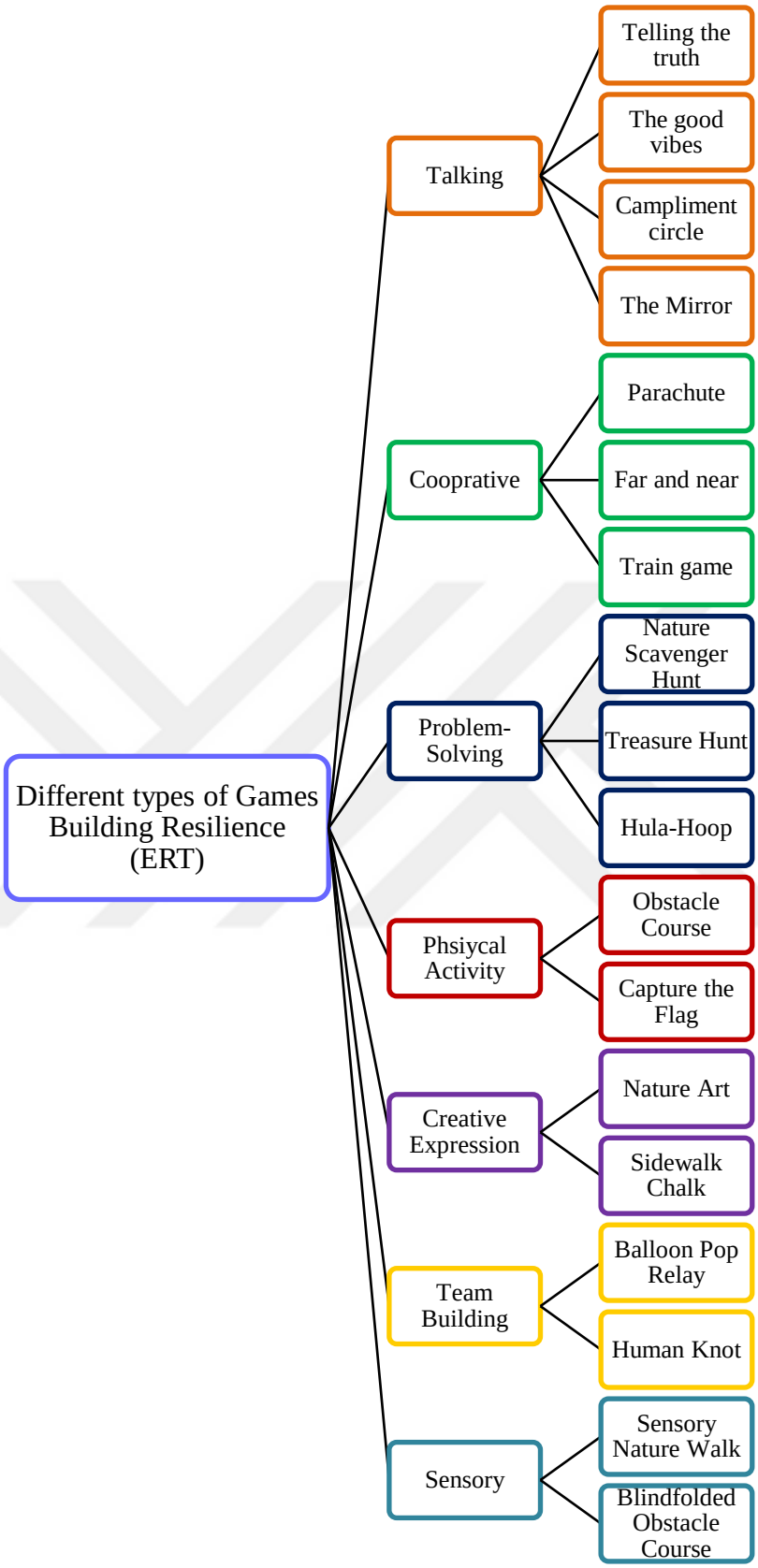


Figure 4.10 : Different types of Games for building resilience.

5. CONCLUSION

This thesis explores the concept of playful learning landscape playgrounds in post-disaster areas. The study examines the different types of educational playgrounds and those that are suitable for disabled children. It considers the features and characteristics of playgrounds and educational fields that are suitable for different people in society, fostering communication among them. The researcher aims to create a guide for designing educational playgrounds that are suitable for all children and for society after a disaster and in hard conditions and times. Moreover, this project assists designers in critical conditions such as disaster areas, taking into account the characteristics and structural features of a playful learning landscape. The researcher has investigated all the conditions that contribute to transforming a playground into an educational and entertaining environment (PLL). By studying the features and characteristics of 42 playful learning landscape projects, the researcher aimed to better understand the playful learning landscape and provide comprehensive guidance for designing playgrounds in critical situations and post-disaster scenarios such as earthquakes. The survey focused on the characteristics of playgrounds suitable for examining playgrounds in critical conditions. The researcher has analyzed the characteristics of playful learning landscape playgrounds and identified different game groups that have an impact on children after disasters or unavoidable traumas. These game groups are identified based on their impact on children's physical, cognitive, and social-emotional development. By examining each group's impact, children can be encouraged to play these games according to the available space. Playing these games can have a positive effect on children's resilience, strengthening their cognitive, physical, and socio-emotional indicators in critical situations. Proper play and education can help children overcome the trauma of natural disasters such as earthquakes. The focus of this project is on game groups that promote feelings of empathy, responsibility, and teamwork. This thesis can serve as a guide for designing open play spaces and creating playful learning landscapes in post-disaster settings such as earthquakes. The project focuses on utilizing learning landscapes and playful learning in the areas and urban public spaces affected by the post-disaster. Through

completed research, this project aims to comprehend the critical requirements of the impacted children and their caregivers. The goal is to create playgrounds in public urban spaces that foster the resilience of children who play in an environment related to playful learning. Finding a safe and suitable public space for children's playgrounds is challenging, and in disaster areas, there are more challenges to bear. The objective is to design a playground that can be easily transported and set up in different locations to reach as many children as possible, or even use material that easily changes as children want it. The proposed games for the playful learning landscape and mobile playgrounds will be based on principles of landscape architecture, urban education, and learning skills. Children can play and study in a stimulating atmosphere with the help of this, fostering resilience and promoting the seven Cs of outdoor play space. The guide incorporates features that focus on the particular requirements of the affected youths, such as sensory play areas, quiet spaces for reflection, and opportunities for social interaction. These guides serve as valuable resources for future implementation and replication of similar initiatives. In conclusion, the project aims to study the characteristics of PLL to have a profound impact on the growth of youths during play in suitable playgrounds affected by post-disaster. By combining thorough research, the project seeks to create a guideline of features and characteristics for a resilient and adaptable learning landscape that facilitates healing and promotes well-being among the affected children.

As part of a research project, the first stage involved investigating the Hatay earthquake area in Turkey, which was devastated by an earthquake on February 6th. However, due to the time constraints of the project and limited access to disaster areas, the researcher was unable to obtain sufficient information from the region. Additionally, playgrounds with playful learning landscapes created after natural disasters were not available for sample examination, and there was not enough information about them. Therefore, the goal of designing playful learning landscape playgrounds for post-disaster areas has been moved to the future of this project. The limitation of time and information about these earthquake-affected areas is insufficient for the design of the project within the project's timeframe.

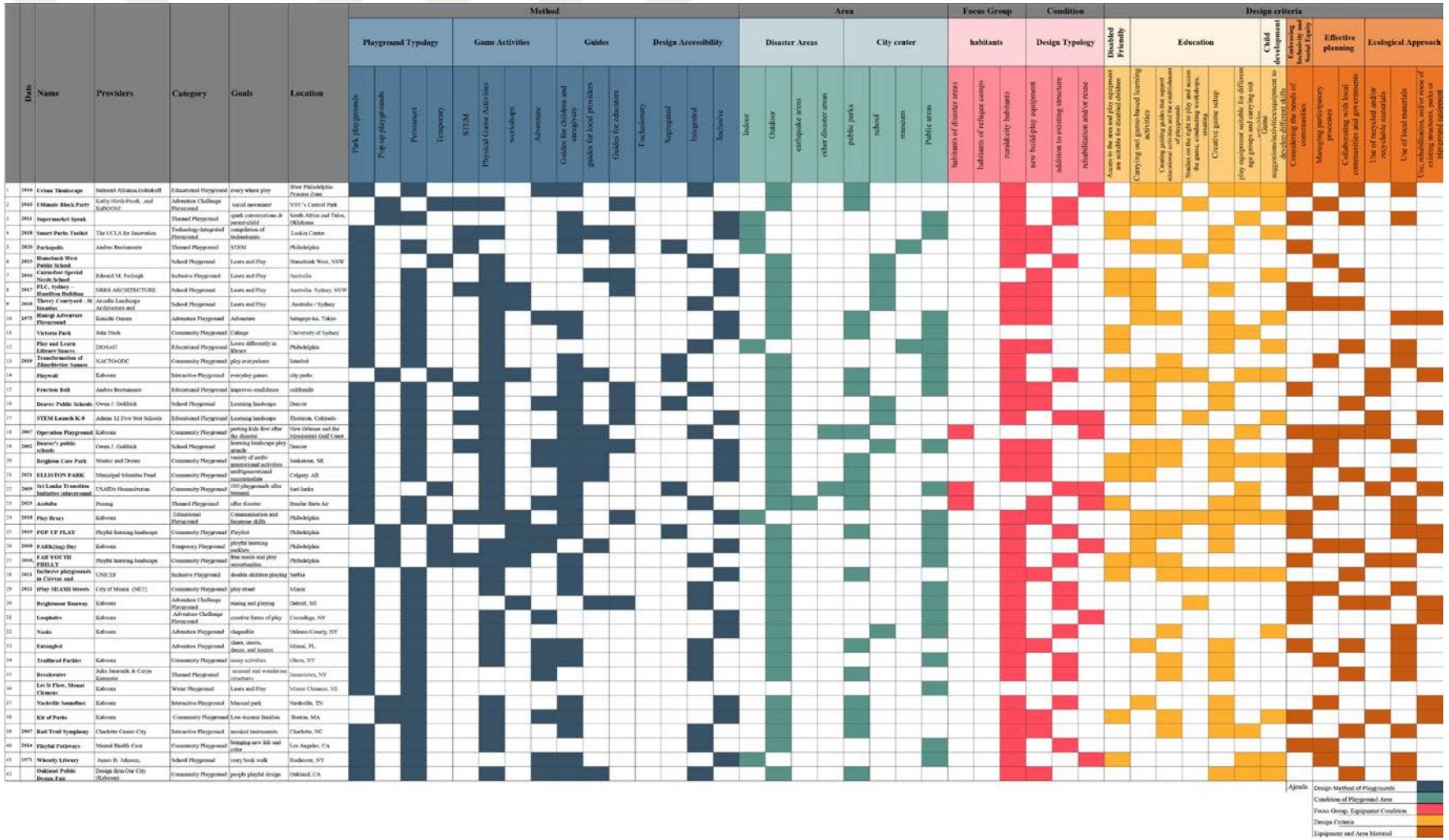


Figure 5.1 : Case Studies of Learning Landscape's Playgrounds.

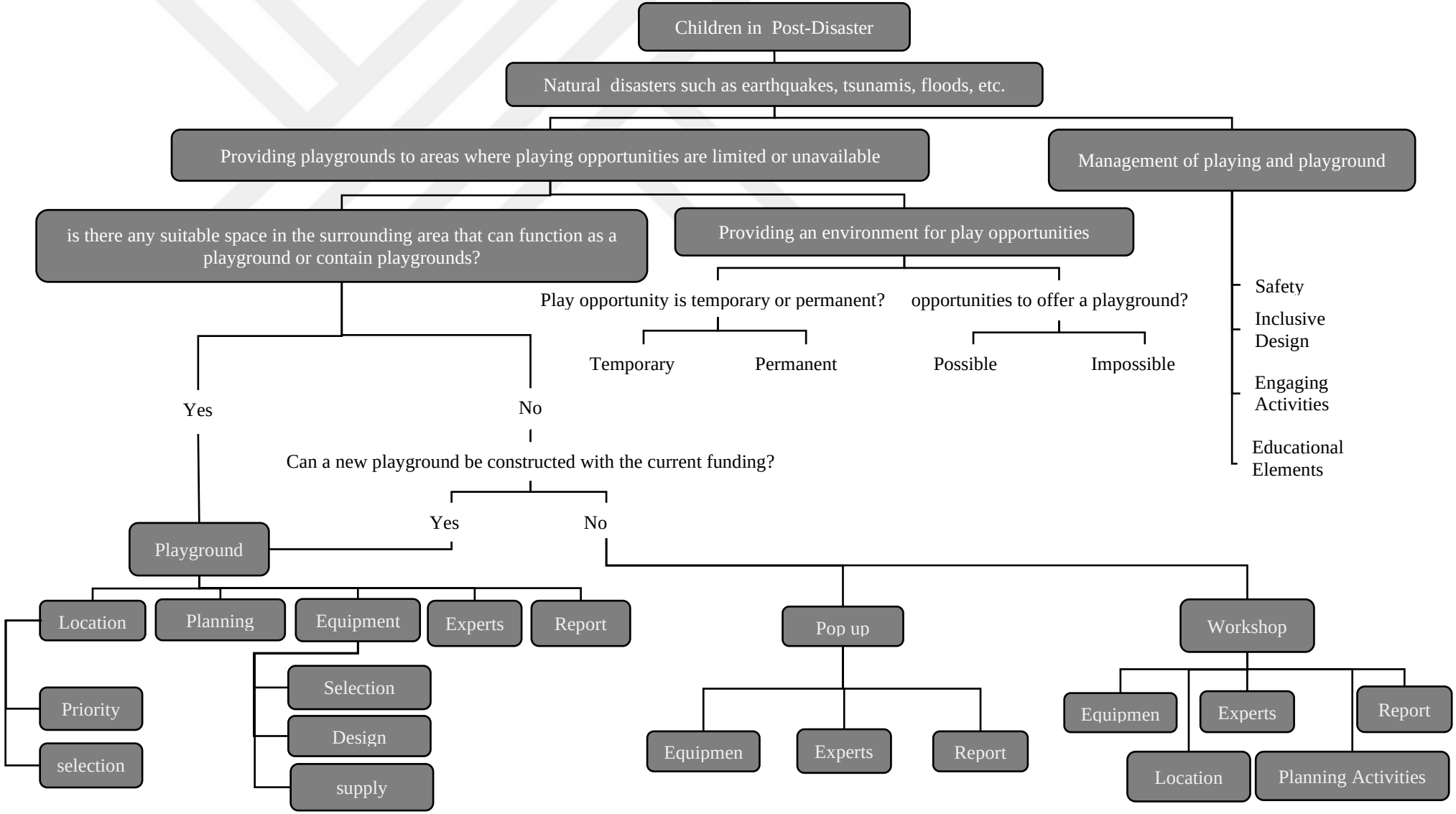


Figure 5.2 : Playground and learning space evaluation in post-disaster areas.

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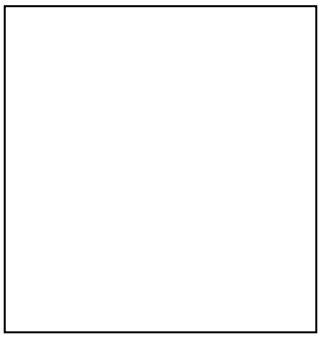
CURRICULUM VITAE



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