

Together: Design guidelines for intergenerational playgrounds

by

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A REPORT

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Abstract

Play is done for joy, as an escape from everyday activities. Not only is play fun, but it also provides participants of all ages with social, emotional, and physical benefits that can last for a lifetime (Rainwater, 1922; Gray, 2017). Playgrounds are a facilitator for play, allowing users to participate in various activities that encourage an active lifestyle and mental wellness (Frost, 2009). In the United States however, public playgrounds are typically designed for specific age groups. The compartmentalization of playgrounds by age group separates users of different generations. Yet, intergenerational connections are essential for strong social equity in communities. Connecting users across generations minimizes hurtful generation-based stereotypes that cause a social divide (Washington et al., 2019). Intergenerational playgrounds can offer play spaces that are welcoming to all ages and provide an opportunity to bring generations together through physical acts of play. Currently, there is minimal research specific to intergenerational playgrounds however, and no known design guidelines that seek to connect people across generations. This research project aims to fill that gap by generating design guidelines and an activity guide for intergenerational playgrounds. To inform the proposed intergenerational playground design guidelines, a review of existing design guidelines related to playground design and intergenerational connections was conducted, along with interviews of subject matter experts. A review of physical fitness recommendations was utilized in combination with precedent studies to understand playground activities and their physical and developmental benefits to each age group. Physical fitness recommendations and precedent studies of playground activities led to the creation of a program activities guide, defining ten playground activities that provide intergenerational connections through physical acts of play. To illustrate the application of the design guidelines and playground activities guide, a projective site design was created for an intergenerational playground at the Martin Luther King Jr. Square Park in Kansas City, Missouri. The projective design shows how a proposed intergenerational playground can provide a space that connects multigenerational users through physical acts of play.

TOGETHER



Design Guidelines for Intergenerational Playgrounds

Mikala Fitzgerald
2021

ABSTRACT

Play is done for joy, as an escape from everyday activities. Not only is play fun, but it also provides participants of all ages with social, emotional, and physical benefits that can last for a lifetime (Rainwater, 1922; Gray, 2017). Playgrounds are a facilitator for play, allowing users to participate in various activities that encourage an active lifestyle and mental wellness (Frost, 2009). In the United States however, public playgrounds are typically designed for specific age groups. The compartmentalization of playgrounds by age group separates users of different generations. Yet, intergenerational connections are essential for strong social equity in communities. Connecting users across generations minimizes hurtful generation-based stereotypes that cause a social divide (Washington et al., 2019). Intergenerational playgrounds can offer play spaces that are welcoming to all ages and provide an opportunity to bring generations together through physical acts of play. Currently, there is minimal research specific to intergenerational playgrounds however, and no known design guidelines that seek to connect people across generations. This research project aims to fill that gap by generating design guidelines and an activity guide for intergenerational playgrounds. To inform the proposed intergenerational playground design guidelines, a review of existing design guidelines related to playground design and intergenerational connections was conducted, along with interviews of subject matter experts. A review of physical fitness recommendations was utilized in combination with precedent studies to understand playground activities and their physical and developmental benefits to each age group. Physical fitness recommendations and precedent studies of playground activities led to the creation of a program activities guide, defining ten playground activities that provide intergenerational connections through physical acts of play. To illustrate the application of the design guidelines and playground activities guide, a projective site design was created for an intergenerational playground at the Martin Luther King Jr. Square Park in Kansas City, Missouri. The projective design shows how a proposed intergenerational playground can provide a space that connects multigenerational users through physical acts of play.

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PREFACE

This project builds on work completed for the LAR 705 Master's Project Studio in Fall 2020. The studio focused on Martin Luther King Jr. Square Park in Kansas City, Missouri and was a part of the national Landscape Architecture Foundation's Green New Deal Superstudio.

Martin Luther King Jr. Square Park (MLK Park) is a 42-acre site along the Brush Creek Greenway, located in a historically redlined area of KCMO. The park site currently offers tennis courts and a crumbling parking lot. Community members have shown genuine interest in improving the site, offering a range of interventions.

In late September, the KCMO Parks & Recreation Department issued a Request for Proposal (RFP) to implement a destination playground at MLK Park. During the studio, the students responded to the RFP, but went beyond to illustrate how the entire park could be updated to provide the community with a much needed amenity, and not just a playground.

During the design process, students worked with local stakeholders to understand community needs. The final outcomes for the studio project include, a park master plan, an activation strategy, an event program schedule, and a funding & management plan. The final master plan proposed a playground space for the community to play, gather, and connect within, but a detailed site design was not proposed. Thus, this research project focuses on furthering the design to show how the space can become an intergenerational playground where all people can collaboratively participate in play activities.



1

INTRODUCTION

INTRODUCTION

What is play and why is it important? Play is most often defined by a person's motives and attitudes toward an activity, rather than the activity itself. To be considered play, the activity should not be an everyday task, but rather an activity done with no goal or reward beyond play itself (Rainwater, 1922; Gray, 2017). Beyond pure enjoyment, play provides participants with various social, emotional, and physical benefits. The act of play is beneficial to all ages by promoting social interactions and physical activity that can be linked to positive outcomes throughout life (Frost, 2009; Kellert, 2015). Playgrounds are designated spaces that promote play and physical activity. At playgrounds, physical activity utilizes different muscles, which can meet physical fitness needs of various age groups in different ways. Playgrounds also provide a space for social interactions. Playgrounds in the United States are highly restricted by concerns for safety, which results in separate areas for designated ages. Most playgrounds are designed for children between the ages of 5 to 12, thus minimizing users and benefits for anyone outside of that age range (Rosin, 2014). However, age mixing can be beneficial. Studies have shown that mixing people of various ages and generations benefited those individuals, and participants were seen to advance faster and become more caring and understanding (Gray, 2017; Washington et al., 2019). Cross-generational interactions can also help to minimize generation based stereotypes.

WHAT IS AN INTERGENERATIONAL PLAYGROUND?

Current research on intergenerational playgrounds is limited, with no common definition. Many of the playgrounds considered to be “intergenerational,” are focused singularly on the elderly or on children, and they do not intentionally seek to increase connections and communication between different generations. The term “intergenerational” refers to interactions among people of different generations, while the term “playground” refers to an outdoor space designed specifically for play and recreation that often includes special equipment and nodes for designated activity (Brownell & Resnick, 2005; Definition of Playground, n.d.; Hamler, 2019). For a playground to truly be intergenerational, and benefit all, physical and social opportunities should span across age groups (Link, 2017). The challenge for playground design, is to move away from the traditional idea of a playground as a space where caregivers watch children play, to a space where caregivers play alongside their children. In this project and report, the term “intergenerational playground” refers to outdoor spaces intentionally designed for play and social interactions across different generations. Intergenerational playgrounds consider play to be ageless and thus create spaces and opportunities where all people can collaboratively participate in play activities (Link, 2017).

SIGNIFICANCE

This project’s primary focus is to provide more information about intergenerational playgrounds with the goal of connecting people across generations through physical acts of play. By connecting people across generations through common physical acts of play, intergenerational playgrounds will provide users with a space that is welcoming to all and encourages intergenerational connections. Connecting across generations can minimize negative perceptions and generation based stereotypes (Washington et al., 2019). Intergenerational playgrounds can provide opportunities for physical and social health benefits to people of all generations within a space where everyone is welcome. This project builds on existing research and defines design guidelines and playground activities for the development of intergenerational playgrounds, which can foster connections and provide physical and social health benefits, to all users.

DILEMMA

Playgrounds in the United States have evolved since the early 1900s to be minimal risk, which is achieved in part by dividing play activities into age specific categories catering to infants, toddlers, and adolescents separately (Frost, 2004). Many playgrounds are unwelcoming to people outside the designated age range, thus limiting play opportunities and interactions across ages (Talarowski, 2017). Minimal interactions between different generations can lead to stereotypes and misunderstandings, which can be hurtful and have negative impacts on community relations (Washington et. al., 2019).

Currently, there is a growing interest in playgrounds becoming more inclusive, meaning they are accessible to all ages and abilities (Playcore, 2016); Yet many of the guidelines for inclusive playgrounds focus on designing just for children. The concept of intergenerational playgrounds has begun to gain popularity in other countries like China, Spain, and Finland. However, current research on intergenerational playgrounds is limited and built examples tend to focus only on the elderly or children, and they do not intentionally support connections and communication across generations (Lusinski, 2015). But playgrounds, if intentionally planned and designed to support intergenerational play, have the potential to be multi-beneficial across generations.

RESEARCH QUESTIONS & OBJECTIVES

- **How can playgrounds be designed to meet the physical activity needs for users of all ages through acts of play that encourage interaction across generations?**
 - Identify physical activity needs of each age group
 - Define types of activities on a playground and analyze them through the lenses of physical activity and play
 - Determine how physical activity needs compare to the activities that occur on playgrounds
 - Discover ways of connecting ages with physical fitness
- **How can intergenerational playground design guidelines inform the creation of a playground at Martin Luther King Jr. Square Park in Kansas City, Missouri?**
 - Understand the MLK Park site and community needs
 - Provide design guidelines and playground activities for planners, designers, and communities to utilize when implementing future intergenerational playgrounds

PROJECT OVERVIEW

This research project proposes design guidelines and playground activities for the creation of intergenerational playgrounds. To inform the development of the intergenerational playground design guidelines and suggested playground activities, the methodology included a review of existing guidelines, interviews of subject matter experts, a review of physical activity recommendations, and precedent studies (Figure 1.01). Findings were applied through a projective design of an intergenerational playground at the Martin Luther King Jr. Square Park in Kansas City, Missouri, thus demonstrating the use of the design guidelines and playground activities.



Figure 1.01 - Research Process Diagram



2

BACKGROUND

INTRODUCTION

A literature review was conducted to reveal gaps in knowledge about intergenerational playgrounds, and to help identify opportunities for future intergenerational playground design. Topics reviewed included: history of play, decline in play, developmental, social, & physical needs of different age groups, health & wellness, types of physical activity, types of play, and types of playground activities.

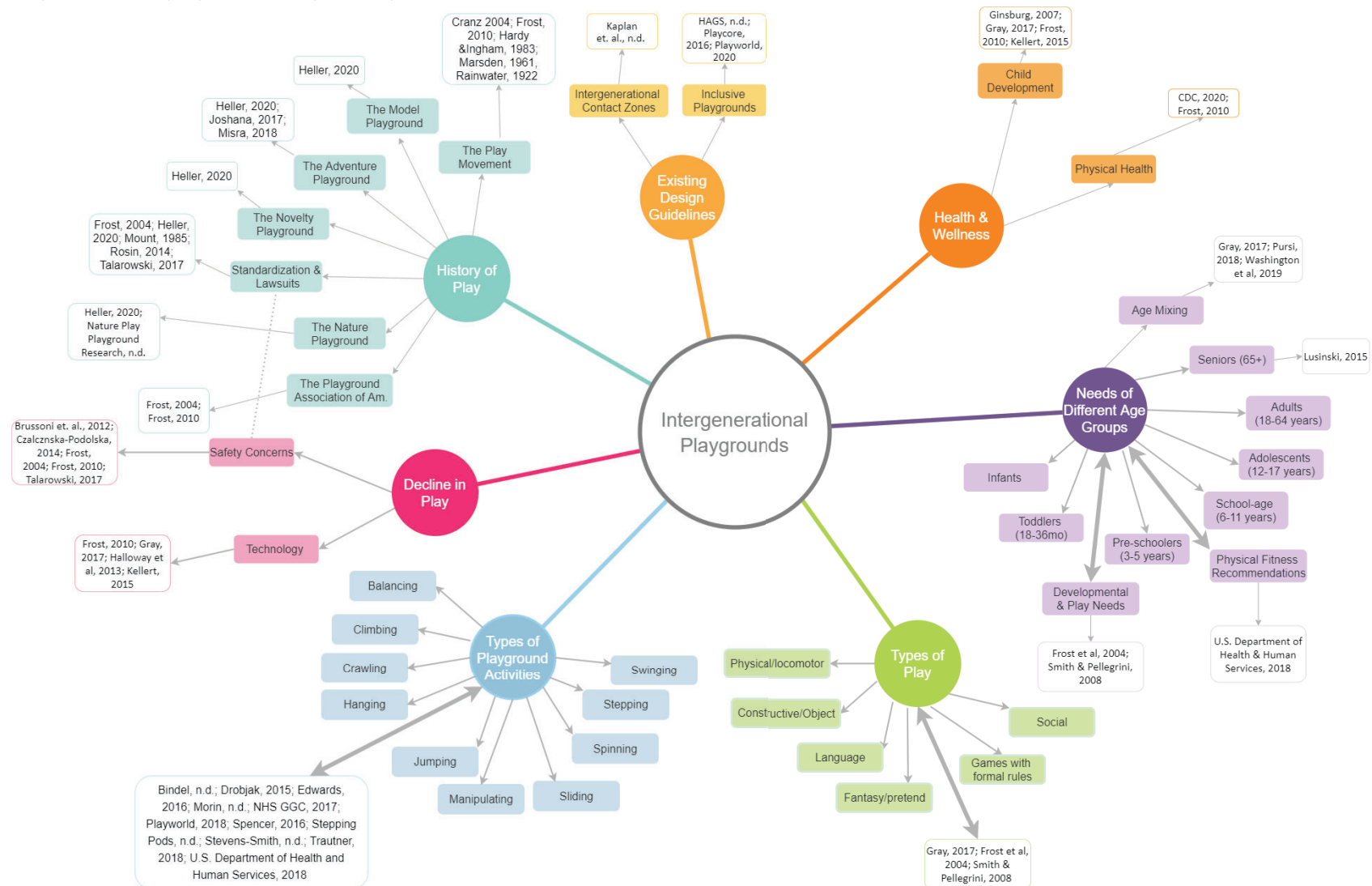


Figure 2.01 - Literature review diagram

WHAT IS AN INTERGENERATIONAL PLAYGROUND?

As defined in the previous chapter, this project uses the term “intergenerational playground,” which refers to an outdoor space intentionally designed for play and social interactions across different generations.

The terms “intergenerational” and “multigenerational” have been used semi-interchangeably regarding playgrounds, with multigenerational being used more often. Many of the examples referred to as being multigenerational describe spaces that can be used by all generations, but they are often designed with only one age group in mind. Multigenerational playgrounds first emerged in China after the country passed a physical fitness law that encouraged fitness for the elderly (Forrester, 2019; Link, 2017). The first known official multigenerational playground was built in China in 1995. This playground gained attention from many European countries, which began implementing similar playgrounds in the early 2000’s (Forrester, 2019). Multigenerational playgrounds have become more prevalent in recent years, gaining popularity in Asia and Europe (Link, 2017; Lusinski, 2015). Finland was one of the first countries outside of China to implement this type of playground. In 2003 Finland built multigenerational playgrounds to study the benefits (Forrester, 2019).

Intergenerational playgrounds, different than multigenerational playgrounds, are designed around the idea that play is ageless and that all people should have access to play equipment (Link, 2017). In Asia and Europe, intergenerational-type playgrounds often consist of low-impact exercise equipment geared toward seniors to benefit their social and physical well-being. These playgrounds are designed primarily for older adult exercise and do not offer play equipment. But, these playgrounds can still be used by people of all ages, providing fun for the whole family (Lusinski, 2015). In the United States, adding exercise stations for adults and seniors within public parks has become increasingly popular. Intergenerational playgrounds are often designed in conjunction with play areas for children so that multiple ages are catered toward within several areas of the park (Cournoyer, 2012; Forrester, 2019; Lusinski, 2015).

HISTORY OF PLAY

Knowing the history of playgrounds in the U.S. can help explain how the evolution of playground design has led to the common separation of ages seen in playgrounds today. The timeline below shows the stages of playground development in the U.S., beginning with the sand gardens and ending with the emergence of nature playgrounds (Figure 2.02). In the U.S., playgrounds began as a movement in Boston from the 1870s through the 1910s. After the initial playground movement, playground design began to evolve over the next century.

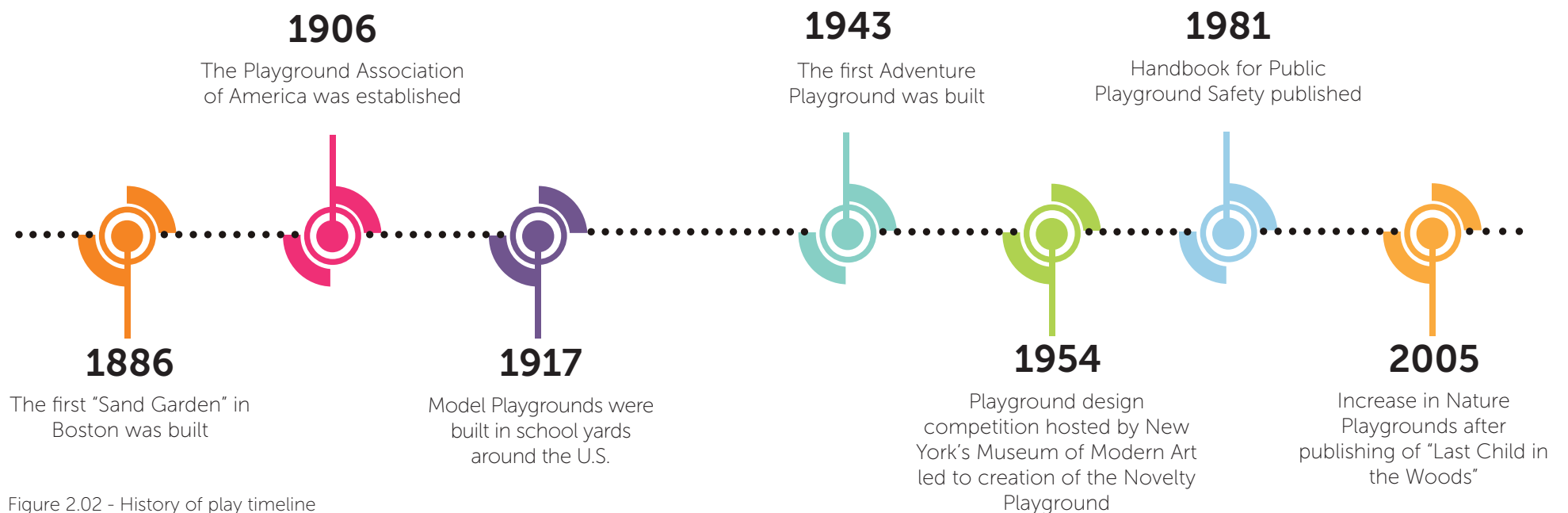


Figure 2.02 - History of play timeline

THE PLAYGROUND MOVEMENT

The Playground movement originated in Boston stemming from a critical need for open space (Marsden, 1961; Rainwater, 1922). As the city urbanized, people became removed from open recreational areas, and children's play spaces began to disappear. By the 1870s, there were no longer centralized playgrounds, and children began to play in the streets, increasing delinquency and crime in young people (Marsden, 1961; Rainwater, 1922). Playgrounds emerged in Boston in 1885 to respond to needs for safe spaces dedicated to children (Frost, 2010; Hardy & Ingham, 1983; Marsden, 1961; Rainwater, 1922). These playgrounds were built by the Massachusetts Emergency and Hygiene Association, which had formed a year earlier. The association copied the idea of sand gardens after seeing sand piles in the public parks in Berlin. In 1885, three lots were used to create 'sand gardens'. The following summer, ten more 'sand gardens' were built (Marsden, 1961). Before the sand gardens, people did not have many physical areas for social organization to partake in play (Rainwater, 1922). By 1887, it was clear that these spaces provided health benefits and reduced child crime rates. The next summer, the Massachusetts Emergency and Hygiene Association gained permission to open and maintain seven school playgrounds (Marsden, 1961). A significant outcome of Boston's sand gardens was the formation of the playground association in 1906 (Frost et al., 2004).

During the playground movement, play became a higher priority within cities and went through many stages. From 1905 to 1912, cities were focused on recreation and providing opportunities to gather and perform and provide sporting fields (Frost, 2010). From 1912 to 1914, the focus shifted to "civic art and welfare". This stage focused on organizing play within communities through commercial amusement. This included festivals, concerts, dancing, and more. By 1915, many cities created ordinances to stipulate play

and amusement within their cities (Frost, 2010; Rainwater, 1922). After the "civic art and welfare" stage, the "neighborhood council" stage emerged, strengthening during the "community service" stage in 1918. The "community service" stage focused on World War I by creating "physical, social, aesthetic, constructive and civic programs." This stage overlapped with the "neighborhood council" stage, which organized many programs for individual neighborhoods. Along with the community service aspects, the neighborhoods created recreation centers for their communities (Frost, 2010; Rainwater, 1922). Ideas of play and parks continue to change with each new generations' view of how play can benefit cities and people (Cranz, 2004). After the playground movement, other forms of playgrounds have begun to emerge.

THE PLAYGROUND ASSOCIATION OF AMERICA (PAA)

In 1906, research and safety concerns led to the founding of the Playground Association of American (PAA). This group went through many name changes before becoming the National Recreation and Park Association (NRPA) in 1966 (Frost et al., 2004; Frost, 2010). With the change in 1966, the association shifted focus to recreation, encouraging playground safety and commercial play equipment (Frost et al., 2004).

THE MODEL PLAYGROUND

During President Theodore Roosevelt's time in office, he supported the idea of playgrounds, promoting public playgrounds with specific guidelines laid out by The Playground Association of America. These standards suggested play equipment that were considered to be the ideal playground. The equipment suggested often utilized galvanized steel, which was now available due to the industrial revolution. By 1917, these playgrounds were seen across the US; However, in the 1930s, playground production was minimized, and maintenance was limited due to the Great Depression and World War II (Heller, 2020).

THE ADVENTURE PLAYGROUND

After World War II, children in Europe began playing with materials left from bombing sites. Children used found materials to create, explore, and build. This idea led to the first adventure playground, opened in the 1940s, and encouraged by a landscape architect, Mary Allen, who petitioned for London's new space (Heller, 2020). Adventure playgrounds are based around the idea of risky play, creating various learning opportunities for children to learn about what they can do in an environment with calculated risks (Misra, 2018). These 'playgrounds' provide tools and opportunities that lead to learning through exploration, utilizing materials from wood to found household objects, offering a wide range of activities and materials (Heller, 2020; Joshana, 2017; Misra, 2018). Adventure playgrounds are also known as 'junk playgrounds' since they are often full of items that kids can explore and manipulate (Joshana, 2017). It is found that though these spaces have a higher risk, children tend to be more careful than they would be in a standardized playground, where they often create situations for risk (Misra, 2018). In the U.S., adventure playgrounds are less common due to concerns and legal safety issues (Heller, 2020; Joshana, 2017; Misra, 2018).

THE NOVELTY PLAYGROUND

In 1954, playgrounds shifted to art-based play through the novelty playground. The Museum of Modern Arts in New York held a playground design competition in 1954, won by Virginia Dortch Dorazi. She used abstract art and design to create a playground conducive to open play and exploration of the play structures (Heller, 2020). This playground led to the use of open play and imagination as a primary aspect of playgrounds, creating more standardized playgrounds that were sculptural, promoting fantasy and imagination using play equipment designed to be rockets, spaceships, robots, and more (Heller, 2020). The Novel Playground was the beginning of standardized equipment and firms that began to specialize in playground design. Before this time, equipment was built or assembled from kits (Heller, 2020).

THE STANDARDIZED PLAYGROUND AND PLAYGROUND LAWSUITS

Playgrounds in the US have become increasingly standardized, especially during the 1980s. This was primarily due to multiple lawsuits, costing cities and manufacturers millions due to injury (Heller, 2020; Rosin, 2014). One of the substantial cases in this movement was settled in 1985 regarding a two-year-old boy who fell from the top of a 12-foot-tall tornado slide in Hamlin Park in Chicago. In 1975, the boy and his mother climbed to the top of the slide, where the two-year-old fell through the bars to the asphalt below, cracking open his head and sustaining brain damage, paralyzing the left side of his body, causing lifelong injury (Heller, 2020; Mount, 1985; Rosin, 2014). The family won a settlement of 9.5 million dollars to pay medical bills. The settlement was paid out by the park district and two private companies involved in the playground and play equipment design. This lawsuit led to the reevaluation of playground equipment in Chicago and the removal of all tornado slides, limiting slides to 6 feet in height (Mount, 1985; Rosin, 2014).

In 1981, the Consumer Product Safety Commission published standards for playground safety, widely accepted in the United States (Frost, 2004; Heller, 2020). These new standards and regulations began to regulate the size and height of equipment, as well as specifying guardrails and minimizing climbing. These standards began to look at safety in all aspects of play, creating guides for material, including plastic, splinter free wood, and coated metal (Heller, 2020). The Consumer-Product Handbook has gone through many revisions over the years, often revised by lawyers, engineers, and technical experts who focus on safety, with minimal knowledge of children (Rosin, 2014). Many playgrounds became plastic as manufacturing became cheaper and more manageable with pre-made molds and standard pieces that could be combined to create play structures (Heller, 2020). Due to the numerous lawsuits, new safety guides, and more efficient manufacturing, playgrounds in the United States became increasingly standardized. All new playgrounds by the 1980s and '90s were very similar (Heller, 2020). As these playgrounds became standardized, they became so similar that going to different playgrounds at different parks was not much different, always finding the same slides at the same heights attached to similar playground pieces and equipment (Rosin, 2014). These playgrounds became so similar that they are often considered boring to children, leading to more risky behavior using the playground equipment in unintended ways (Rosin, 2014; Talarowski, 2017).

THE NATURE PLAYGROUND

After the 1990s, when standardized playgrounds became popular, there was a significant effort to increase play opportunities for people of all abilities by using 'playscapes' (Heller, 2020). This term

came from a sculptor, Isamu Noguchi, who believed that playgrounds should use art and nature together to create play, bringing children closer to the natural environment (Heller, 2020). The Natural Learning Initiative is a group that was founded in 2000 to get children outside and interact with nature. This group focuses on the importance and benefits that nature provides to children, including diverse play opportunities, multiple learning opportunities, comfort, stimulation, and immune system benefits (Cosco, 2019).

Today, playscapes are often also known as nature playgrounds (Heller, 2020). The concept of nature playgrounds gained popularity after Richard Louv's 2005 book "Last Child in the Woods", in which he coined the term nature-deficit disorder. His book began to address the issue of children in today's world having minimal to no access to nature (Heller, 2020). Nature playgrounds have become widely popular in the United States due to the many static playgrounds that came out of the standardized playground era. In the United States, nature playgrounds have been the link between adventure and safety (Joshana, 2017). Nature playgrounds have been studied and found to be very beneficial and more engaging than the standardized playground (Heller, 2020; Nature Play Playground Research, n.d.). By combining built and natural elements, nature playgrounds can provide opportunities for new ways to explore and learn that are engaging. In recent years, the idea of nature playgrounds has expanded and is often used in combination with traditional playground equipment to create fun, safe, engaging, and environmentally friendly spaces (Nature Play Playground Research, n.d.).

DECLINE IN PLAY

In recent years, outdoor play has become less common due to increased parent safety concerns and increased use of media. In a modern world, parents feel safer giving a child technology instead of letting them play outside alone.

PLAYGROUND SAFETY

In the U.S., safety in play structures has been of significant concern due to the increase in lawsuits, specifically a case in 2004 that changed the safety standards of play equipment to include all playgrounds, whether natural or designed (Frost et al., 2004). These safety standards have led to the primary use of manufactured play equipment in playground designs to ensure safety standards are met. These spaces have become designed to eliminate risk and “dumb down” children’s play (Frost, 2010). In doing this, playgrounds have become primarily multi-colored structures that do not engage or stimulate children or social activity (Czalcznaska-Podolska, 2014). Children often see these spaces as boring and become more likely to injure themselves by using the play structures in unintended ways to create risk (Talarowski, 2017).

SAFETY CONCERNS

In recent years, outdoor play has significantly decreased, in part due to parental safety concerns and the idea that children need structured activity (Brussoni et al., 2012). Media is a large contributor to increasing parent concerns by warning parents of the dangers of playing outside. Media has magnified fears of child abductions due to “stranger danger” lessons taught to children (Brussoni et al., 2012; Frost, 2010). Parent fears are often disproportionate to actual danger. A study of parents found that

many believed a child should be at least fourteen or sixteen before playing outside alone, leaving a minimal opportunity for outdoor play (Brussoni et al., 2012). Along with parent fears is the notion that parents should ensure children have the best possible opportunities. The parents then get too involved in their children’s activities, spending time transporting children between activities, often little time for unstructured play (Brussoni et al., 2012).

TECHNOLOGY INCREASE

Technology use has increased significantly for young children since the late 2000s, especially for toddlers and preschoolers. Today, many applications target young children and child development, leading to increased technology usage (Halloway et al., 2013). Parents have begun to support the use of technology and indoor play, seeing it as a safe and structured play alternative (Kellert, 2015). Though online play has shown many developmental benefits, indoor play options limit physical fitness activity and development. Safety is another factor to consider for children of different ages when using the internet (Halloway et al., 2013). As a result of parental fear, children spend more time indoors than ever before, with eight to eighteen-year-olds spending an average of 52 hours a week using electronics (Gray, 2017; Kellert, 2015). As play declines, young adults’ mental and social well-being has also declined, posing the idea that play is a major factor in mental stability (Gray, 2017).

The increased use of electronics for learning and play follows similar trends to the end of the twentieth century, which favored cyber play over traditional play opportunities within schools. With the decline in outdoor play, children’s health and fitness began to decline as well (Frost, 2010). In 1956, American children ranked lower than European children in fitness, causing President Dwight D. Eisenhower to create the President’s Council on Youth Fitness (Frost, 2010).

DEVELOPMENTAL, SOCIAL, & PHYSICAL NEEDS OF DIFFERENT AGE GROUPS

Each age group has different needs that are important to understand when designing a play space that is beneficial to all. The following categories are divided into age groups based on the information available regarding play, development, and physical fitness recommendations. Children develop at a fast pace, changing every few years, while adults do not have as many drastic developmental changes. Because of the difference in development, the age groups are divided unevenly.

INFANTS (0-18 MONTHS)

Infants are often overlooked in play environments; however, they benefit significantly from play, utilizing, and learning motor skills through object play (Frost et al., 2004; Smith and Pellegrini, 2008). Young children benefit most from exploration and senses, including equipment that makes sound, entry and exit opportunities, climbing opportunities, and objects that can be moved and manipulated are best for infant development (Frost et al., 2004).

TODDLERS (18-36 MONTHS)

Toddlers are beginning to play in new ways, including starting to play pretend. At this stage, they are still utilizing objects to play and enjoy using various play features that stimulate the senses and allow a range of movement (Frost et al., 2004; Smith and Pellegrini, 2008). Children are beginning to use language to play at this age, often talking to themselves and playing by themselves or near others with minimal engagement (Smith and Pellegrini, 2008).

PRE-SCHOOLERS (3-5 YEARS)

Preschoolers are now partaking in social play and need opportunities to connect with peers to benefit future development. At this age, they use language play and pretend play to communicate with others and create scenarios where they are more interactive (Frost et al., 2004; Smith and Pellegrini, 2008). During this time, they also learn more fundamental movements and should have opportunities for challenge through free play options (Frost et al., 2004). To benefit physical health, preschool-aged children should be participating in physical activity that benefits bone strengthening, muscle strengthening, and aerobic activity. This can be accomplished through structured play, including bike riding or activities like hopping and jumping (U.S. Department of Health and Human Services, 2018).

SCHOOL-AGERS (6-11 YEARS)

School-age children are highly active and social. There should be many physically challenging and stimulating activity options available for this age group while also providing social opportunities. This age group is the peak age for exercise play (Frost et al., 2004; Smith and Pellegrini, 2008). During this time, children are also involved in many sports and games with rules; thus, open sporting fields and space for these types of games should be available (Frost et al., 2004). School-aged children should be doing similar activities as preschool-aged children to increase bone and muscle strength along with aerobic activity. There are different types of activities for this age group that may be more challenging and beneficial; however, there is also overlap in activities such as hopping and jumping. For this age group, it is recommended to be active for at least 60 minutes each day to stay healthy (U.S. Department of Health and Human Services, 2018).

ADOLESCENTS (12–17 YEARS)

Physical activity needs for adolescents is very similar to the physical activity needs of school-aged children. In this stage, it is still important for adolescents to be getting at least 60 minutes of activity daily, including bone-strengthening, muscle strengthening, and aerobic activities (U.S. Department of Health and Human Services, 2018).

ADULTS (18–64 YEARS)

As defined by the U.S. Department of Health and Human Services, physical activity is outlined for adults ages 18 to 64 years old. It is important to note that within this age range, users have similar physical fitness needs and requirements; however, social and developmental requirements, along with activities of enjoyment, may need to be divided into smaller categories for more accuracy. Physical activity for adults has many health benefits. Adults are recommended to do two and a half to five hours of moderate-intensity activity each week or an hour and fifteen minutes to two and a half hours of vigorous-intensity activity each week. This activity can include things such as walking, biking, running, and anything that gets the heart rate up. Along with these activities, this age group benefits from muscle-strengthening activity. Keeping physically active during this age is important and can help carry out daily tasks and activities (U.S. Department of Health and Human Services, 2018). Play for older adults is beneficial for both physical and mental health.

SENIOR (65+ YEARS)

Play for seniors provides spaces for social opportunities to people that may not have family or friends that live nearby. Staying active is vital to feeling well and continuing to get up and going each day, mentally and physically (Lusinski, 2015). Seniors are recommended similar amounts of activity as adults are; however, all activity is beneficial. Being physically active as an older adult can make it easier to do daily living activities, including dressing, moving around the house, eating, and more. Physical activity for this age group is important, as it has shown that active older adults are less likely to fall and are often able to keep independence longer. Guidelines for older adults include doing balance and muscle-strengthening activities. These activities should be based on each individual's level of activity, knowing what they are personally capable of based on ability (U.S. Department of Health and Human Services, 2018).

BENEFITS OF AGE MIXING

There are numerous benefits in combining play across generations. Recently, age separation in play has become more common as children are separated by age for school. Historically, play was enjoyed by groups of kids with children of varying ages (Gray, 2017). When playing together, children of different ages learn from each other. The younger children advance quicker by playing and participating in activities above their usual ability level. Older children are seen to be more caring, leading, and protecting after teaching younger children new activities (Gray, 2017).

Though there is less research about play between adults and children, it has been found that adults who spend time with children are better able to understand child needs and wants (Pursi, 2018). Spending time with people of different generations can also promote positive relationships and improve overall well-being (Washington et al., 2019). Today, there are many stereotypes related to different generations, creating bad feelings and negative perceptions between them. These stereotypes come from media portrayals that are not always correct and can cause problems among neighbors. By spending time with different generations, people can begin to understand each other and create a community based on mutual understanding (Washington et al., 2019).

HEALTH & WELLNESS

Playgrounds provide physical and cognitive benefits that carry through life. For children, playgrounds provide many physical, social, and emotional health benefits that correlate with developmental milestones. Play also provides a space for physical fitness, which is necessary for people of all ages. Habits created through play will carry into adulthood and leads to healthier lives. Providing physical fitness for people of all ages is necessary to ensure that everyone has the opportunity to be healthier.

CHILD DEVELOPMENT

Play provides multiple child development benefits, improving cognitive, physical, social, and emotional well-being (Ginsburg, 2007; Frost, 2010). Play environments promote the use of new skills and functions for children and encourage them to try new things in a space where they can make mistakes without fear of punishment (Ginsburg, 2007; Frost, 2010). Through play, kids learn skills necessary for life, along with cultural skills and ideas (Gray, 2017). Play environments enable children to express themselves while trying new activities that improve their fine and gross motor skills (Frost, 2010). Free play encourages kids to be creative and uses their imaginations. As children explore, it stimulates children's sense of wonder and imagination, among many other adaptive responses that encourage children to learn about the world they are in (Kellert, 2015). Free play also stimulates children to think and progresses brain development, increasing their ability to problem solve, negotiate, think creatively, cope with trauma, and socialize with peers (Frost, 2010).

As children begin to master new activities and techniques, they become more confident and resilient to challenges they will face in the future. By encouraging children to play freely and make their

own decisions, they can exercise their decision-making skills and determine activities they enjoy doing (Ginsburg, 2007). As children get older, they begin to create and play more complex games, teaching them new skills. More complexity in play draws on new ideas and can increase understanding of different cultures and beliefs (Frost, 2010). Contact with nature is seen as highly significant, as it has been shown to benefit children by increasing self-confidence, ability to work with others, and relationships with adults (Kellert, 2015). Skills learned through play are often directly beneficial to daily life and success in today's culture. Different forms of play teach children other skills. Social play is essential to increase connections and understanding among peers; this is a skill primarily learned through play and is carried through life (Gray, 2017).

Play is a large factor in the learning process, beginning in early childhood. Early childhood experiences are vital to childhood development. During brain development, neurons form connections through the brain; however, if neurons go unused, they die (Frost, 2010). A study done by Baylor College of Medicine found that "children who don't play much or are rarely touched develop brains 20 percent to 30 percent smaller than normal for their age" (Frost, 2010). This can significantly impact a child's future, determining the defining factors of who they are and how they learn (Frost, 2010).

PHYSICAL HEALTH

Physical activity is essential for people of all ages. It is never too late to begin being active. However, it has substantial benefits throughout life including, minimizing the risk of health complications, benefiting mental health, and improving the performance of activities needed for daily living (U.S. Department of Health and Human Services, 2018).

Studies have shown that 70 to 80 percent of children that struggle with obesity will continue to struggle with it throughout their life (Frost, 2010). Obesity as a child is also linked to accelerated health disorders and risks that often show up in adults (Frost, 2010). Spontaneous play and outdoor playgrounds are critical factors in physical activity, fitness, and health for children. Exercising during childhood is essential and seen to have lasting impacts, significantly impacting brain function that can influence future actions (Frost, 2010). By improving physical activity in children, we can cause lasting effects on their futures. Not only does physical activity benefit fitness and physical health, but it also prevents stress and mental illness (Frost, 2010).

In the U.S., obesity continues to rise for both children and adults. Since 2000, adult obesity has increased by more than twelve percent (CDC, 2020). When adults partake in the advised exercise each week, the benefits are significant, including many health benefits such as the lowered risk of coronary heart disease, type 2 diabetes, anxiety, depression, dementia, and more. Physical activity can also lead to a better quality of life, improved cognition, and better sleep. Some of these benefits can be seen temporarily after a single period of physical activity (U.S. Department of Health and Human Services, 2018). Some activities that have gained popularity in recent years include walking for lower intensity and lower risk options, yoga or tai chi which can range in intensity and be considered muscle strengthening and aerobic, and high-intensity interval training consisting of short periods of maximal effort exercise with less intense recovery periods (U.S. Department of Health and Human Services, 2018). It is recommended that adults who do not yet meet the recommended physical activity guidelines should ease into activity by beginning with lower intensity activity to minimize the risk of injury.

In seniors, physical activity and physical health are very different for each individual. Older adults often experience loss of physical fitness and function with age, meaning there is a diverse range of abilities within this category (U.S. Department of Health and Human Services, 2018). Keeping physically active provides social opportunities for this age group, who may not have as many friends or family living nearby (Lusinski, 2015, U.S. Department of Health and Human Services, 2018). As an older adult, physical activity can benefit physical health by managing existing health conditions, lowering the risk of dementia, and improving anxiety and depression. Seniors are often the most sedentary group. Being physically active can help get them moving and make it easier for this age group to perform daily living tasks. This can lead to seniors keeping independence longer (U.S. Department of Health and Human Services, 2018). Physical health is vital for all people to ensure that they can live life to the fullest and longest extent.

FINE & GROSS MOTOR SKILLS

Motor development is divided into gross and fine motor skills. Gross motor skills refer to skills that use large muscle movements, including jumping, walking, or sitting. Fine motor skills refer to skills that use smaller muscle movement, including holding or manipulating objects, grasping, or drawing (Gonzalez, 2019). Motor skills are important throughout life and are vital to being independent. Play engages motor skills and creates a way for children to practice and gain more confidence in the new skills they are learning (The Importance of Motor Skill Development, 2017). In studies of adults, it is found that motor skills are greatly affected by age. As people get older, their motor skills begin to decline. These studies have found that though performance is highly based on age, the gain of skills is not affected by age, and learning new skills is comparable across all ages (Voelcker-Rehage, 2008).

TYPES OF PHYSICAL ACTIVITY

There are six types of physical activity outlined in the “Physical Activity Guidelines for Americans,” by the U.S. Department of Health and Human Services (2018). These types (Figure 2.03) were referenced to determine the relationships between physical activity and playground activities presented in Chapter 4.

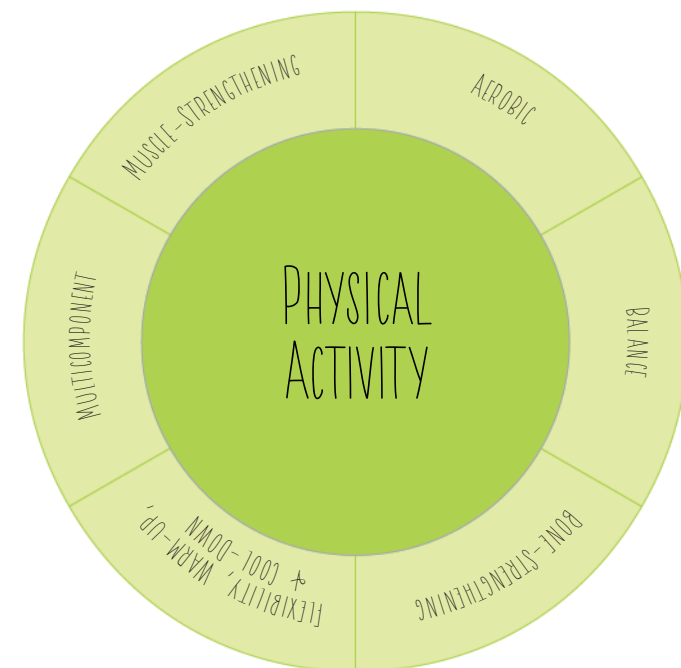


Figure 2.03 - Six types of physical activities as defined by the U.S. Department of Health and Human Services in 2018

AEROBIC ACTIVITY

Aerobic activity is also known as endurance or cardio activity. It includes “activities in which people move their large muscles in a rhythmic manner for a sustained period of time” (U.S. Department of Health and Human Services, 2018). This type of activity includes actions that require increased breathing rates and a more rapid heartbeat to meet the physical demands of the activity. This could include running, bicycling, dancing, swimming, and more. Aerobic activity is beneficial for increasing cardiorespiratory fitness, and is recommended for children, adults, and seniors. For children, aerobic activities are done in short bursts (U.S. Department of Health and Human Services, 2018).

BALANCE ACTIVITY

Balance activities can reduce the risk of falling caused by forces within or outside the body, which is especially important for seniors, who are at higher risk of injury during falls. Balance training exercises can improve daily living tasks, and include walking heel-to-toe, using a wobble board, and strengthening muscles of the back, abdomen, and legs (U.S. Department of Health and Human Services, 2018).

BONE-STRENGTHENING ACTIVITIES

Bone-strengthening activities are important for children. This type of activity occurs by creating a “force on the bones of the body that promotes bone growth and strength” (U.S. Department of Health and Human Services, 2018). Some examples include tennis, hopscotch, running, and jump rope.

FLEXIBILITY, WARM-UP, AND COOL-DOWN

Flexibility, warm-up, and cool-down activities are significant for adults and seniors. Warm-up and cool-down activities allow gradual increase or decrease of heart rate and breathing at the beginning or end of physical activity (U.S. Department of Health and Human Services, 2018). Flexibility activities enhance joint movement through a full range of motion. These types of activities may include ballet or salsa dancing. For older adults, flexibility, warm-up, and cool-down activities are important to maintain a full range of motion necessary for daily living (U.S. Department of Health and Human Services, 2018).

MULTICOMPONENT PHYSICAL ACTIVITY

Multicomponent activities are recommended for seniors to help reduce fall risk while also improving physical function. These types of activities are anything that includes more than one type of physical activity. This activity could include, but is not limited to, balance, muscle-strengthening, aerobic, coordination, or physical function training. These could be activities such as gardening, yoga, sports, and others (U.S. Department of Health and Human Services, 2018).

MUSCLE-STRENGTHENING ACTIVITY

Muscle-strengthening activity is an activity that increases bone strength and muscular fitness. “Muscle-strengthening activities make muscles do more work than they are accustomed to doing. That is, they overload the muscles” (U.S. Department of Health and Human Services, 2018). This can include using bodyweight for resistance, such as push-ups, climbing trees, or pull-ups, carrying heavy loads, such as groceries or heavy gardening, and structured or unstructured activity, including playing on playground equipment, tug-of-war, and use of resistance bands. Older adults are recommended to do these at least two days a week to maintain muscles of the legs, hips, chest, back, abdomen, shoulders, and arms (U.S. Department of Health and Human Services, 2018).

TYPES OF PLAY

Figure 2.04 lists the types of play that children engage in most frequently. The list has been derived from multiple sources.

Multiple types of play can occur simultaneously during a single play activity.

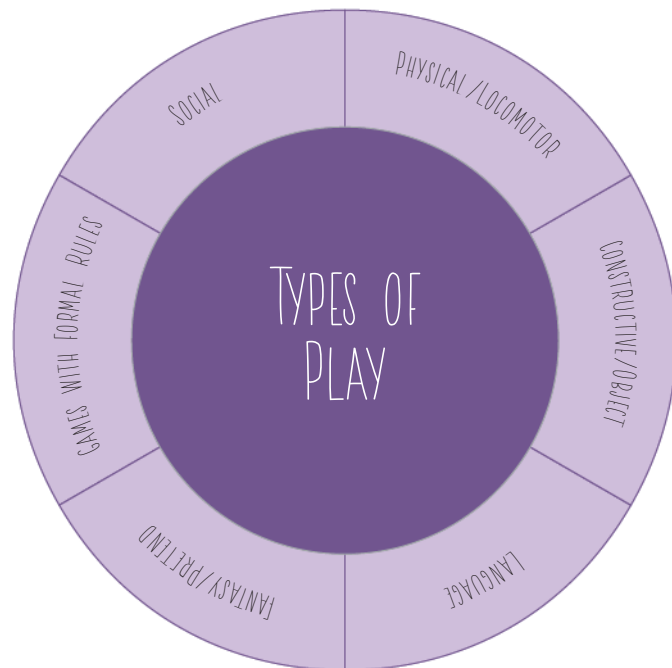


Figure 2.04 - Types of play derived from multiple sources

PHYSICAL / LOCOMOTOR PLAY

Physical or locomotor play is an active form of play, often involving strenuous or risky physical movement that increases strength, endurance, and skills. This type of play effectively promotes physical fitness and teaches children coordination (Gray, 2017; Smith et al., 2008). Different age groups experience this form of play differently, peaking in early elementary school ages (Smith et al., 2008).

CONSTRUCTIVE / OBJECT PLAY

Constructive or object play consists of play utilizing items, often used to build things (Gray, 2017). At young ages, this is mainly used to play with blocks or dolls, using them as objects to build or more often use as a form of pretend play (Smith et al., 2008). This type of play for older children can include artistic or musical play, through constructing utilizing intangible tools like sound and sight (Gray, 2017).

LANGUAGE PLAY

Language play differs widely across age groups. As infants, language play is often babbling or cooing for the sake of producing sound for joy. As older children use this form of play, it morphs into phrases, rhymes, puns, and other forms of speech for enjoyment and humor (Gray, 2017; Smith et al., 2008). Language play is often connected to culture and a child's native language (Gray, 2017). During the preschool years, language skills are fundamental (Smith et al., 2008). If used during adulthood, this form of play is often considered poetry (Gray, 2017).

FANTASY / PRETEND PLAY

Fantasy or pretend play is make-believe play, where children pretend actions or objects are something else (Gray, 2017; Smith et al., 2008). This type of play begins around 15 months with small activities and increases to become more involved with longer stories as children get older, eventually leading into play that includes other children (Smith et al., 2008). Fantasy play encourages inventiveness, deductive reasoning, and creative thinking and can even begin to benefit language development through symbolism during the creative play process (Gray, 2017).

GAMES WITH FORMAL RULES

Games with formal rules include activities where there is a verbally stated or written set of rules that each player knows and abides by during the game. This form of play follows logic and order and is often competitive in American culture (Gray, 2017). These games often need space and equipment (Frost et al. 2004). Playing games with formal rules is essential, showing children how to agree to specified restrictions, remember them, and follow them (Gray, 2017). Games with formal rules include football, tennis, freeze-tag, red rover, and others.

SOCIAL PLAY

Social play occurs when two or more children are playing together. This form of play coincides with other forms (Gray, 2017). Social play often begins more like parallel play among two and three-year-old's, where children choose to play next to each other but without much interaction (Smith et al., 2008). As children get older, social play becomes more complex, involving more children; sometimes including groups (Smith et al., 2008). These interactions are essential to child development and are primarily learned through play. Children can learn how to get along with peers, interact with one another, compromise, negotiate, and understand each other's needs and wants (Gray, 2017).

TYPES OF PLAYGROUND ACTIVITIES

Playgrounds encourage many different physical activities and types of play. The following section presents common types of activity that occur on a playground. These activities were selected after reviewing multiple sources to determine which activities had high potential to promote intergenerational connections. Figure 2.05 lists the activities chosen, including balancing, climbing, crawling, hanging, jumping, manipulating, sliding, spinning, stepping, and swinging.



Figure 2.05 - Ten playground activities for intergenerational playgrounds derived from multiple sources

BALANCING

Balance is maintaining a controlled position or stability during a task. There are two types of balance, dynamic or static. Dynamic balance refers to the skill of maintaining equilibrium while in motion, while static balance is the ability to remain stable while not moving (Playworld, 2018; Stevens-Smith, n.d.). Balance activities benefit children by promoting pretend play, including games like “walk the plank.” Balance activities also promote problem-solving skills when they meet someone while balancing on a surface only wide enough for one person (Stevens-Smith, n.d.). Balance can also help at all ages with coordination. Coordination is the ability to process multiple signals and processes at once (Playworld, 2018; Stevens-Smith, n.d.). By gaining balance and coordination, children and adults are more independent and reduce the risk of injury (Playworld, 2018).

CLIMBING

Climbing is the action of using hands and feet to move upward. This action is beneficial to play because it encourages flexible thinking to determine what will happen when moving a certain way. The action of climbing requires problem-solving to determine where to place hands and feet to continue moving upward (Morin, n.d.; Stevens-Smith, n.d.). Along with flexible thinking and problem solving, climbing also encourages physical fitness through the use of many muscles, engaging both fine and gross motor skills (Stevens-Smith, n.d.).

CRAWLING

Crawling is the action of moving on hands and knees in any direction. The action of crawling provides physical and mental benefits to all ages by increasing strength and mobility while engaging the whole sensory system (Edwards, 2016). Many

physical benefits can be gained from crawling, including improved reflexive movement. Reflexive movement is the ability to react quickly with speed and stability to a situation. Crawling also engages the whole body, transferring power from the lower to upper portions of the body (Edwards, 2016). Crawling also provides cognitive benefits by tying together the whole sensory system, forcing communication between the left and right side of the brain, providing cognitive benefits to the people that are participating (Edwards, 2016).

HANGING

In play, hanging is the act of being suspended in the air through the grasping of an object. Hanging or grasping is beneficial for fine motor skills and strengthens hands and fingers. This is also beneficial for upper body strength (Bindel, n.d.; Spencer, 2016).

JUMPING

Jumping is the act of intentionally leaving the ground and springing into the air (Drobjak, 2015). Jumping provides many benefits, including increased bone strength due to the force when landing on the ground (U.S. Department of Health and Human Services, 2018). Jumping takes balance, strength, coordination, and motor planning, thus benefiting developmental and physical health. Children begin jumping around the age of three, and jumping can often be part of pretend play (Drobjak, 2015).

MANIPULATING

Manipulating refers to moving or using an object in an intended movement. In early child development, manipulating objects is important to learn how to use hands. Manipulating objects improves fine motor skills, which are necessary for daily living tasks (NHS GGC, 2017).

SLIDING

Sliding is the smooth continuous movement over a surface. Sliding is an action that creates vestibular involvement, meaning it affects balance and requires coordination to maintain equilibrium. Slides often only allow one person at a time, thus require cooperation between users allow everyone a turn. Sliding also requires spatial awareness to ensure that no one will crash into another user and cause injury (Stevens-Smith, n.d.).

SPINNING

Spinning is the act of rotating in a swift motion. Similar to sliding, spinning enhances the vestibular system, increasing balance. The use of equipment to spin benefits physical health by improving muscle strength and endurance. Spinning at a playground often requires gripping play equipment, which improves fine motor skills. Spinning can improve posture too, due to the necessity of standing tall to maintain balance (Stevens-Smith, n.d.).

STEPPING

Stepping is the action of moving to a new location by lifting a foot. The action of stepping allows for risk while practicing balance, coordination, and problem-solving. Through the act of stepping, children can better learn depth perception and partake in pretend play. Stepping opportunities also lend to various other activities to occur, including jumping, climbing, and balancing in a safe environment (Stepping Pods, n.d.).

SWINGING/ROCKING

Swinging is the action of moving back and forth along a singular axis. The action of swinging is beneficial to sensory development, which helps us organize information and react in various ways. Swinging also provides physical benefits, including muscle development and improved fine and gross motor skills (Trautner, 2018).



3

METHODOLOGY

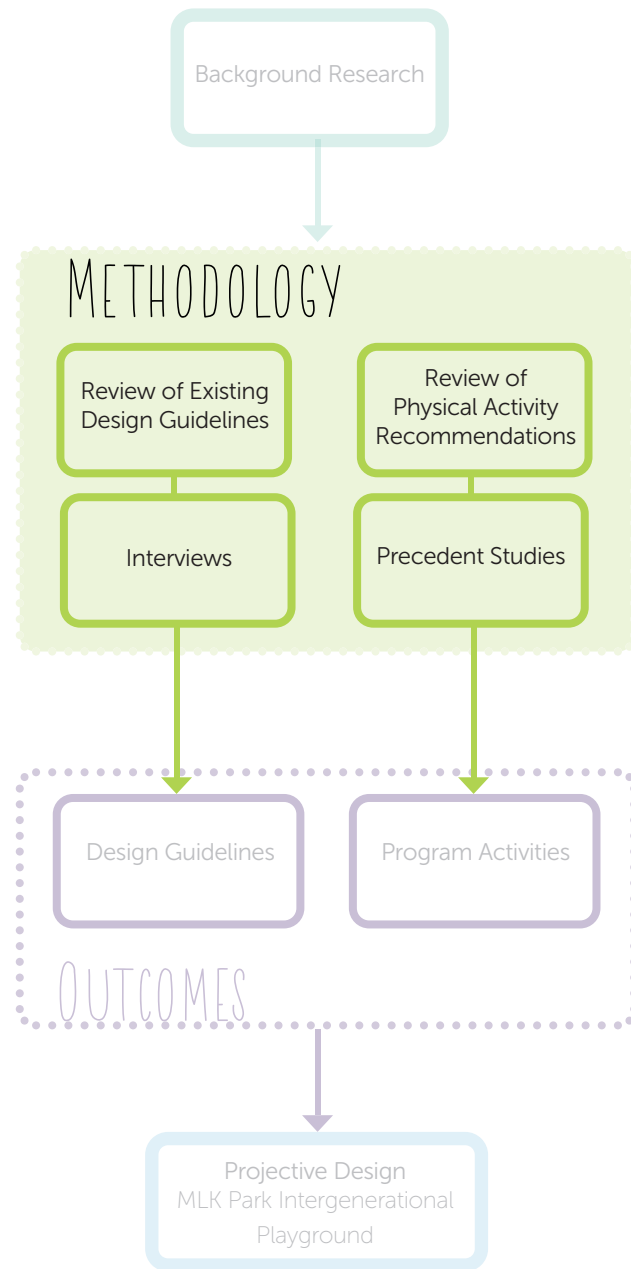


Figure 3.01 - Research process methodology

INTRODUCTION

To answer the research question: How can playgrounds be designed to meet the physical activity needs for users of all ages through acts of play that encourage interaction across generations?, the following methods were used: precedent studies, interviews, review of existing design guidelines, and review of physical activity recommendations.

Findings from the methods inform the development of the proposed design guidelines and program activities for intergenerational playgrounds. The design guidelines and program activities are demonstrated by applying them in a projective design for an intergenerational playground at MLK Park in Kansas City, Missouri.

INTERVIEWS

PURPOSE

Interviews were conducted to gain an understanding of existing best practices for playground design and inclusivity. Each of the selected professionals has a background in inclusive playground design, and focuses on designing spaces for people of all abilities. The information learned through the interviews helped inform the development of the proposed design guidelines for intergenerational playgrounds.

PROCEDURE

Two interviews were conducted with professionals with backgrounds in playground and/or inclusive design. The interviewees were identified through snowball sampling that began with a personal professional connection. The small sample size was due to project time constraints, but the information learned was helpful in shaping subsequent project efforts. Each interview was semi-structured, beginning with an emailed list of questions that were expanded upon during the interview with follow-up/clarifying questions. Questions asked during the interviews address the planning and design for intergenerational play in public parks. Each interview was approximately 30-60 minutes and conducted over Zoom, then transcribed and reviewed for common themes, which are presented in Chapter 4.

PRECEDENT STUDIES

PURPOSE

A precedent study was done to identify strong design examples that demonstrate the playground activities identified in Chapter 2. A total of ten precedents were selected for their ability to foster connections across generations through play. The information gained through the precedent studies informs the program activities guide.

PROCEDURE

The precedents studied demonstrate the ten common playground activities, as established in Chapter 2. Each activity was selected based on their potential to promote intergenerational connections. Each of the ten activities includes two precedents to show both a natural based example and a more traditional, manufactured type playground element. The precedents selected offer examples for each activity, showing how the playground activity can be implemented in varying types of playgrounds to connect users across generations.

The selected precedents illustrate the play activities listed below:

Balance, Climbing, Crawling, Hanging, Jumping, Manipulating, Sliding, Spinning, Stepping, Swinging/Rocking

SELECTION CRITERIA

Each of the design precedents varies in size, location, and activity, but they all meet the following criteria:

- Playground is fully built
- Potential to accommodate use by multiple age groups
- Design is replicable in other locations

FINDINGS ORGANIZATION

To standardize the findings, content was organized as follows:

- Name
- Location
- Designer
- Design Approach
- Intended Users

Precedents studied include:

- Founders Park at Woodland Hills
- Zorlu Playground
- Hastings Park
- Avon P.S. Playground
- Royal Road Reserve Playground
- Bison's Bluff Nature Playground
- Brooklyn Bridge Park
- Carnation Park
- Mountain's Edge Regional Park
- Evelyn's Park
- Wikado Playground
- Kew Pine Tree Wilderness
- Governors Island
- Exploration Park
- San Jose Rotary Garden
- Gasworks Park
- Maruta Gardner Playground

REVIEW OF EXISTING DESIGN GUIDELINES

PURPOSE

Currently, there is minimal research specific to intergenerational playgrounds, and no known design guidelines that intentionally seek to connect people across generations through play. Thus, the design guidelines selected for this review focused on topics of inclusive playground design and creation of intergenerational connections.

SELECTION CRITERIA

Four design guideline documents were selected for review, including three that focus on inclusive playground design and one that focuses on intergenerational contact zones.

Inclusive playground design guidelines are highly researched; thus, multiple sets of guidelines exist for inclusive playground design. The three that were chosen best describe principles to follow when designing inclusive playgrounds. Intergenerational playgrounds are not highly researched; thus, there was only one set of guidelines found that related to intergenerational connections through public space. The guidelines reviewed are listed below with brief descriptions.

DOCUMENTS REVIEWED

Guidelines documents include:

- *Me2: 7 Principles of Inclusive Playground Design* by Playcore in 2016
- *Inclusive Play Design Guide* by Playworld in 2018
- *The Five Principles for Designing an Inclusive Playground* by HACS
- *Intergenerational Contact Zone Design Principles* by Dr. Matthew Kaplan, Dr. Leng Leng Thang, Dr. Mariano Sánchez, and Dr. Jaco Hoffman in 2020

PROCEDURE

Existing design guideline documents were reviewed to understand current best practices that can be applicable to intergenerational playground planning and design. Through the review of existing design guidelines, five intergenerational playground design principles were formed, with corresponding guidelines to offer suggestions related to implementing each principle.

Existing design guidelines regarding inclusive playground design were useful in providing information and suggestions to create playgrounds that allow users of different abilities to play together side-by-side. As people age, physical and mental ability change, thus it is important to understand how people with varying levels of ability are included in a single playground.

Only one source for intergenerational connections was discovered during the research process. This document discussed how to connect users across generations within communities, and was foundational to understanding of how to get users to connect across generations within a public space.

After reviewing the four existing design guideline documents, each of the individual guidelines (27 total) presented within the documents was synthesized; and then grouped into one of ten common idea categories. These ten common ideas served as the basis for the proposed intergenerational playground design guidelines presented in Chapter 5. The reviewed guidelines were further reviewed and combined to determine primary themes. The five themes discovered include site planning, program, safety, engagement, and choice. These five themes are the basis for the intergenerational playground design principles presented in Chapter 5.

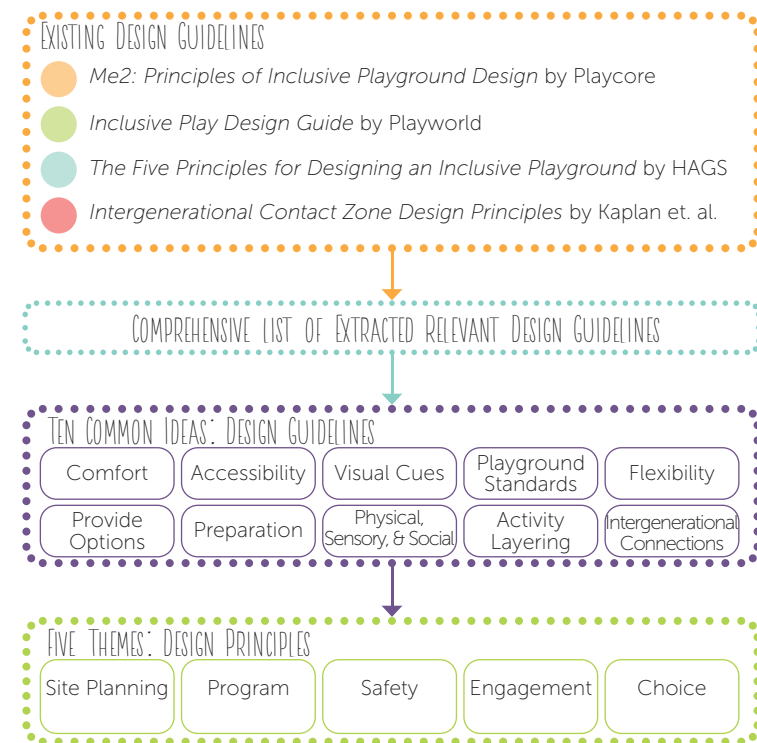


Figure 3.02 - Procedure to determine principles and proposed design guidelines for intergenerational playground design

ME2: 7 PRINCIPLES OF INCLUSIVE PLAYGROUND DESIGN BY PLAYCORE

Dr. Keith Christensen, a landscape architecture and environmental planning professor at Utah State University, partnered with Playcore, a company focused on providing “innovative products, programs, and services to build healthy communities through play and recreation,” to create these guidelines. Parks & recreation, schools, designers, and community advocates can use the Me2 guidelines during the planning process to design an inclusive playground that allows for users of all ages and abilities. Seven principles (Figure 3.03) define best practices for designing inclusive playgrounds.

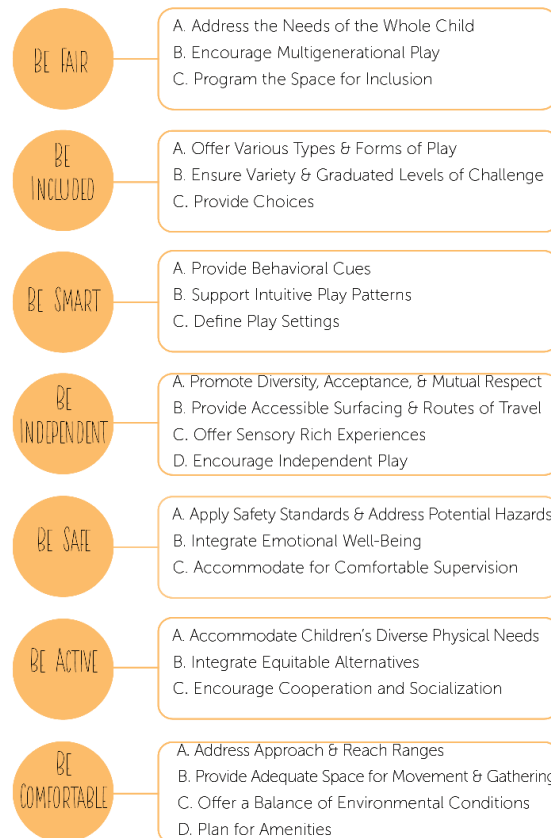


Figure 3.03 - Diagram of principles from the “Me2: 7 Principles of Inclusive Playground Design”

INCLUSIVE PLAY DESIGN GUIDE BY PLAYWORLD

The Inclusive Play Design Guide was written by recreation, playground, and child development experts to provide a resource for landscape architects, municipal employees, parents, educators, and anyone that wants to build a community playground for users of all abilities. These guidelines were written to offer inspiration and guidance for the design of outdoor playgrounds that address the needs of all people. The guidelines cover six design principles (Figure 3.04).

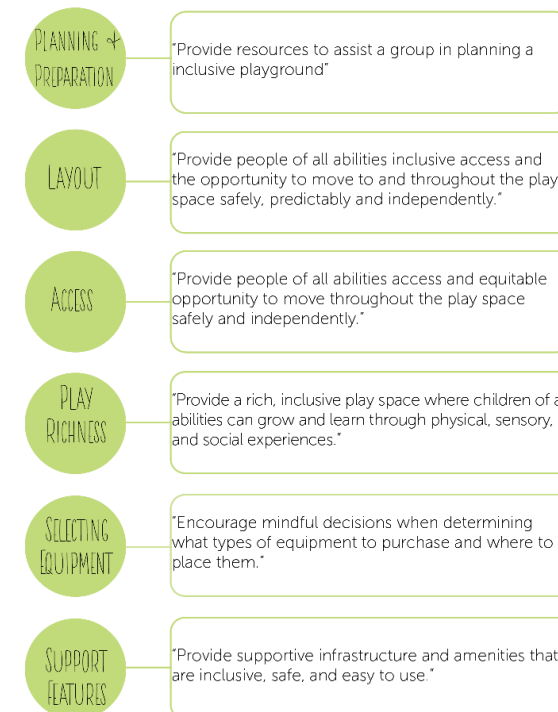


Figure 3.04 - Diagram of the principles from the “Inclusive Play Design Guide”

THE FIVE PRINCIPLES FOR DESIGNING AN INCLUSIVE PLAYGROUND BY HAGS

HAGS designs, manufactures, and installs commercial playground equipment. These guidelines were designed for community groups, designers, and landscape architects, outlining principles and steps to take when planning an inclusive playground. These design guidelines outline five principles to follow to create a playground for children of all abilities to interact and play with each other. The guidelines cover five principles (Figure 3.05).



Figure 3.05 - Diagram of principles from "The Five Principles for Designing an Inclusive Playground"

INTERGENERATIONAL CONTACT ZONE DESIGN PRINCIPLES BY KAPLAN, THANG, SÁNCHEZ, HOFFMAN

These guidelines were authored by professors from four universities. The guidelines are intended to increase understanding about the design of intergenerationally enriched environments. These guides include nine principles focused on bringing people together through passive and programmed activities and providing users of different generations with choices for participation. (Figure 3.06)

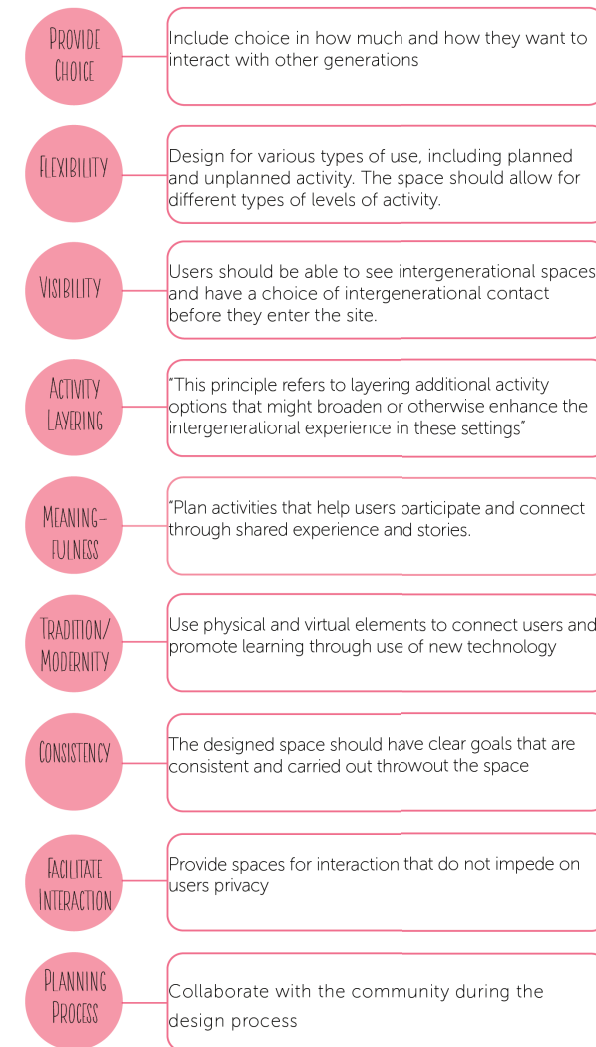


Figure 3.06 - Diagram of principles from the "Intergenerational Contact Zone Design Principles"

REVIEW OF PHYSICAL ACTIVITY RECOMMENDATIONS

PURPOSE

To understand how play activities can connect users of different generations through physical acts of play, an analysis of physical activity recommendations was conducted. Each age category is recommended different types and amounts of physical activities each week, as stated by the U.S. Department of Health and Human Services in 2018. The types of activity recommended for each age group can be used to compare generational physical activity needs to the playground activities determined in Chapter 2. The comparison of age based physical activity needs to playground activities reveals which playground activities meet the physical activity needs of multiple age groups. Thus, having the highest potential to promote intergenerational connection through physical acts of play.

PROCEDURE

Utilizing physical activity recommendations per age group from the "Physical Activity Guidelines for Americans," presented in Chapter 2, Table 4.01 was created to visualize the types of physical activity that each age group is recommended weekly.

Information gathered from the "Physical Activity Guidelines for Americans" was also utilized to understand types of physical activity and their relationship to playground activities. The ten playground activities presented in Chapter 2 were combined with types of physical fitness activities in Table 4.02 to determine which types of physical activity each playground activity meets.

Next, the outcomes of the physical activity recommendations per age group were utilized to create four tables (4.03 - 4.06), one for each

age group, that compare types of physical activity recommended for each age to each type of playground activity. This determined which playground activities directly benefit each age group based on their physical activity needs.

After determining which activities have direct physical benefits for each age group, the results for all ages were overlayed to determine the playground activities that have the most potential to promote intergenerational connections through physical acts of play that meet physical benefits for multiple age groups.

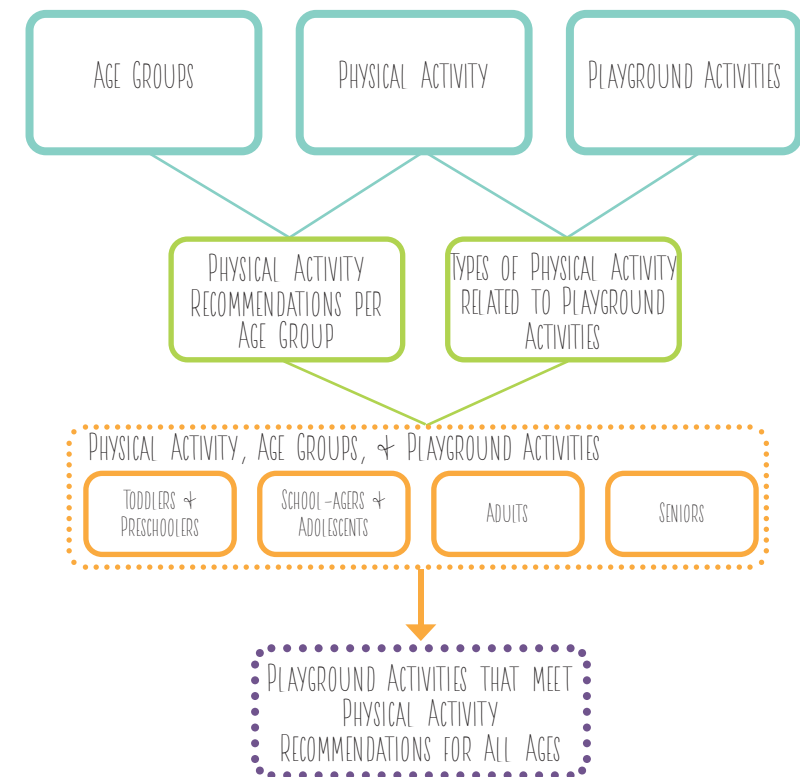


Figure 3.07 - Review process of physical activity recommendations, age groups, and playground activities



4

FINDINGS

INTRODUCTION

This chapter presents the findings of the interviews, the review of existing design guidelines, and the review of physical activity recommendations. These findings helped inform the subsequent development of the proposed design guidelines and playground activities for intergenerational playgrounds, presented in Chapter 5.

INTERVIEWS: FINDINGS

Interviews were conducted with two subject matter experts, Jodi House and Dana Dempsey.

JODI HOUSE, PLA, LEED AP

INTERVIEW DATA:

Jodi House is a landscape architect in Dallas, Texas. House has designed many playgrounds during her career, including PlayGrand Adventures, a playground in Grand Prairie, Texas, which is inclusive to people of all ages and abilities.

During the conversation, she explained that inclusive playground design requires expertise from many disciplines. During the design process of PlayGrand, House met with experts, including physical therapists and doctors who provided insight about disabilities and how children move and think. Including a team of experts in the playground design process led to a more successful playground that was designed for all abilities and caters to all children's needs. The playground is designed in a way that allows all abilities to play side by side so that every child can have the same experience.

Regarding the layout of inclusive playground design, House explained that it's important for the users to be able to play "on the same pieces together as opposed to different pieces that might be in different parts of the playground," by separating ages and abilities, "they're really not playing in the same environment together, and they're getting different experiences." When designing for different ages and abilities, it is important to ensure everyone is getting the same experiences by playing in the same area with the same play materials or equipment. All users should have the opportunity to experience play activities together in a common way.

When discussing of designing an intergenerational playground, House mentioned that slides and swings are often activities that everyone enjoys, and they are a staple in the playground setting. Climbing and rope structures were also mentioned as activities that have multigenerational potential. House stated that nature playgrounds might offer more opportunities for creating intergenerational connections, offering options including "skipping rocks, trails, or fishing." These playgrounds could focus on activities that can be done together as a family. Nature playgrounds can offer a larger variety of activities for all ages to enjoy.

KEY TAKEAWAYS

• Site Planning & Design

- o Design for physical ability and mental development to make playgrounds accessible regardless of age
- o Establish a multi-discipline team of experts to consult during the planning & design process
- o Utilize alignment to visually connect similar play activities across different age/ability zones

• Program

- o Provide a range of experiences
 - Colors, sounds, and activity can overstimulate
 - Areas of retreat focus on soothing motions and touch to support emotional stability

• Safety

- o Provide visibility across the entire playground to allow caretakers to see a child from anywhere inside the playground area
- o Include physical barriers with controlled access to minimize the risks of children running into unsafe areas

• Engagement

- o Present opportunities for all abilities to play side by side
- o Offer play elements that are inviting to all age groups, like slides, swings, & climbing/rope structures

DANA DEMPSEY

INTERVIEW DATA:

Dana Dempsey is a therapeutic recreation specialist who has been involved during the design process for inclusive playgrounds. She served on the team of professional consultants for the design of PlayGrand Adventures with Jodi House.

The conversation with Dempsey focused on spatial organization, safety, and physical abilities. Considering design strategies, Dempsey confirmed the importance of creating spaces that allow users with varying abilities to participate in the same play zones. One strategy mentioned was considering the physical activity of the lower and upper extremities and designing them to be used in the same zones. Dempsey stated, “you’re going to have some individuals regardless of the age that their upper extremity functions better than the lower extremity, and vice versa,” it is important to create similar experiences regardless of ability.

During the conversation, she discussed various considerations when designing for intergenerational connections. Dempsey mentioned the importance of safety and development, stating that spaces should still be safe and developmentally appropriate for the intended age. Thus, it may be difficult to combine users of different age groups safely in a single space. She suggested instead, spacing out separate age groups with activities that may interest the individual groups. However, spaces should be designed to be useable for adults’ and teenagers’, with options to play with their children or siblings.

KEY TAKEAWAYS

• Site Planning & Design

- o Consider providing safe and developmentally appropriate activities for each age
- o Include seating that allows for passive interactions

• Program

- o Design activities that allow participants to use of both upper and lower extremities
- o Provide spaces that allow different aged people to participate in similar activities, regardless of ability

• Safety

- o Consider safety of users by creating a perimeter around the playground
- o Provide clear sight lines that allow caregivers to see children from anywhere within the playground

• Engagement

- o Determine types of physical activity that will benefit the intended users

• Choice

- o Provide various zones within the playground that allow for a range of different activities

REVIEW OF EXISTING DESIGN GUIDELINES: FINDINGS

INTRODUCTION

After reviewing the four design guideline documents, five notable themes emerged. The five themes helped structure the proposed principles and design guidelines for intergenerational playgrounds, presented in Chapter 5. The five principles presented include: site planning, program, safety, engagement, and choice.

CATEGORIZATION OF EXISTING DESIGN GUIDELINES

After reviewing the four guideline documents, the principles from each were synthesized and grouped into ten categories of similar ideas (Figure 4.01). The ten categories that were determined were then utilized to inform the proposed intergenerational playground design

guidelines. The ten identified guidelines were further synthesized and grouped into five themes, that helped to establish the principles for the proposed intergenerational playground design guidelines, presented in Chapter 6.

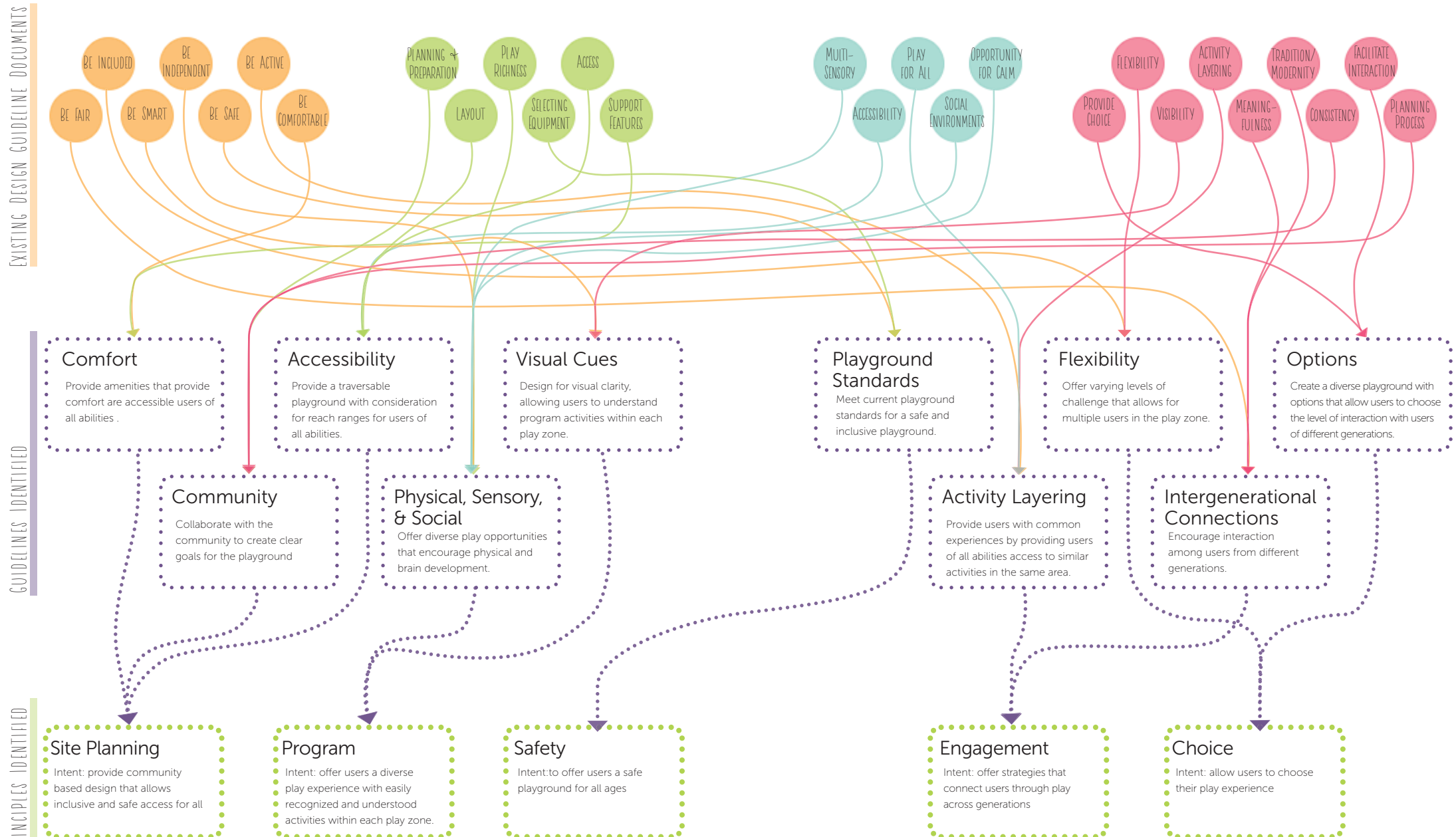


Figure 4.01 - Guideline development through review of existing design guidelines

EXISTING DESIGN GUIDELINES

After determining five design principles and ten corresponding guidelines applicable for intergenerational playgrounds, each principle was then reviewed to better understand its purpose. The purpose was determined by summarizing each of the corresponding guidelines based on the existing design guidelines.

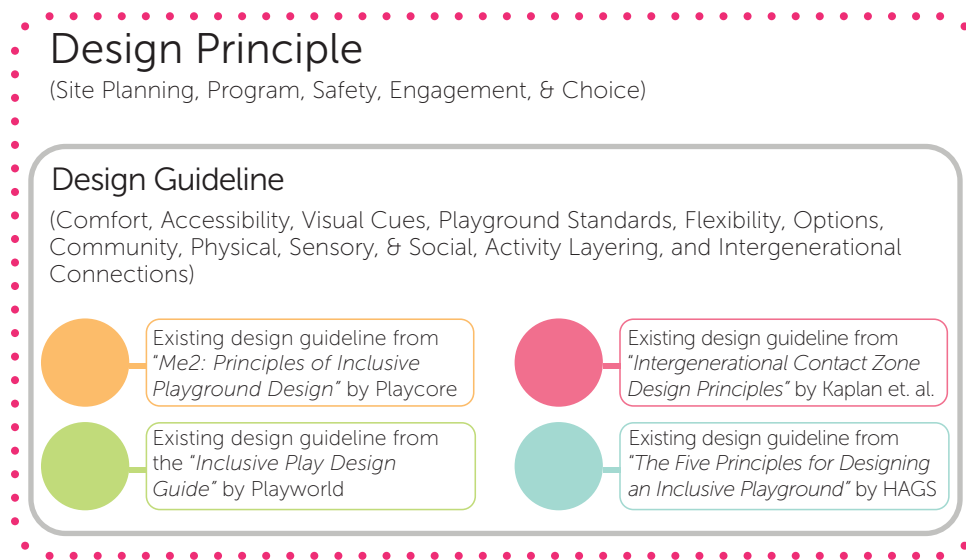


Figure 4.02 - Diagram of synthesized design principles and guideline framework

SITE PLANNING

The Site Planning principle is focused on providing a community-based design that allows inclusive and safe access for all. One suggestion for site planning is collaborating with the Community. This Site Planning guideline suggests collaborating with the community to determine clear goals for a future playground. The playground design should also consider accessibility, ensuring that it is usable for all abilities. The Site Planning principle also suggests providing comfort for users by providing amenities and varying ecological conditions within the playground area.



Figure 4.03 - Existing design guidelines for site planning

PROGRAM

The Program principle focuses on offering users a diverse play experience with easily recognized and understood activities in each play zone. This principle consists of two corresponding guidelines suggesting practices to help program the site. The Physical, Sensory, and Social guideline focuses on providing diverse play opportunities that encourage physical and brain development. The second guideline, Visual Cues helps inform users about the program activities in each play zone and how to use the space.

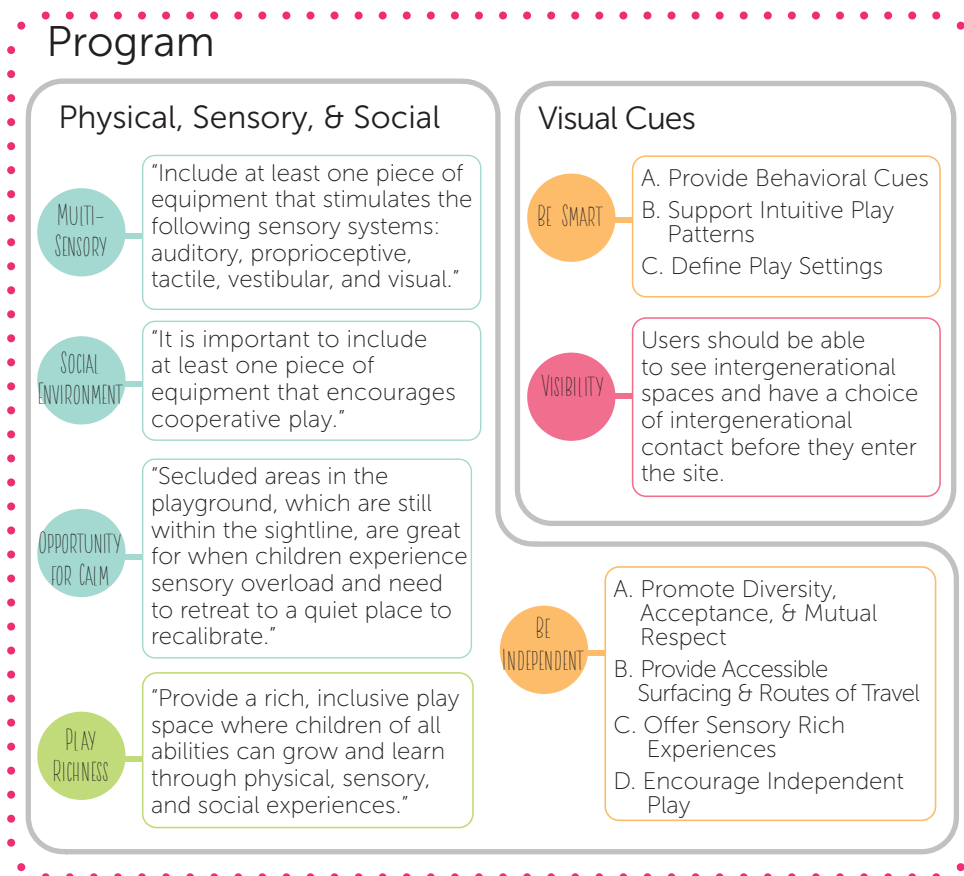


Figure 4.04 - Existing design guidelines for program

SAFETY

Safety was determined as a principle that focuses on offering all users a safe play experience. The corresponding guideline related to safety is the utilization of Playground Safety Standards, which ensures the play experience is safe for all users. It is essential to always follow all current safety standards when designing playgrounds.



Figure 4.05 - Existing design guidelines for safety

ENGAGEMENT

The Engagement principle suggests strategies to connect users across generations through play. The two corresponding guidelines include Activity Layering and Intergenerational Connections. The goal of Activity Layering is to provide equitable options for all users to have the same playground experience side-by-side. Intergenerational Connections focuses on providing physical playground elements applicable for all generations.

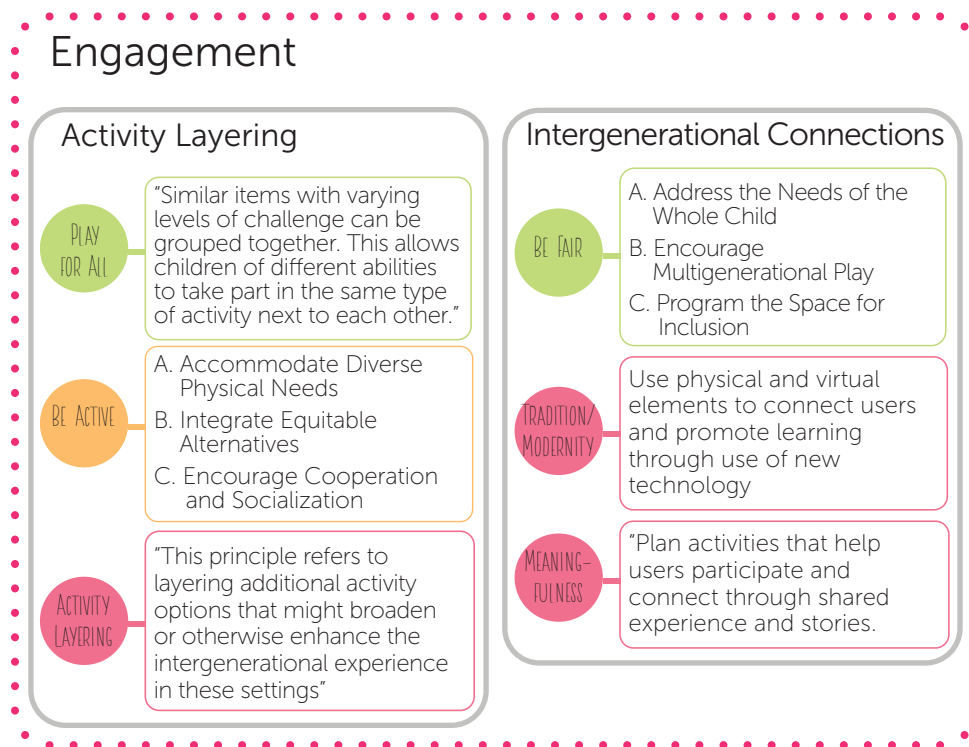


Figure 4.06 - Existing design guidelines for engagement

CHOICE

The principle Choice allows users to choose their play experience. The two corresponding guidelines are Flexibility and Options. Options focuses on enabling users to choose their level and type of interaction with other users across generations. Options can include observing from a bench or playing side-by-side. The other guideline Flexibility focuses on providing spaces that allow users to create their own experiences through spontaneous play activities.

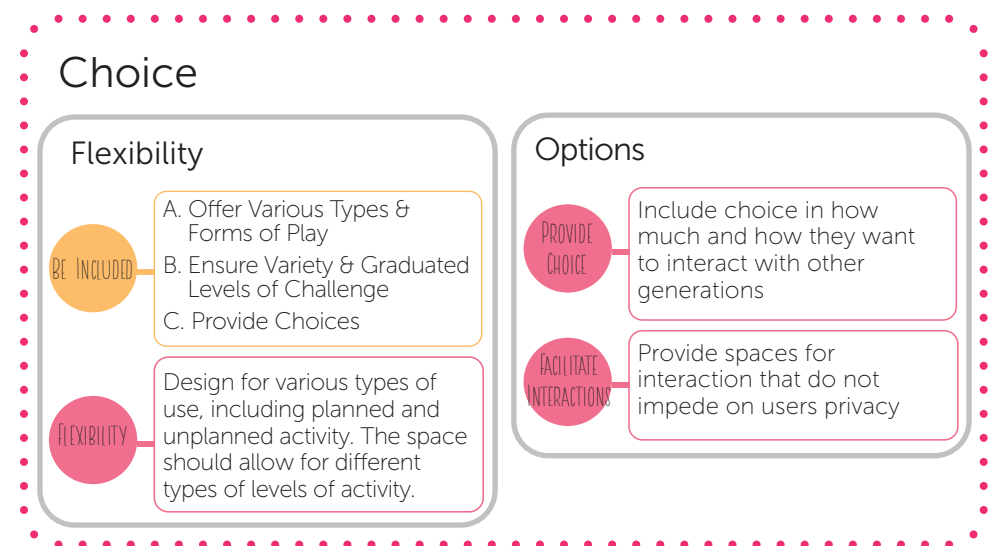


Figure 4.07 - Existing design guidelines for choice

REVIEW OF PHYSICAL FITNESS STANDARDS: FINDINGS

INTRODUCTION

To understand how playground activities can be utilized to connect users across generations through physical acts of play, it is necessary to understand how each playground activity meets the types of physical fitness activities recommended for each age group. After determining which playground activities meets the physical activity recommendations for each age group, they were compared to determine which playground activities overlap among users of different ages and to determine playground activities with the highest potential to foster intergenerational connections.

PHYSICAL ACTIVITY RECOMMENDATIONS FOR INDIVIDUAL AGE GROUPS

First, Table 4.01 was created to present the types of physical activities that are recommended for each designated age group from the “Physical Activity Guidelines for Americans” (2018).

Examining types of physical activities recommended for each age group revealed that all users are recommended to complete aerobic and muscle-strengthening activities weekly, providing a potential opportunity to connect across generations. Bone-strengthening activities were revealed as an activity common across all ages except

adults. Table 4.01 also shows the similarity of physical activity needs between toddlers, preschoolers, and seniors. Each of these age groups is recommended to participate in balance activities and activities to increase fine motor skills.

PHYSICAL ACTIVITY	AGE GROUPS					
	Toddlers	Preschoolers	School-agers	Adolescents	Adults	Seniors
						
						
						
						
						
						

Table 4.01 - Types of physical activity recommended for individual age groups

ANALYSIS OF TYPES OF PHYSICAL ACTIVITY & PLAYGROUND ACTIVITIES

After reviewing the types of physical activities recommended for each age group, the ten playground activities that were presented in Chapter 2, were examined through the lens of each type of physical activity. This process helped determine what types of physical activities each playground activity can provide users. Playground activities were reviewed based on the definitions of each type of physical activity, presented in Chapter 2. Table 4.02 illustrates how each playground activity correlates with the types of physical activities.

PHYSICAL ACTIVITY	PLAYGROUND ACTIVITY									
	Balancing	Climbing	Crawling	Hanging	Jumping	Manipulating	Sliding	Spinning	Stepping	Swinging/Rocking
										
										
										
										
										
										

Table 4.02 - Types of physical activity that each playground activity provides to users

ANALYSIS OF PHYSICAL ACTIVITY, AGE GROUPS, & PLAYGROUND ACTIVITIES

After determining which playground activities support the different types of physical activity, four tables were then created to show how each playground activity meets the needs of different ages. Tables 4.03 - 4.06 correlate to each age group, showing the age specific types of physical activities, listed in Table 4.01, in relation to each playground activity, thus revealing the playground activities that provide physical fitness benefits to each age group. These tables include results for toddlers & preschoolers (2-5 years), school-agers & adolescents (6-18 years), adults (19-64 years), and seniors (65+ years).

The horizontal axis of Tables 4.03 - 4.06 list the ten playground activities determined as being most appropriate for an intergenerational playground. The vertical axis lists each type of physical activity specifically beneficial to each age category. The top row of each table, labeled "Physical Activity," shows which playground activities are beneficial to the age group represented in the table. A gradient is used to show the level of benefit each playground activity provides based on the number of physical activities met.

Table 4.06 shows the playground activities determined to provide physical fitness benefits to seniors, based on recommended types of physical activity. Climbing, crawling, and spinning are grayed out because these categories were determined to be unlikely for senior participation due to the intensity and high ability needed for the activity. However, all users should determine their own ability before participating in any activity.

TODDLERS & PRESCHOOLERS (2-5 YEARS)

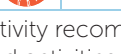
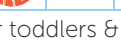
PHYSICAL ACTIVITY	PLAYGROUND ACTIVITY									
	Balancing	Climbing	Crawling	Hanging	Jumping	Manipulating	Sliding	Spinning	Stepping	Swinging/Rocking
	Physical Activity									
	Aerobic									
	Balance									
	Bone-Strengthening									
	Muscle-Strengthening									
	Fine Motor Skills									

Table 4.03 - Physical activity recommendations for toddlers & preschoolers compared to playground activities

SCHOOL-AGERS & ADOLESCENTS (6-18 YEARS)

PHYSICAL ACTIVITY	PLAYGROUND ACTIVITY									
	Balancing	Climbing	Crawling	Hanging	Jumping	Manipulating	Sliding	Spinning	Stepping	Swinging/Rocking
	Physical Activity									
	Aerobic									
	Bone-Strengthening									
	Muscle-Strengthening									

Table 4.04 - Physical activity recommendations for school-agers & adolescents compared to playground activities

ADULTS (19-64 YEARS)

PHYSICAL ACTIVITY	PLAYGROUND ACTIVITY									
	Balancing	Climbing	Crawling	Hanging	Jumping	Manipulating	Sliding	Spinning	Stepping	Swinging/Rocking
	Physical Activity									
	Aerobic									
Muscle-Strengthening										

Table 4.05 - Physical activity recommendations for adults compared to playground activities

SENIORS (65+ YEARS)

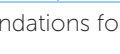
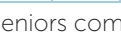
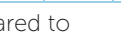
PHYSICAL ACTIVITY	PLAYGROUND ACTIVITY									
	Balancing	Climbing	Crawling	Hanging	Jumping	Manipulating	Sliding	Spinning	Stepping	Swinging/Rocking
	Physical Activity									
	Aerobic									
	Balance									
	Bone-Strengthening									
	Flexibility, Warm-up, Cool-down									
Muscle-Strengthening										
Fine Motor Skills										

Table 4.06 - Physical activity recommendations for seniors compared to playground activities

PLAYGROUND ACTIVITIES THAT PROVIDE PHYSICAL BENEFITS TO ALL AGES

After determining which playground activities could meet each individual age groups physical activity recommendations, the top row from Tables 4.03 - 4.06 were used to create Table 4.07. Table 4.07 shows which age groups benefit from each playground activity. Each row, showing age groups from Table 4.07 was then overlayed in Table 4.08 to determine which playground activities meet the physical activity recommendations for all ages.

When overlaying the physical activity recommendations by age, with the playground activities, it was determined that balancing, hanging, jumping, and swinging/rocking are beneficial to all age groups. Climbing and crawling were the next most beneficial, providing physical fitness benefits to three of the four age groups, including toddlers & preschoolers, school-agers & adolescents, and adults. Manipulating, sliding, and stepping were determined as being beneficial for two of four groups, including toddlers & preschoolers and seniors. Spinning was found to only benefit toddlers & preschoolers.

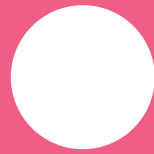
Correlating the types of physical activity recommended for each age group with the playground activities revealed which playground activities provide recommended physical fitness benefits for multiple age groups.

PHYSICAL BENEFITS TO EACH AGE GROUP	PLAYGROUND ACTIVITY									
	Balancing	Climbing	Crawling	Hanging	Jumping	Manipulating	Sliding	Spinning	Stepping	Swinging/ Rocking
	Toddlers & Preschoolers									
	School-agers & Adolescents									
	Adults									
Seniors										

Table 4.07 - Playground activities that meet the recommended types of physical activity for each age group

	PLAYGROUND ACTIVITY									
	Balancing	Climbing	Crawling	Hanging	Jumping	Manipulating	Sliding	Spinning	Stepping	Swinging/ Rocking
All Ages										

Table 4.08 - Overlay to show which playground activities meet the recommended types of physical activity for multiple age groups



5

DESIGN GUIDELINES

OVERVIEW

INTRODUCTION

This chapter presents the proposed design guidelines and playground activities for intergenerational playgrounds. An example application of the intergenerational playground design guidelines and playground activities is included in Chapter 6 in a projective design for an intergenerational playground at the MLK Park site in Kansas City, Missouri.

HOW TO USE THE GUIDELINES AND PLAYGROUND ACTIVITIES

This chapter includes two sections: the proposed design guidelines, and the suggested playground activities. The proposed design guidelines are intended as a starting point to initiate the design of intergenerational playgrounds. The guidelines are organized into five design principles that include corresponding guidelines. Each guideline offers suggestions to address one of the following principles: site planning, program, safety, engagement, and choice. The second section includes suggested playground activities, which are included to show examples of elements that promote physical and developmental benefits.

INTERGENERATIONAL PLAYGROUND DESIGN GUIDELINES

The Intergenerational Playground Design Guidelines suggest five principles with corresponding guidelines. The proposed guidelines are intended as a starting point and should be utilized during the design process to guide decision making. The guidelines offer suggestions that should be considered during the site analysis and playground design. Every playground is different and should consider playground goals to prioritize implementation of guidelines accordingly.

The guidelines include five principles:

1. Site Planning
2. Program
3. Safety
4. Engagement
5. Choice

1. SITE PLANNING

Utilize a community based design that incorporates community input and knowledge from experts across disciplines to ensure the needs of all users are supported by conditions that are applicable, accessible and, comfortable.

GUIDELINES

• Promote Community Involvement

Meet with community members to determine goals for the playground that meet the wants and needs of the community.

- o Meet with community groups, park neighbors, school officials, and any other community stakeholders to learn about community needs
- o Complete a community design charette before beginning design

• Include Subject Matter Experts

Work with a team of experts from other disciplines to inform the playground design process.

- o Consider experts in physical therapy, playground manufacturing, and health care to better understand the needs of all ages

• Provide Accessible Options

Provide accessibility for all users, by providing equitable options within the playground.

- o Include traversable options throughout the playground by considering playground inclusion of ADA surfacing and equipment
- o Consider approach and reach ranges for users of all abilities

• Accommodate User Needs

Provide the necessary amenities for users within a close proximity to the playground.

- o Provide easy access to amenities, including restrooms, drinking fountains, seating, and more.
- o Include amenities that are accessible to people of all abilities.

2. PROGRAM

Offer users a diverse play experience with easily recognized and understood activities in each play zone.

GUIDELINES

• Offer Physical, Sensory, & Social Play Opportunities

Determine how playground activities can support physical and brain development for all ages.

- o Include a variety of intergenerational playground activities to support multiple types of physical fitness activities, including aerobic, balance, bone-strengthening, flexibility, warm-up, & cool-down, muscle-strengthening, and fine motor
- o Offer playground activities that promote pretend and cooperative play
- o Incorporate playground activities and elements that engage touch, smell, sight, and sound

• Provide Visual Cues

Design for intuitive playground use and include visual cues that promote repeated playground activities and clear signals that notify users of the intention of each play zone.

- o Use clear signals that inform users of the intentions of each play zone, including intended users and playground activities
- o Utilize intuitive visual cues to support play patterns that provide for repeated activities that promote physical and mental development

• Design Spaces with Diverse Environmental Conditions

Allow for user comfort and safety, by providing for varying environmental conditions within the playground

- o Offer varying environmental conditions, including shaded and sunny areas, to provide users with options for personal comfort
- o Provide features, including trees and shade structures, to ensure playground elements and zones safe to use during all seasons.

3. SAFETY

Adhere to safety standards for playground design and Universal Design Principles to provide a safe playground that is welcoming to users of all ages.

GUIDELINES

- **Utilize Playground Standards**

Utilize existing playground safety standards to design an intergenerational playground that anticipates use of playgrounds outside of the intended use.

- o Utilize the Public Playground Safety Handbook by The U.S. Consumer Product Safety Commission, the ADA standards, the American Society for Testing and Materials standards, and any other local standards that apply
- o Design for ability and development of the intended users and provide safe opportunities for interaction between users of different abilities

- **Offer Safety Features that Limit Harm**

Analyze the playground surroundings and offer features that minimize the risk of children leaving the play area unintended.

- o Offer controlled exits that allow for caregivers to see into the play zone from anywhere in the playground area
- o Utilize fencing or planting to create barriers that minimize the amount of exits from each play zone

- **Provide Visibility throughout the Playground**

Allow for sight lines through the entire playground to allow for caregivers to see children from any point within the playground.

- o Minimize visibility barriers by utilizing low growing shrubs and plants that do not block views
- o Utilize ornamental fencing that allows for sight into the playground
- o Include playground elements and equipment that allows for visibility into the play feature if enclosed

4. ENGAGEMENT

Offer playground activities that connect users across generations through physical acts of play by providing activities that benefit all users and encourage communication and collaboration.

GUIDELINES

- **Layer Multiple Activities into One Play Zone**

Provide diverse play zones with a range of playground activities that provide equitable options for users of all ages and abilities.

- o Layer multiple playground activities within each play zone to provide for multiple types of play and interactions among users of different generations
- o Include activities that utilize different muscles and extremities, including upper and lower body, to allow for people of varying abilities to play side by side
- o For each playground activity, include varying levels of skill within a single zone to promote interaction among users of different generations
- o Incorporate modern and traditional themes and elements to allow for teaching opportunities among users of different generations. Elements could include planting, technology, and more

- **Encourage Intergenerational Play**

Include opportunities that encourage users of different generations to connect through physical acts of play that provide physical, social, and developmental benefits to all ages and encourage cooperation and communication.

- o Provide playground activities that provide physical, social, and developmental benefits for all ages
- o Incorporate activities that encourage collaboration and socialization among users of different generations. Some examples include: seesaws, sand & water play, musical instruments, groups spinning equipment, interactive games, and more
- o Include playground activities and elements that encourage users to share personal experiences with users of different generations

5. CHOICE

Allow users to choose their own play experience by providing clear options for play and by providing spaces that allow for flexibility in use.

GUIDELINES

• Provide Options for Play and Interaction

Organize playground activities to allow users to choose their playground experience by including multiple levels of challenge, zones with varying activities, and options for how and when to interact with others.

- o Create play zones that allow users to choose how much they interact with people of different generations
- o Provide options, allowing users to choose how they interact with users of different generations. This could include passive interaction, watching others play, active interaction, playing side by side, and more.
- o Offer multiple levels of challenge within each zone to allow for users of different generations to play side by side

• Create Space for Flexibility

Design spaces that allow for spontaneous activity and encourage pretend and social play.

- o Design space that allows for flexible use that encourages interaction among different generations through spontaneous activity
- o Provide spaces that encourage pretend play, through elements that allow for a variety of uses

INTERGENERATIONAL PLAYGROUND PROGRAM ACTIVITIES

Suggested activities were chosen because of their potential to provide intergenerational connections through play. Each play activity is presented including: a definition, relevant age groups, physical and developmental benefits, safety considerations, and possible implementations. When considering the design of intergenerational playgrounds, it is important to include a range of activities that can provide multiple and varied benefits for users. Each playground activity includes two precedents that show both a nature-based example and a more traditional, equipment-based playground example. During the design process, it is useful to categorize activities by type of physical activity and how they relate across age groups seeking to connect users through physical acts of play. Table 5.01 shows each type of physical activities in relation to age group recommendations for reference.

Playground activities presented in this chapter include:

Balancing, Hanging, Jumping, Swinging/Rocking, Climbing, Crawling, Manipulating, Sliding, Stepping, and Spinning.

	AGE GROUPS					
	Toddlers	Preschoolers	School-agers	Adolescents	Adults	Seniors
Aerobic						
Balance						
Bone-Strengthening						
Flexibility, Warm-up, Cool-down						
Muscle-Strengthening						
Fine Motor Skills						

Table 5.01 - Types of physical activity recommended for individual age groups

BALANCING

- Balance
- Muscle-Strengthening

Physical Benefits Age Groups:

All Ages

Definition:

Maintaining a controlled position or stability while completing a task

Physical Fitness Benefits:

Promotes muscle development, balance, and coordination

Developmental Benefits:

Improves problem solving skills and encourages pretend play

Safety Considerations:

Fall risk for seniors is higher when balancing on a surface above ground level

Possible Implementations:

Balance beam, standing spinners, steppers, rocks etc.

ZORLU PLAYGROUND

Location:

Istanbul, Turkey

Park Designer:

Carve Landscape Architecture

Design Approach:

The low balance beam between wooden posts includes a rope to hold onto. The low height provides low fall height allowing younger ages to use the play equipment.

Intended Users:

Ages 5-12



Figure 5.01 - Zorlu Playground (Landzine, 2014)

FOUNDERS PARK AT WOODLAND HILLS

Location:

Houston, Texas

Park Designer & Manufacturer:

Clark Condon Associates Inc. (Design)
& Earthscape (Design/Fabrication)

Design Approach:

The stacked logs vary in height providing challenges for all ages to participate in play.

Intended Users:

All Ages



Figure 5.02 -Founders Park at Woodland Hills (Earthscape, 2020)

HANGING

- Fine Motor
- Muscle-Strengthening

Physical Benefits Age Groups:

All Ages

Definition:

Action of being suspended in the air through the grasping of an object

Physical Benefits:

Increases upper body strength and coordination, while also improving fine motor skills like grip strength

Safety Considerations:

Poor upper body strength can lead to falling, ensure that the fall zone is acceptable for all intended users

Possible Implementations:

Monkey bars, zip-line, exercise equipment, etc.

HASTINGS PARK

Location:

Vancouver, British Columbia

Park Designer:

PFS Studio

Design Approach:

The park implemented a parkour course to provide opportunities for young adults to keep active.

Users:

Youth & Young Adults

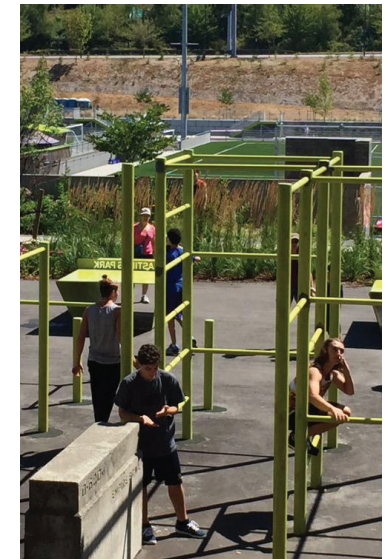


Figure 5.03 -Hastings Park parkour course (Kirby-Yung, 2015)

AVON P.S. PLAYGROUND

Location:

Stratford, Ontario

Park Designer & Manufacturer:

Earthscape (Design & Fabrication)

Design Approach:

This playground uses logs and metal bars at varying heights to allow for children of all ages to play together.

Intended Users:

Ages 2-12



Figure 5.04 - Hanging bars natural playground (Earthscape, 2017)

JUMPING

- Bone-Strengthening
- Muscle-Strengthening
- Aerobic

Physical Benefits Age Groups:

All Ages

Definition:

The act of intentionally leaving the ground and springing into the air

Physical Benefits:

Increases bone-strength, balance, coordination, and motor planning

Developmental Benefits:

Promotes pretend play

Safety Considerations:

Consider height and distance of jump and plan for intended user group

Possible Implementations:

Trampolines, springers, hopscotch, etc.

ROYAL ROAD RESERVE PLAYGROUND

Location:

Auckland, New Zealand

Park Designer(s) & Manufacturer:

Parklife, Stella Projects, &
Playground Centre (Manufacturer)

Design Approach:

Trampolines at ground level allow for users to jump within their trampoline pad. The design is surrounded by fall surfacing for minimal injury.

Intended Users:

All ages



Figure 5.05 - Royal Road Reserve jumping pads (Playground Centre, 2018)

BISON'S BLUFF NATURE PLAYGROUND

Location:

Spring Valley, Illinois

Park Designer:

Hitchcock Design Group

Design Approach:

Lizard patterned hopscotch encourages jumping and learning. The ground level design allows for safe use for all ages.

Intended Users:

Ages 2-12

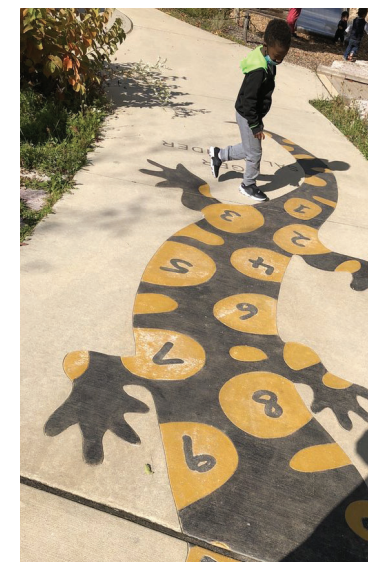


Figure 5.06 - Lizard painted hopscotch (Tiara B., 2020)

SWINGING/ROCKING

- Fine Motor
- Aerobic
- Balance

Physical Benefits Age Groups:

All Ages

Definition:

Moving back and forth along a singular axis

Physical Benefits:

Promotes muscle development and improves fine and gross motor skills

Developmental Benefits:

Beneficial to sensory development

Safety Considerations:

- Ensure adequate spacing for swings to move in an unobstructed path
- Provide seating options for multiple age groups

Possible Implementations:

Swings, springers, seesaw, etc.

CARNATION PARK

Location:

Logan City, Australia

Manufacturer:

Playground Centre

Design Approach:

The rocker allows for multiple users to participate at one time, encouraging interaction. Low height and stoppers provide safety for all ages.

Intended Users:

All Ages

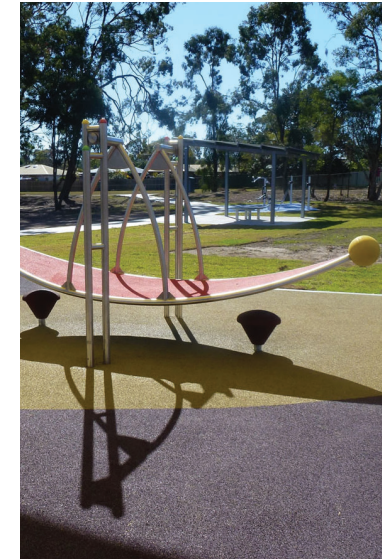


Figure 5.07 - Seesaw ship (Playground Centre, 2014)

BROOKLYN BRIDGE PARK – SWING VALLEY

Location:

New York, New York

Park Designer:

Michael Van Valkenburgh Associates, Inc.

Design Approach:

Rope swings allow all users to participate. The swings are spaced to work with the topography and guide users around the swing zone, out of harms way.

Intended Users:

Ages 5+



Figure 5.08 - Swing Valley at Pier 6 (Alexa Hoyer, n.d.)

CLIMBING

- Fine Motor
- Muscle-Strengthening
- Aerobic

Physical Benefits Age Groups:

Ages 2-64

Definition:

Using hands and feet to move upward

Physical Benefits:

Uses upper and lower body muscles and improves fine and gross motor skills

Developmental Benefits:

Encourages flexible thinking and problem solving

Safety Considerations:

- Consider fall height recommendations for intended user groups
- Determine fall height from top of structure to surface below unless otherwise stated.

Possible Implementations:

Rope/net climbing structures, ladders and playground towers, trees, rock walls, berms, etc.

MOUNTAINS EDGE REGIONAL PARK

Location:

Las Vegas, Nevada

Manufacturer:

Luckey Climbers

Design Approach:

This playground is designed for all ages by designing for fall height of all ages and promoting critical thinking and creativity through the maze-like design.

Intended Users:

All Children

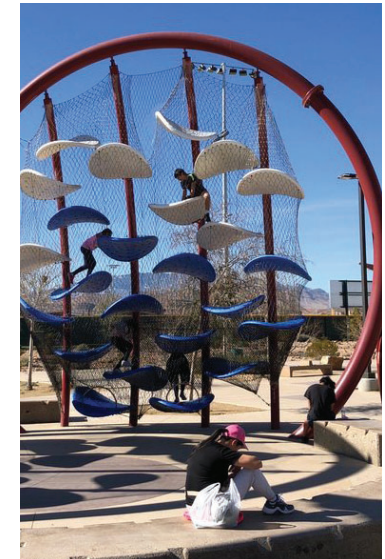


Figure 5.09 - Climbing structure at Mountains Edge Regional Park (Justin C., 2020)

EVELYN'S PARK

Location:

Bellaire, Texas

Park Designer:

Unknown

Design Approach:

Logs placed into the ground provide an open air staircase accessible to users of all ages. Varying log width and height provide options for increased challenge.

Intended Users:

All Ages

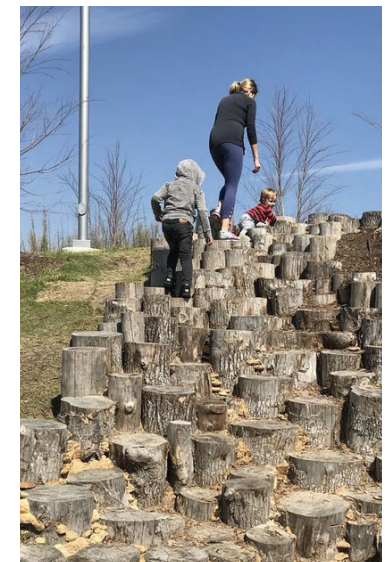


Figure 5.10 - Log staircase at Evelyn's Park (Rosy P., 2018)

CRAWLING

● Aerobic

Physical Benefits Age Groups:

Ages 2-64

Definition:

Moving on hands and knees in any direction

Physical Benefits:

Improves strength, mobility, and reflexive movement

Developmental Benefits:

Encourages flexible thinking

Safety Considerations:

- Allow for users of varying sizes
- Provide surfacing that will not cause injury to hands & knees

Possible Implementations:

Tubes, tunnels, etc.

WIKADO PLAYGROUND

Location:

Rotterdam, The Netherlands

Park Designer:

Superuse Studio

Design Approach:

Repurposed wind turbine blades create tunnels through the playground, large enough for anyone to participate. Cutouts allow for participation for people of varying abilities.

Intended Users:

All Ages



Figure 5.11 -Wikado Playground (Guzzo, 2013)

KEW PINE TREE WILDERNESS

Location:

Kew Gardens, London

Park Designer & Manufacturer:

Ground Control (Architect) and
Duncan & Grove

Design Approach:

The tunnel net offers a sloped elevated tunnel that offers a more challenging option to cross the playground. This play area is designed to offer challenge to older children.

Intended Users:

Ages 12-18

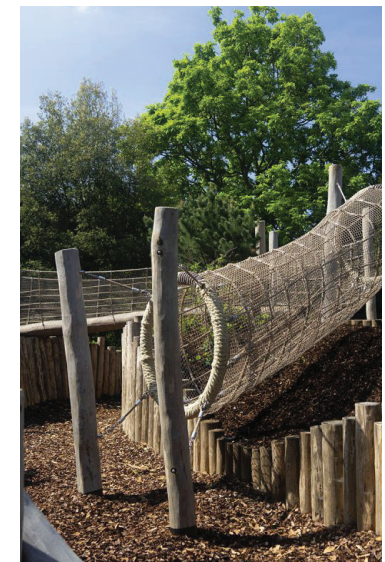


Figure 5.12 - Robina tunnel net (Duncan & Grove, 2020)

MANIPULATING

- Fine Motor
- Flexibility, Warm-up, Cool-Down

Physical Benefits Age Groups:

Ages 2-5 & 65+

Definition:

Moving or using an object in an intended movement

Physical Benefits:

Improves fine motor skills, including gripping and hand movement

Developmental Benefits:

Create understanding of hand moment in early child development

Safety Considerations:

- Consider intended users level of ability, heights, and needs

Possible Implementations:

Sand & water play, manipulation walls, etc.

EXPLORATION PARK

Location:

Katy, Texas

Park Designer:

TBG Partners

Design Approach:

Moveable blocks allow for manipulation along a colored beam large enough for anyone to participate.

Intended Users:

Ages 2-5



Figure 5.13 -Exploration Park (V.F., 2019)

BISON'S BLUFF NATURE PLAYGROUND

Location:

Spring Valley, Illinois

Park Designer:

Hitchcock Design Group

Design Approach:

Water and sand play offers a creative outlet to build and design, improving fine motor skills.

Intended Users:

Ages 2-12



Figure 5.14 -Bison's Bluff water & sand play (Jessica U., 2017)

SLIDING

- Balance

Physical Benefits Age Groups:

Ages 2-5 & 65+

Definition:

Smooth continuous movement over a surface

Physical Benefits:

Increases balance and coordination

Developmental Benefits:

Encourages spatial awareness, cooperation, and social interaction

Safety Considerations:

- Understand user group and follow platform guidelines
- Consider slide height and angle standards

Possible Implementations:

Slides, hills, etc.

ROYAL ROAD RESERVE PLAYGROUND

Location:

Auckland, New Zealand

Park Designer(s) & Manufacturer:

Parklife, Stella Projects, &
Playground Centre (Manufacturer)

Design Approach:

This slide allows multiple people to travel down it together, encouraging social interaction. The wide design allows use by users of all ages.

Intended Users:

All ages



Figure 5.15 - 2 meter slide (Playground Centre, 2018)

GOVERNORS ISLAND

Location:

Governors Island, New York

Park Designer & Manufacturer:

West 8 & Earthscape

Design Approach:

Utilizing the hill as a slide provides safe options with minimal fall risk for all ages. Wider slides allow a larger age range to utilize the slide.

Intended Users:

Ages 5-12

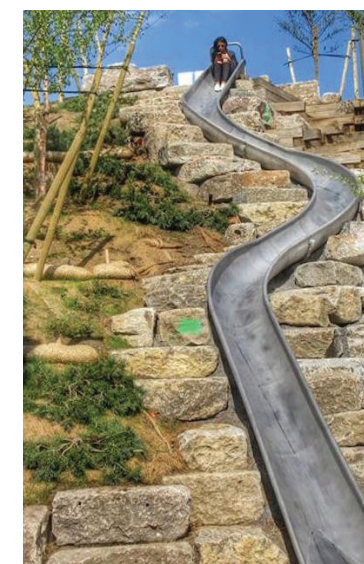


Figure 5.16 - Governors Island slide (Earthscape, 2015)

STEPPING

● Balance

Physical Benefits Age Groups:

Ages 2-5 & 65+

Definition:

Moving to a new location by lifting a foot

Physical Benefits:

Improves balance and coordination

Developmental Benefits:

Improves depth perception and problem solving, while promoting pretend play

Safety Considerations:

- Consider fall risk of intended user when encouraging stepping above ground level
- Consider surfacing and risk associated with slipping

Possible Implementations:

Stones, stumps, logs, etc.

SAN JOSE ROTARY GARDEN

Location:

San Jose, California

Park Designer:

PGAdesign

Design Approach:

Rounded mounds provide options to step or jump. These mounds vary in size and distance, encouraging decision making while traveling through the space.

Intended Users:

All ages

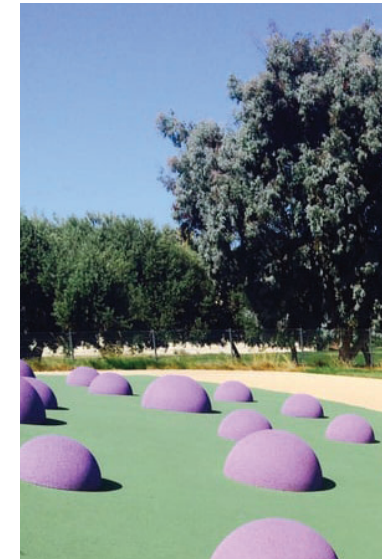


Figure 5.17 - San Jose Rotary Garden (Karla D., 2015)

EXPLORATION PARK

Location:

Katy, Texas

Park Designer:

TBG Partners

Design Approach:

Use of natural and cut stones provide stepping options for graduated levels of challenge

Intended Users:

All ages

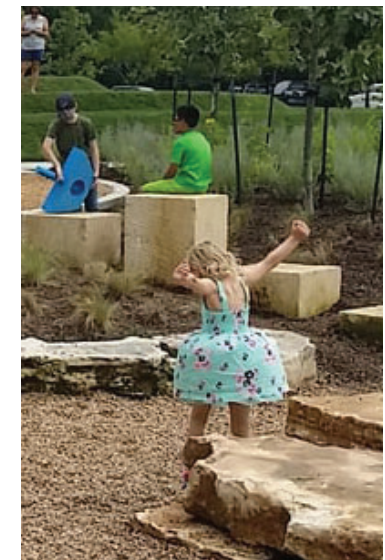


Figure 5.18 - Exploration Park dry creek (Melissa G., 2015)

SPINNING

- Fine Motor
- Balance

Physical Benefits Age Group:

Ages 2-5

Definition:

Rotating in a swift motion

Physical Benefits:

Improves balance, muscle strength, and endurance, utilizing fine and gross motor skills

Developmental Benefits:

Enhances sensory stimulation and spatial awareness

Safety Considerations:

- Understand fall zones and requirements

Possible Implementations:

Spinners, merry-go-round, etc.

MARUTA GARDNER PLAYGROUND

Location:

San Diego, California

Park Designer:

Schmidt Design

Design Approach:

Standing and sitting spinners allow users of varying abilities to participate.

Intended Users:

Ages 5+

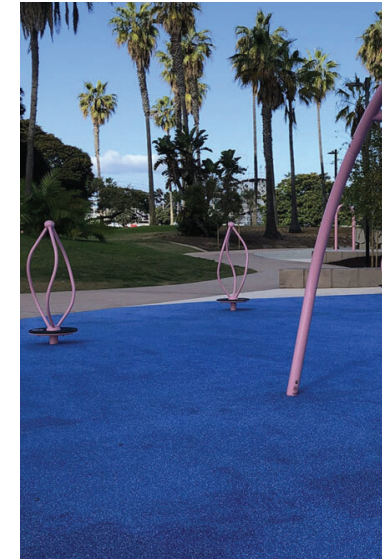


Figure 5.19 - Maruta Gardner Bonita Cove Park (Jeannie, 2021)

GASWORKS PARK

Location:

Seattle, Washington

Park Designer:

Richard Haag

Design Approach:

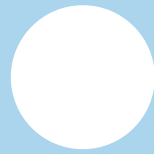
This Spinner allows use by children and adults, due to its height. Spinning requires muscle and grip strength.

Intended Users:

Ages 5-12



Figure 5.20 - Spinner at Gasworks Park (Kappelman, 2019)



6

SITE APPLICATION

INTRODUCTION

PROCESS OVERVIEW

This chapter presents the projective design for an intergenerational playground at MLK Park in Kansas City, Missouri, as an example application of the proposed design guidelines and playground activities. The projective design process started by conducting a community context analysis to identify local needs and desires for the park. From the community context analysis, playground goals were determined for the site.

The playground goals include connecting users across generations by: including playground elements that offer varying levels of difficulty, incorporating playground elements and activities that are comfortable for use by all ages and abilities, and utilizing playground activities that offer multiple types of physical fitness activities that benefits all ages.

A site analysis for the playground space was conducted based on the proposed MLK Park Master Plan developed by the LAR 705 Master's Project Studio in Fall 2020. Findings from the analysis were utilized to determine the appropriate playground activities and types of physical fitness activities to be included in the proposed playground design. A functional use diagram was created to establish site circulation and playground zones, and to articulate the locations for each type of proposed physical fitness and playground activity. From the functional use diagram and playground goals, two playground concepts were created: one that utilized traditional playground equipment and one that showed a nature-based playground design. The different concepts were created to show that an intergenerational playground can vary in type.

MLK PARK DESIGN PROCESS

The MLK Park Master Plan utilized for this project was design by the LAR 705 Master's Project Studio. To design the site plan, students met with stakeholders, conducted a community & site inventory, and researched programs & precedents. The master plan was designed during the fall of 2020. This project began with information gathered by the LAR 705 Master's Project Studio to understand community wants and needs, leading to the informed design of the MLK Park Master Plan. From the master plan, a site analysis was conducted and intergenerational playground design goals were created. Proposed design guidelines and playground activities presented in Chapter 5 were then used to create two design concepts for an intergenerational playground at MLK Park.

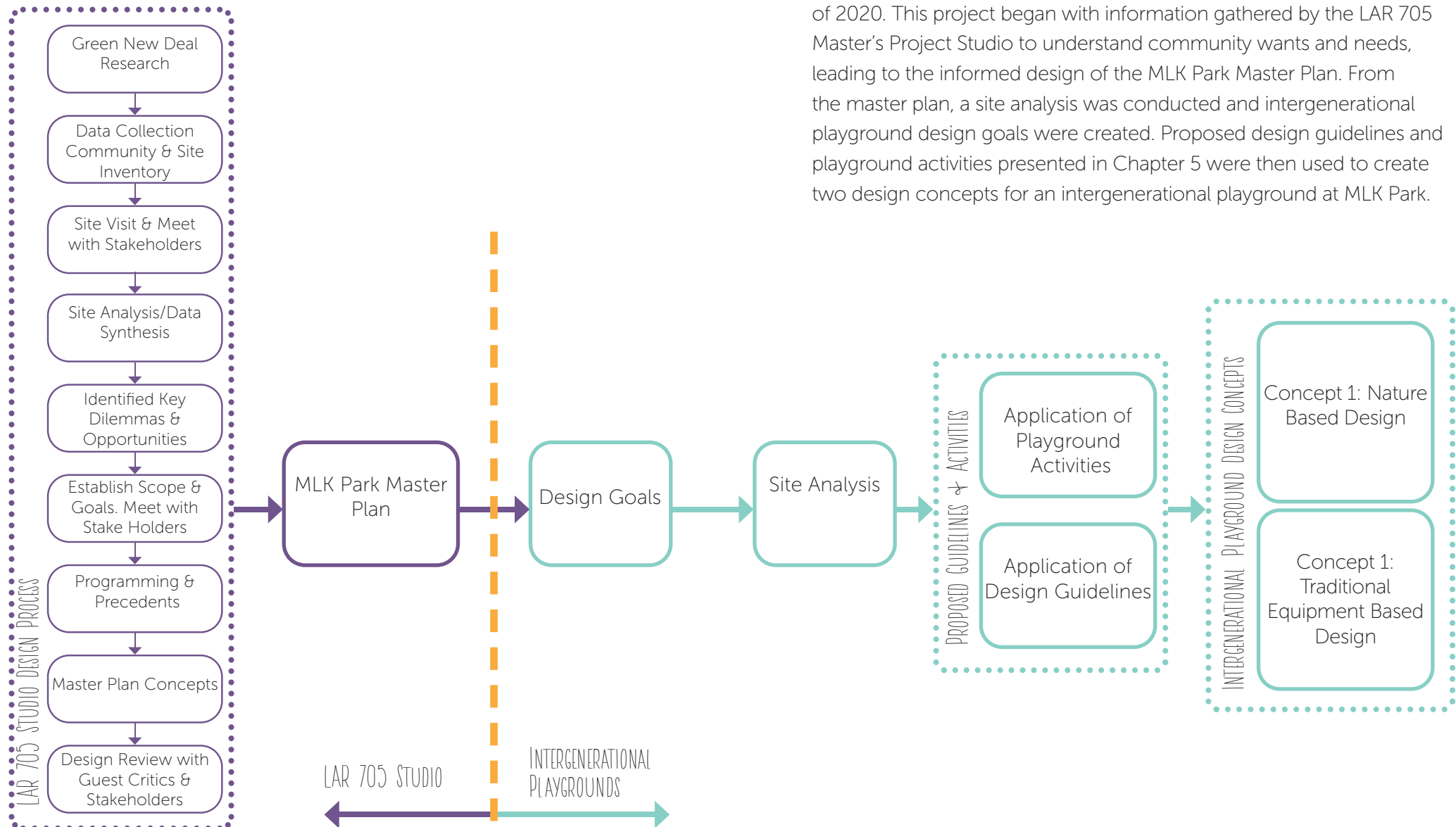


Figure 6.01 - MLK Park master plan and intergenerational playground design process

COMMUNITY AND SITE ANALYSIS

REGIONAL CONTEXT ANALYSIS

Martin Luther King Jr. Square Park (MLK Park) is located within Kansas City, Missouri, in a historically disinvested area. The 42 acre park sits along the Brush Creek Greenway, consisting of 286 acres of green space. The park is connected to the greenway through trails on the north and south sides of the site.

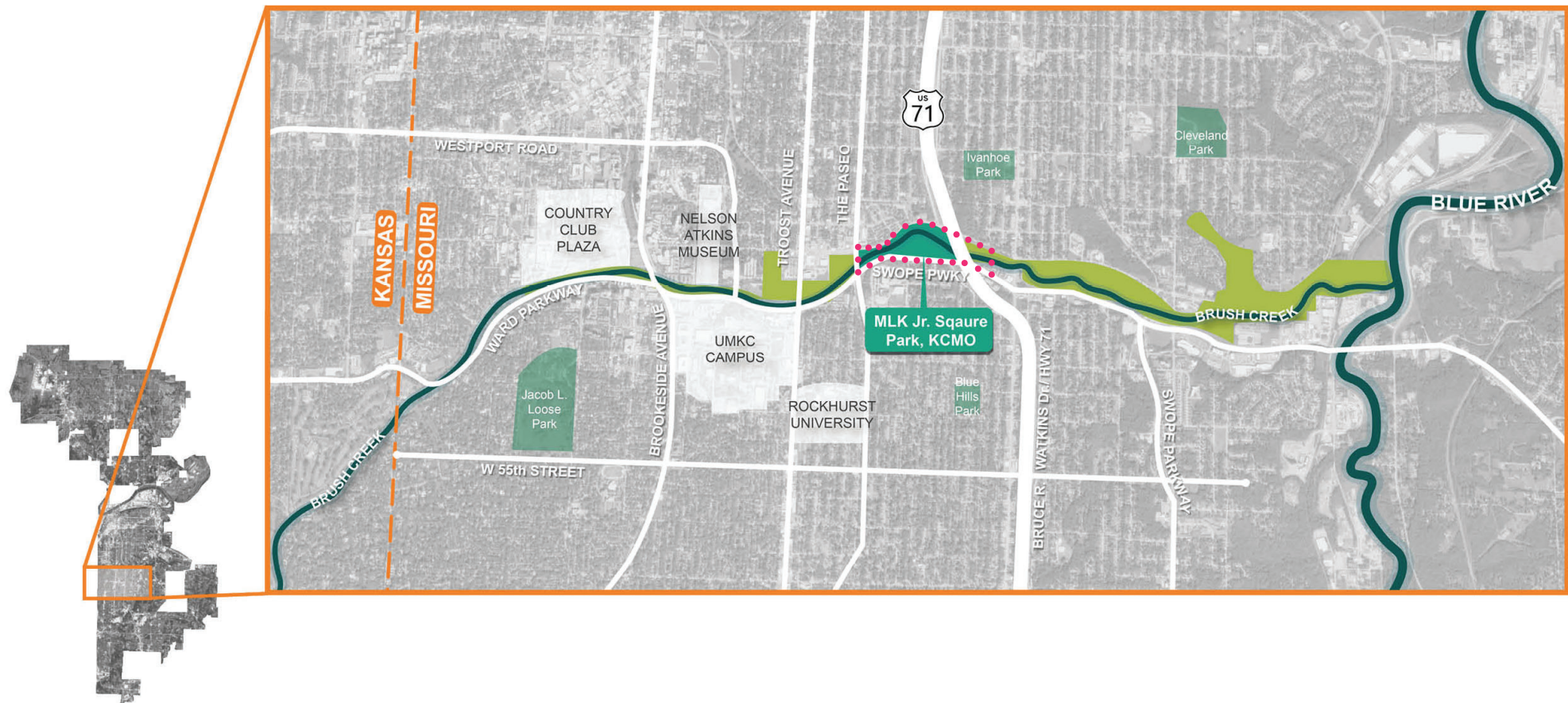


Figure 6.02 - Regional Context Map (Pasowicz, 2020)

COMMUNITY CONTEXT ANALYSIS

Analyzing the surrounding neighborhood revealed that there are multiple cultural amenities, parks, and schools in the area. Figure 6.03 shows a few of the more prominent sites. The Paseo Academy and MLK Elementary Schools sit across the street from the park, with two universities located within a 1-mile radius. In this area, schools are the primary age-related facility, meaning an increased number of users between 5 and 29. Nearby, there are many neighborhood parks and community amenities including, the Anita B. Gorman Conservation Center and the Kauffman Garden.

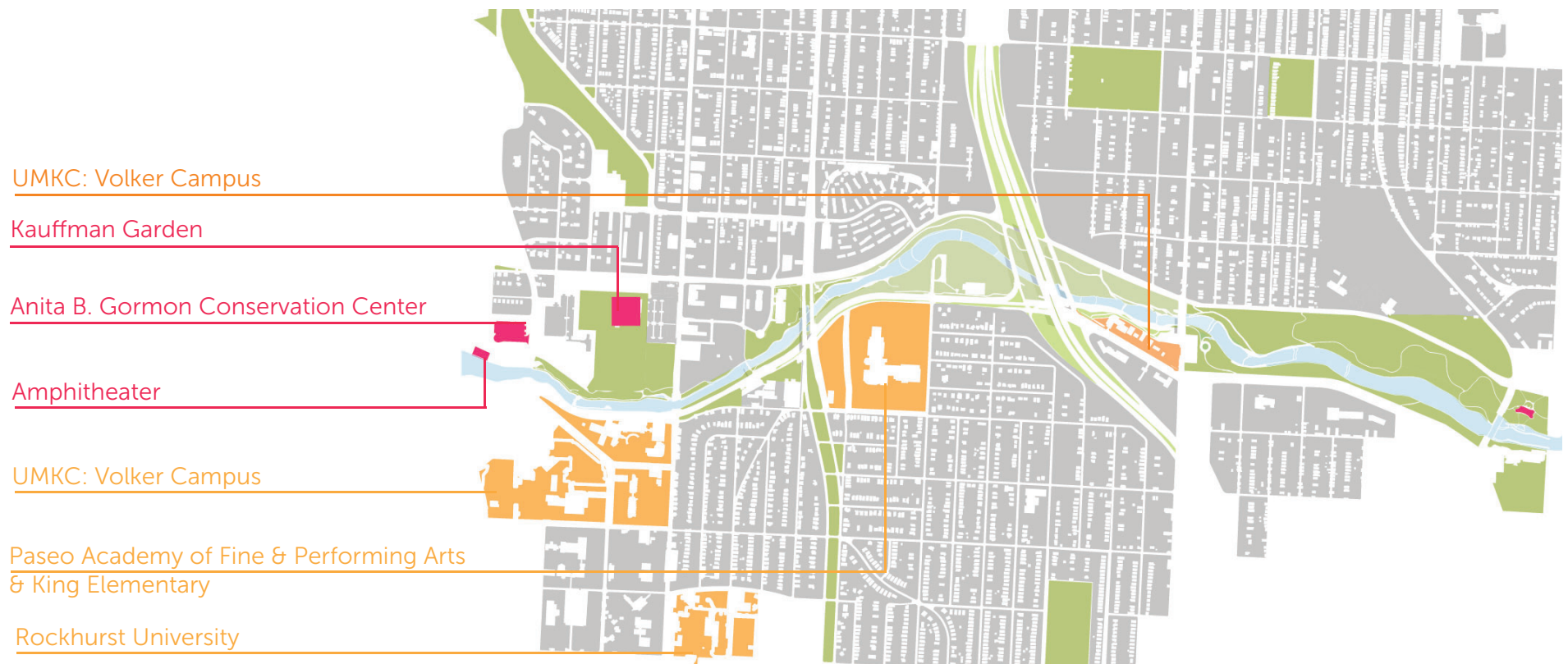


Figure 6.03 - Neighborhood context map

COMMUNITY AGE DEMOGRAPHICS

The community surrounding MLK Park consists of 8 census blocks within a 1-mile radius, shown in Figure 6.04. These blocks were analyzed to understand the playground user group by age based on information collected in 2019 by the Census Bureau.



Figure 6.04 - Census block analysis

Table 6.01 shows the ages of community members in five year age increments. Each bar is colored to correspond to the defined age groups from the previous chapters. The pie chart shows the proportion of each defined age group.

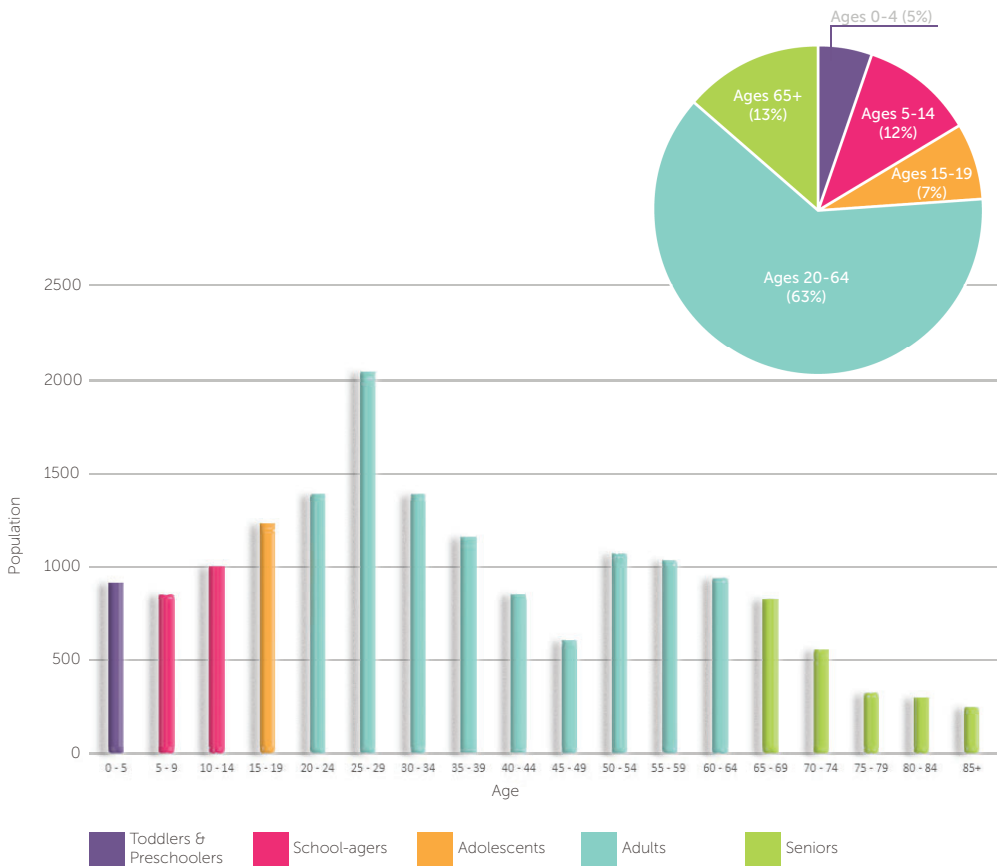


Table 6.01 - Community age analysis formed from census blocks within a 1-mile radius of MLK Park

COMMUNITY INCOME & ETHNICITY DEMOGRAPHICS

MLK Park is located within a historically red-lined area, the effects of which are still seen in the area today. The communities surrounding the site consist of primarily low income residents of diverse ethnicities.

This community consists of a diverse group of people with minimal community gathering space. MLK Park can offer a much needed community amenity that provides a space for users to connect across generations.

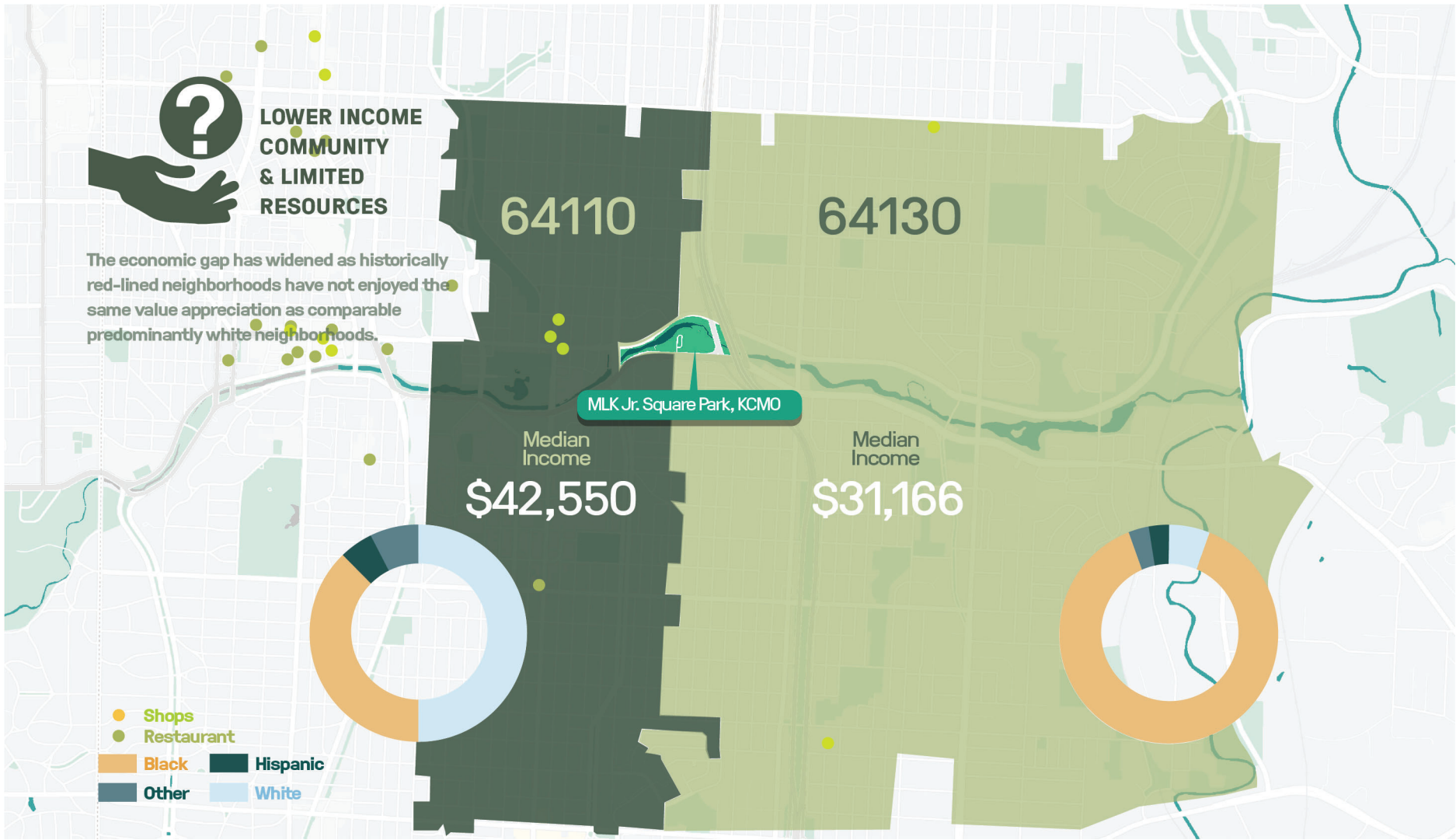


Figure 6.05 - Community income and ethnicity map (Chen, 2020)

MASTER PLAN

The proposed intergenerational playground design concepts build off of the MLK Park Master Plan proposed by the LAR 705 Master’s Project Studio in Fall 2020. The plan includes: a large open lawn,

picnic seating, playground, multi-use sports court, parking, restrooms, pedestrian bridge, prairie trail, and fitness loop. The plan allocated 8,700 square feet of space.

- Key
- 1 Playground
 - 2 Open Lawn
 - 3 Covered Seating
 - 4 Multi-use Sport Court
 - 5 Restrooms
 - 6 Parking/Drop-off
 - 7 Pedestrian Bridge
 - 8 Prairie Trail w/ overlook
 - 9 Splash Pad

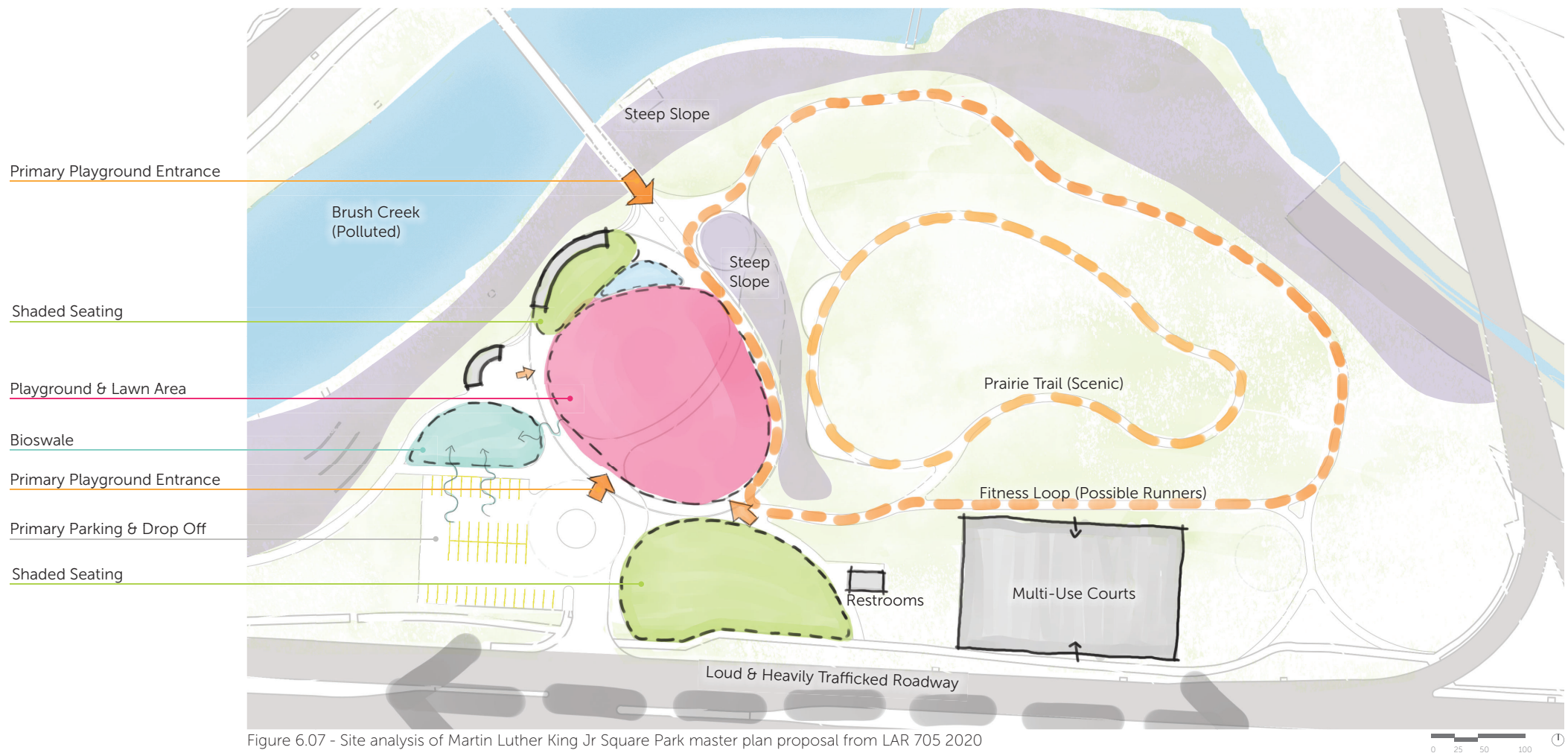


Figure 6.06 - Martin Luther King Jr Square Park as designed by the fall 2020 studio (LAR 705, 2020)

SITE ANALYSIS

A site analysis of the MLK Park Master Plan was conducted to understand the existing conditions that will affect the playground design. The site analysis determined that the area allocated for the playground was too small and needed to be enlarged. The playground area is located directly adjacent to the parking lot and restrooms, but is separated from the primary seating areas. To better design the playground for safety and comfort, the playground and lawn area proposed in the master plan were redesigned in this projective design effort. After merging the playground and lawn into a single zone, it was determined that the primary entrances into the playground would

be from the parking lot and pedestrian bridge, meaning that these entrances should allow for direct access into the playground area. Surrounding the playground are various hazards, including a heavily trafficked road to the south and a polluted stream to the north, creating potential harm to children if not properly blocked off. Covered seating zones buffer both sides of the proposed playground and lawn area, offering a slight buffer to the roadway and stream. A fitness trail loop runs directly adjacent to the east of the playground, promoting high-energy activity.



SITE FUNCTION

FUNCTIONAL USE DIAGRAM

After analyzing the site and surrounding community, a functional use diagram was created to outline circulation, playground access points, and play activities. The layout utilizes the Intergenerational Playground Design Guidelines to help locate playground activities, amenities, and access points on the site to allow for accessibility and activity layering. The functional use diagram was utilized for the design of a nature playground and a traditional equipment based playground.

To determine play zones, this design focuses on the use of physical fitness activity to provide a variety of play options. Each play zone includes multiple playground activities presented in chapter 5.

The playground was divided into the following play zones:

- o **Fine Motor**
 - Manipulating
 - Spinning
- o **Balance**
 - Spinning
 - Stepping
- o **Muscle & Bone - Strengthening**
 - Climbing
 - Hanging
 - Sliding
 - Jumping
- o **Aerobic**
 - Swinging
 - Crawling
 - Climbing
- o **Flexibility, Warm-up, Cool-down**
 - Spontaneous Activity



Figure 6.08 - Functional use concept

INTERGENERATIONAL PLAYGROUND CONCEPT 1

TRADITIONAL EQUIPMENT BASED DESIGN

This playground design concept utilizes tradition playground equipment that offers various playground activities to connect users across generations.

The playground consists of:

- Sand Play
 - o Users can dig, build, and manipulate sand, engaging fine motor skills
 - o Manipulative play encourages social and imaginative play
- Balance Activity
 - o A carousel offers a more challenging option that encourages multiple users participate by to griping an overhead bar while spinning
 - o Two spinner plates provide a seated spinning option
 - o A balance course includes stepping logs, stilts, and balance poles allowing for multiple abilities to participate through varying levels of challenge
- Muscle & Bone-Strengthening Activity
 - o Utilizes the Corocord Rope Play Loop, which offers climbing, hanging, stepping, and sliding
 - o This play feature is safe for use by ages 5+
- Aerobic Activity
 - o Includes Rope Tunnel Bridge and Pendulum Swing
 - o Pendulum swing encourages cooperative play by encouraging multiple users at once
- Flexible Lawn
 - o Three small lawn zones allow for spontaneous activity
 - o The lawns can be utilized for flexibility, warm-up, & cool-down activities including yoga or tai chi

Key

- | | | |
|---------------------------------|--|--------------------|
| 1 Splash Pad | 4 Stepping Logs, Stilts, & Balance Poles | 7 Pendulum Swing |
| 2 Sand Play | 5 Corocord Rope Play Loop | 8 Flexible Lawn |
| 3 Sky Carousel & Spinner Plates | 6 Rope Tunnel Bridge | 9 Moveable Seating |

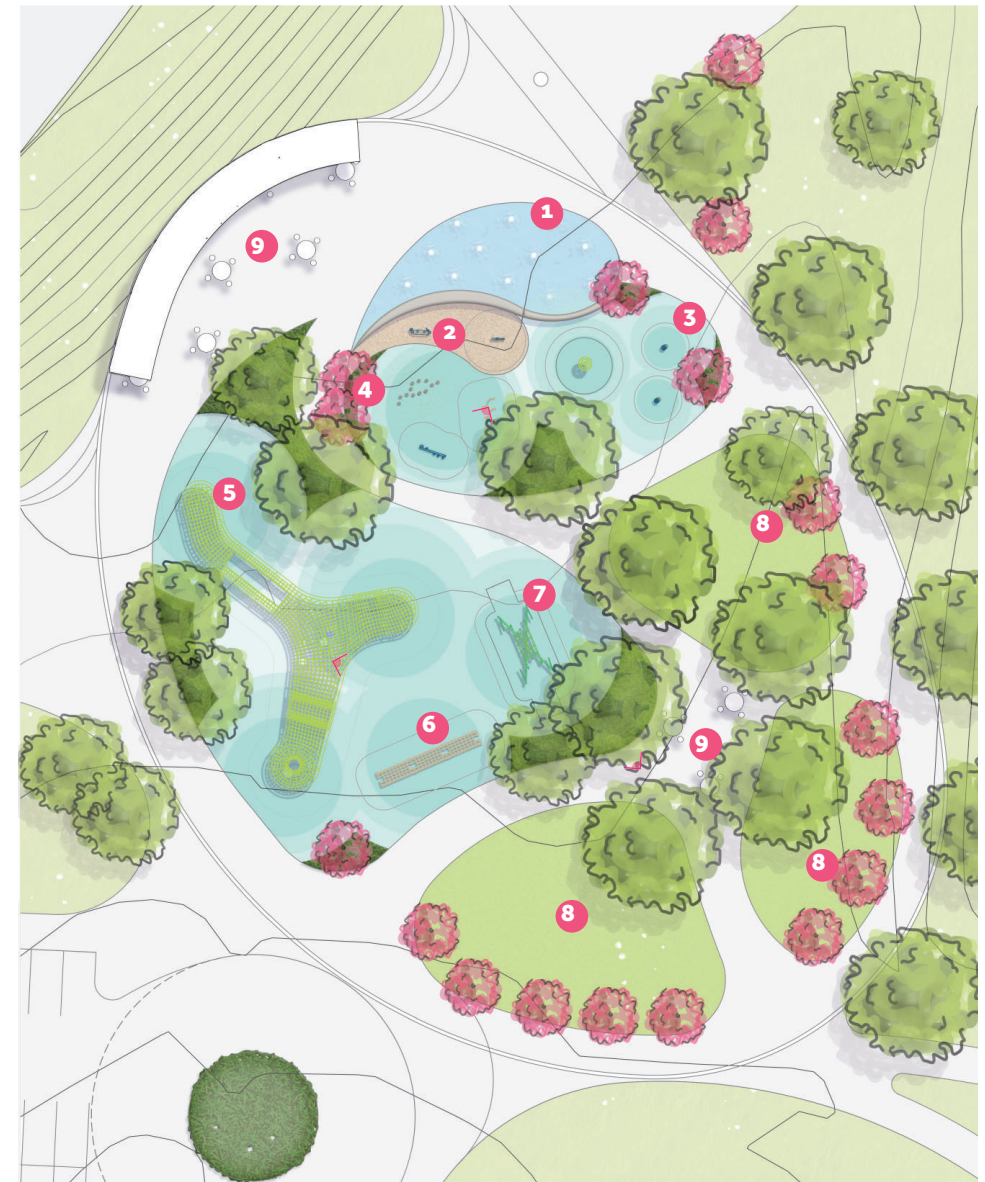


Figure 6.09 - Intergenerational playground concept 1:
Traditional equipment based design

APPLICATION OF DESIGN GUIDELINES

Table 6.02 shows the guidelines that were used to design concept 1. This concept utilizes proposed guidelines from each of the design principles including: site planning, program, safety, engagement, and choice.

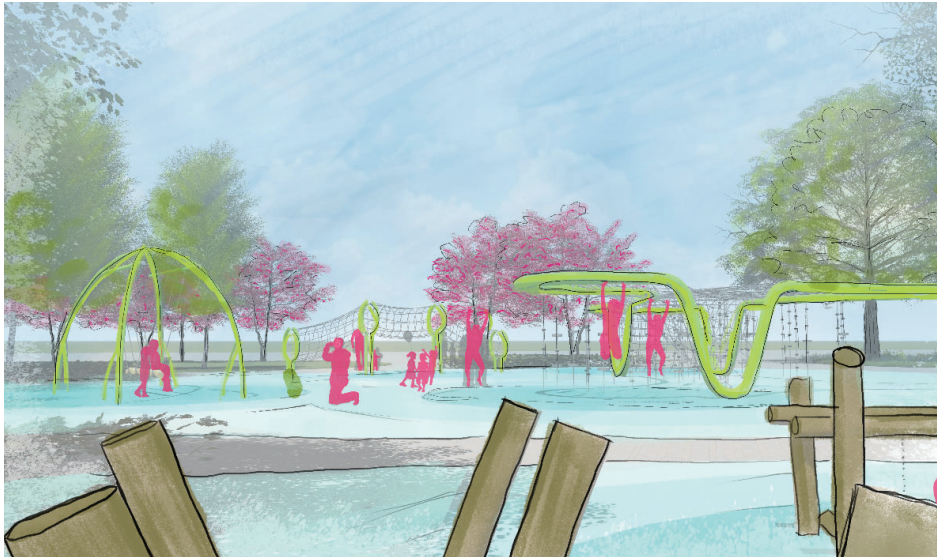


Figure 6.10 - Intergenerational playground concept 1: View of playground from stilts

	Site Planning	Program Organization	Safety	Engagement	Choice
Promote Community Involvement					
Include Subject Matter Experts	●				
Provide Accessible Options	●				
Accommodate User Needs	●				
Offer Physical, Sensory, & Social Play		●			
Provide Visual Cues					
Diverse Environmental Conditions		●			
Utilize Playground Standards					
Offer Safety Features			●		
Provide Visibility			●		
Multiple Activities in Play Zone				●	
Encourage Intergenerational Play				●	
Provide Options for Play & Interaction					●
Create Space for Flexibility					●

Table 6.02 - Intergenerational playground concept 1: Proposed guidelines met



Figure 6.11 - Intergenerational playground concept 1: View from top of Corocord rope structure



Accessibility
Utilization of rubber surfacing provides easy movement for all

Activity Layering
Corocord offers a variety of activities including climbing, balancing, & sliding within the same play zone

Safety Features
Planting offers barriers that limit playground exits

Physical, Sensory, & Social Play
Inclusion of sand play allows for a sensory experience that promotes social interactions and use of fine motor skills

Comfort & Visibility
Shaded seating areas allow for visibility through the playground

Figure 6.12 - Intergenerational playground concept 1: Guideline review

INTERGENERATIONAL PLAYGROUND CONCEPT 2

NATURE BASED DESIGN

This playground design concept utilizes natural materials to provide a playground that offers opportunities to connect across generations.

The playground consists of:

- Sand & Water Play
 - o Users can dig, build, and manipulate sand, engaging fine motor skills
 - o Manipulative play encourages social and imaginative play
- Balance Activity
 - o Logs, stones, and stumps were utilized to create a balance course that offers a range of challenge due to height, surfacing, and distance between obstacles
 - o The balance activities encourage jumping, stepping, and balancing
- Aerobic and Muscle-Strengthening Activity
 - o Boulders, log tunnels, wooden stilts, and crawling structures were utilized to create a play zone that meets physical fitness activity recommendations for all ages
 - o This zone encourages crawling, climbing, stepping, and jumping
- Flexible Lawn
 - o Three small lawn zones allow for spontaneous activity
 - o The lawns can be utilized for flexibility, warm-up, & cool-down activities including yoga or tai chi

Key

- | | | |
|-----------------------------|----------------------------|--------------------|
| 1 Splash Pad | 4 Stone Climbing Structure | 7 Log Tunnels |
| 2 Sand & Water Play | 5 Climbing Logs | 8 Flexible Lawn |
| 3 Balancing Logs and Stones | 6 Crawling Logs | 9 Moveable Seating |

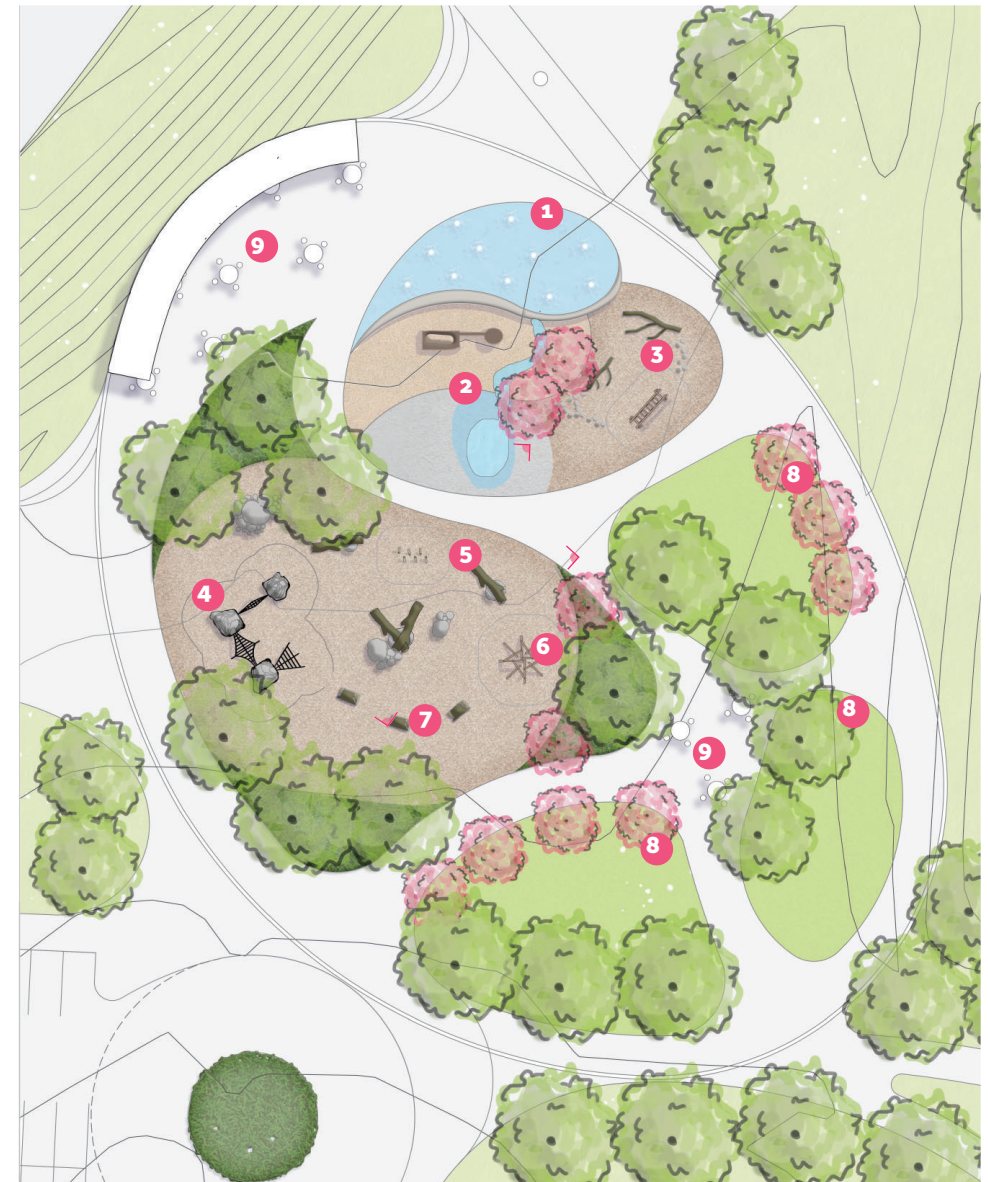


Figure 6.13 - Intergenerational playground concept 2:
Nature based design

APPLICATION OF DESIGN GUIDELINES

Table 6.03 shows the guidelines that were used to design concept 2. Guidelines from each design principle were followed to ensure that the playground meets recommendations for site planning, program, safety, engagement, and choice. Each guideline included was carefully considered to determine best implementation for a nature playground.



Figure 6.14 - Intergenerational playground concept 2: View from boulder

	Site Planning	Program Organization	Safety	Engagement	Choice
Promote Community Involvement					
Include Subject Matter Experts	●				
Provide Accessible Options					
Accommodate User Needs	●				
Offer Physical, Sensory, & Social Play		●			
Provide Visual Cues					
Diverse Environmental Conditions		●			
Utilize Playground Standards					
Offer Safety Features			●		
Provide Visibility			●		
Multiple Activities in Play Zone				●	
Encourage Intergenerational Play				●	
Provide Options for Play & Interaction					●
Create Space for Flexibility					●

Table 6.03 - Intergenerational playground concept 2: Proposed guidelines met



Figure 6.15 - Intergenerational playground concept 2: View from pathway

Activity Layering

Use of climbing elements, stones and logs allows for playground activities including: climbing, crawling, jumping, & balancing

Physical, Sensory, & Social Play

Inclusion of sand & water play allows for a sensory experience that promotes social interactions and use of fine motor skills

Provide Options for Play

Different heights & widths of logs & stones allow for varying levels of challenge

Comfort & Visibility

Shaded seating areas allow for visibility through the playground

Safety Features

Planting offers barriers that limit playground exits



Figure 6.16 - Intergenerational playground concept 2: Guideline review



7

CONCLUSIONS

CONCLUSION

SUMMARY OF RESEARCH FINDINGS

Through this research, the answer was found to the research question: How can playgrounds be designed to meet the physical activity needs for users of all ages through physical acts of play that encourage interaction across generations? To answer the question, playgrounds were analyzed through the lens of physical activity, providing insight into play and its relation to different generations.

To achieve this, past research, precedents, existing design guidelines, physical activity guidelines, and interviews were utilized to create informed design guidelines and a playground activities guide for intergenerational playground design. The design guidelines and playground activities were then applied to an intergenerational playground at MLK Park.

PROJECT STRENGTHS

This project provides a resource for park planners, designers, and communities to reference when designing an intergenerational playground. The proposed design guidelines are formed from existing inclusive and intergenerational design guidelines, providing a unique set of new guidelines that focus on connecting users across generations. The intergenerational playground activities offer a comprehensive guide to understanding physical activity recommendations for each age group and how to apply playground activities to meet needs across generations. As intergenerational playgrounds gain popularity, there is hope that generational barriers are eliminated and play can be a positive way to build understanding between generations and reduce stereotypes. Play can provide a fun opportunity for users to connect across generations in an open and welcoming environment.

PROJECT LIMITATIONS

During the completion of this project, time constraints limited the number of interviews that were completed. Two interviews were completed during this process to gather the necessary information; however, the project would be strengthened by completing more interviews.

Another limitation of this study was the site application. This study would benefit from applying the design guidelines to additional sites to get a more rounded understanding of their applicability in different context and scales.

In terms of the playground activities, many were chosen for their physical benefits, which limits the application to nature-based playgrounds. As a future study, these could be expanded to explore other activities that would occur in nature-based playgrounds.

PROJECT CHALLENGES

During the research process, one challenge was researching to ensure all generations meet safety requirements and benefit from physical play activities while designing in a way that does not intentionally separate generations. Focusing on activity categories and ability was used to design the site to allow for all users.

Regarding research on age groups, it was difficult to specifically address some generations due to a lack of consistent knowledge available for each group. Recommendations and standards for playgrounds, physical fitness, and developmental needs all classify ages differently, with inconsistent age ranges.

FUTURE RESEARCH

The design guidelines created in this study give an in-depth analysis of physical fitness benefits to users of all ages; however, supplemental research could be conducted to expand this study.

Future research may include:

- Focusing on social and developmental needs of all users
- Expanding activities to include nature-based activities
- Understanding play desires of all users
- Interviews of users to understand what would make all ages feel welcome at the playground
- Application to a real site and discussion with the design team about the process



END MATTER

TEXT REFERENCES

Bindel, Amanda. n.d. "Spinning, Swinging, Sliding and Sand: The Many Benefits of Playground Play." *The Power of Play* | Toca Boca. Accessed February 21, 2021. <https://tocaboca.com/magazine/benefits-playground-play/>.

Brownell, Patricia, and Rosa Perla Resnick. 2005. "Intergenerational-Multigenerational Relationships: Are They Synonymous?" *Journal of Intergenerational Relationships* 3 (1): 67–75. https://doi.org/10.1300/J194v03n01_06.

Brussoni, Mariana, Lise L. Olsen, Ian Pike, and David A. Sleet. 2012. "Risky Play and Children's Safety: Balancing Priorities for Optimal Child Development." *International Journal of Environmental Research and Public Health* 9 (9): 3134–48. <https://doi.org/10.3390/ijerph9093134>.

CDC. 2020. "Obesity Is a Common, Serious, and Costly Disease." Centers for Disease Control and Prevention. June 29, 2020. <https://www.cdc.gov/obesity/data/adult.html>.

Cosco, Nilda, and Robin Moore. 2019. "Creating Inclusive Naturalized Outdoor Play Environments," May 2019.

Cournoyer, Caroline. 2012. "Playgrounds for Seniors Popping Up in U.S." September 2012. <https://www.governing.com/topics/health-human-services/gov-senior-playgrounds-popping-up.html>.

Cranz, G., and M. Boland. 2004. "Defining the Sustainable Park: A Fifth Model for Urban Parks." *Landscape Journal* 23 (2): 102–20. <https://doi.org/10.3368/lj.23.2.102>.

Czalczyńska-Podolska, Magdalena. 2014. "The Impact of Playground Spatial Features on Children's Play and Activity Forms: An Evaluation of Contemporary Playgrounds' Play and Social Value." *Journal of Environmental Psychology* 38 (June): 132–42. <https://doi.org/10.1016/j.jenvp.2014.01.006>.

Drobnjak, Lauren. 2015. "DEVELOPMENTAL SKILLS: JUMPING." The Inspired Treehouse (blog). June 14, 2015. <https://theinspiredtreehouse.com/developmental-skills-jumping/>.

Edwards, Darryl. 2016. "The Physical and Mental Benefits of Crawling." Primal Play. December 10, 2016. <https://www.primalplay.com/blog/the-physical-and-mental-benefits-of-crawling>.

Forrester, Lesley. 2019. "Playgrounds for Seniors | Montreal Home Care | Worn Doorstep." The Worn Doorstep (blog). July 17, 2019. <https://worndoorstep.com/playgrounds-for-seniors/>.

Frost, Joe L. 2010. *A History of Children's Play and Play Environments: Toward a Contemporary Child-Saving Movement*. London, UNITED KINGDOM: Taylor & Francis Group. <http://ebookcentral.proquest.com/lib/ksu/detail.action?docID=460307>.

Frost, Joe L., Pei-San Brown, John A. Sutterby, and Candra D. Thornton. 2004. *The Developmental Benefits of Playgrounds: Research Results from Leading Experts on Playgrounds and Child Development*. Association for Childhood Education International.

Gray, Peter. 2017. "What Exactly Is Play, and Why Is It Such a Powerful Vehicle for Learning?." *Topics in Language Disorders* 37 (3): 217–28. <https://doi.org/10.1097/TLD.0000000000000130>.

Ginsburg, K. R., and the Committee on Communications, and the Committee on Psychosocial Aspects of Child and Family Health. 2007. "The Importance of Play in Promoting Healthy Child Development and Maintaining Strong Parent-Child Bonds." *PEDIATRICS* 119 (1): 182–91. <https://doi.org/10.1542/peds.2006-2697>.

Gonzalez, Sandy L., Veronica Alvarez, and Eliza L. Nelson. 2019. "Do Gross and Fine Motor Skills Differentially Contribute to Language Outcomes? A Systematic Review." *Frontiers in Psychology* 10. <https://doi.org/10.3389/fpsyg.2019.02670>.

HAGS. n.d. "Guide to Designing Inclusive Playgrounds." Accessed April 3, 2021. <https://www.hags.com/en-us/designing-inclusive-playgrounds>.

Hamler, Melissa. 2019. "Difference between Playgrounds and Natural Play Spaces for School." Organization. Child in the City. December 7, 2019. <https://www.childinthecity.org/2019/07/12/difference-between-playgrounds-and-natural-play-spaces-for-school/>.

Hardy, Stephen, and Alan G. Ingham. 1983. "Games, Structures, and Agency: Historians on the American Play Movement." *Journal of Social History* 17 (2): 285–301.

Heller, Naomi. 2020. "A Brief History of Playground Design, Part 1." The Field (blog). March 12, 2020. <https://thefield.asla.org/2020/03/12/a-brief-history-of-playground-design-part-1/>.

Heller, Naomi. 2020. "A Brief History of Playground Design, Part 2." The Field (blog). March 19, 2020. <https://thefield.asla.org/2020/03/19/a-brief-history-of-playground-design-part-2/>.

Holloway, Donell, Lelia Green, and Sonia Livingstone. 2013. *Zero to Eight. Young Children and Their Internet Use*.

Joshana. 2017. "The Evolution of Nature Playgrounds." Goric Marketing Group USA, Inc. September 8, 2017. <https://goric.com/evolution-nature-playgrounds/>.

Kaplan, Matthew, Leng Leng Thang, Mariano Sanchez, and Jaco Hoffman. 2020. "Some Lessons Learned about the Design and Functioning of ICZs." Plone Site. Accessed February 23, 2021. <https://aese.psu.edu/outreach/intergenerational/articles/intergenerational-contact-zones/conclusions>.

Kellert, Stephen. 2015. "Early Child Development. Body of Knowledge." *Nature*, 286–89.

Link, Jeff. 2017. "Intergenerational Playgrounds Unite the Young and Old." Goric Marketing Group USA, Inc. February 7, 2017. <https://goric.com/intergenerational-playgrounds-unite-the-young-and-old/>.

Lusinski, Natalia. 2015. "Playgrounds For The Elderly And Multi-Generations, Because Playing Is Ageless." Simplemost. November 10, 2015. <https://www.simplemost.com/playgrounds-elderly-multi-generations-playing-ageless/>.

Marsden, K. Gerald. 1961. "Philanthropy and the Boston Playground Movement, 1885-1907." *Social Service Review* 35 (1): 48–58.

Morin, Amanda. n.d. "5 Playground Activities That Can Boost Your Child's Development." Accessed February 21, 2021. <https://www.understood.org/en/friends-feelings/child-social-situations/playgrounds-playdates/5-playground-activities-that-can-help-your-childs-development>.

Mount, Charles. 1985. "Boy Injured on Slide Gets \$9.5 Million." *Chicagotribune.Com*. Accessed November 14, 2020. <https://www.chicagotribune.com/news/ct-xpm-1985-01-15-8501030815-story.html>.

"Nature Play Playground Research." n.d. PlayCore. Accessed November 16, 2020. <https://www.playcore.com/research/nature-play>.

NHS GGC. 2017. "Functional/Manipulative Play." NHS GGC. December 17, 2017. <https://www.nhsggc.org.uk/kids/life-skills/play-leisure/functionalmanipulative-play/>.

Playcore. 2016. "Me2 Guidebook | PlayCore." 7 Principles of Inclusive Playground Design. Accessed December 11, 2020. https://secure.viewer.zmags.com/publication/200b6222?__hssc=20404007.3.1604345131935&__

Playworld. 2018. "Developing Balance, Coordination & Fine Motor Skills on the Playground." Playworld® Blog. December 28, 2018. <https://playworld.com/blog/playgrounds-develop-balance-coordination-motor-skills/>.

"Public Playground Safety." n.d., 61.

Pursi, Annukka, and Lasse Lipponen. 2018. "Constituting Play Connection with Very Young Children: Adults' Active Participation in Play." *Learning, Culture and Social Interaction* 17: 21–37.

Rainwater, Clarence Elmer. [c1922]. *The Play Movement in the United States;a Study of Community Recreation*,. Washington, D.C.,. <http://hdl.handle.net/2027/msu.31293006775252>.

Roemmich, James N., Joley E. Beeler, and LuAnn Johnson. 2014. "A Microenvironment Approach to Reducing Sedentary Time and Increasing Physical Activity of Children and Adults at a Playground." *Preventive Medicine* 62 (February): 108–12. <https://doi.org/10.1016/j.ypmed.2014.01.018>.

Rosin, Hanna. 2014. "The Overprotected Kid." *The Atlantic*, April 2014. <https://www.theatlantic.com/magazine/archive/2014/04/hey-parents-leave-those-kids-alone/358631/>.

Smith, Peter, and Anthony Pellegrini. 2008. "Learning Through Play." In . *Encyclopedia on Early Childhood Development*.

Spencer, Jaime. 2016. "Promoting Fine Motor Skills on the Playground." Miss Jaime O.T. (blog). May 18, 2016. <https://www.missjaimeot.com/promoting-fine-motor-skills-playground/>.

"Stepping Pods." n.d. Playground Audit (blog). Accessed February 21, 2021. <https://playgroundaudit.com/stepping-pods/>.

Stevens-Smith, Deborah, and Jami Murdock. n.d. "7 Elements of Play: Balancing." *The Genius of Play*. Accessed February 21, 2021. <https://thegeniusofplay.org/genius/expert-advice/articles/7-elements-of-play-balancing.aspx?WebsiteKey#61;f24671dc-3a61-4dfa-854c-b2d74801f627%23.YC6byGhKhPY>.

Stevens-Smith, Deborah, and Jami Murdock. n.d. "7 Elements of Play Spinning for Children." *The Genius of Play*. Accessed February 21, 2021. <https://thegeniusofplay.org/genius/expert-advice/articles/7-elements-of-play-spinning.aspx#.YDMjg2hKiUk>.

Stevens-Smith, Deborah, and Jami Murdock. n.d. "What's Play Climbing and Brachiating - Benefits for Kids Ages 5 and Up." *The Genius of Play*. Accessed February 21, 2021. <https://thegeniusofplay.org/genius/expert-advice/articles/elements-of-play-climbing.aspx#.YDLZUGhKhPY>.

Talarowski, Meghan. 2017. "London Study of Playgrounds: The Influence of Design on Play Behavior in London vs New York, San Francisco, and Los Angeles." *StudioLudo*, December, 1–126.

"The Importance of Motor Skill Development in Children Age 5 - 8." 2017. *Gym 1* (blog). May 9, 2017. <https://gym1.net/2017/05/09/motor-skill-development-children-5-8/>.

Trautner, Tracy. 2018. "Just a Swinging, Sliding and Climbing!" *Early Childhood Development*. November 8, 2018. <https://www.canr.msu.edu/news/just-a-swinging-sliding-and-climbing>.

Tyler, Jo A. 2017. "What Really Happens When Adults Play?: A Call for Examining the Intersection of Psychosocial Spaces, Group Energy, and Purposeful Play." *International Journal of Game-Based Learning* 7 (3): 1–10. <https://doi.org/10.4018/IJGBL.2017070101>.

U.S. Department of Health and Human Services. 2018. *Physical Activity Guidelines for Americans*, 2nd edition. Washington, DC: U.S. Department of Health and Human Services.

Voelcker-Rehage, Claudia. 2008. "Motor-Skill Learning in Older Adults—a Review of Studies on Age-Related Differences." *European Review of Aging and Physical Activity* 5 (1): 5–16. <https://doi.org/10.1007/s11556-008-0030-9>.

Washington, Tracy L., Debra Flanders Cushing, Janelle Mackenzie, Laurie Buys, and Stewart Trost. 2019. "Fostering Social Sustainability through Intergenerational Engagement in Australian Neighborhood Parks." *Sustainability* 11 (16): 4435. <https://doi.org/10.3390/su11164435>.

IMAGE REFERENCES

Chen, Si. 2020. Community income and ethnicity map. Diagram.

Duncan & Grove. 2020. "Robina tunnel net" Kew Gardens, London. Image. Retrieved from <https://duncanandgrove.com/bespoke-playgrounds/kew-gardens-playground-pine-tree/>

Earthscape. 2020. "Founders Park at Woodland Hills" Houston, Texas. Image. Retrieved from <https://www.earthscapeplay.com/project/founders-park-at-woodland-hills-natural-playground-houston-texas/>

Earthscape. 2015. "Governors Island slide." Governors Island, New York. Image. Retrieved from <https://www.earthscapeplay.com/project/governors-island-playground-new-york/>

Earthscape. 2017. "Hanging bars natural playground." Stratford, Ontario. Image. Retrieved from <https://www.earthscapeplay.com/project/stratford-playground-design/>

Guzzo, Denis. 2013. "Wikado Playground" Rotterdam, The Netherlands. Image. Retrieved from <https://www.flickr.com/photos/2012architecten/16810995098/>

Hoyer, Alexa. n.d. "Swing Valley at Pier 6." New York, New York. Image. Retrieved from <https://www.brooklynbridgepark.org/places-to-see/playgrounds/swing-valley-at-pier-6/>

Jeannie. 2021. "Maruta Gardner Bonita Cove Park" San Diego, California. Image. Retrieved from <https://parksinsandiego.com/maruta-gardner-bonita-cove/>

Jessica U. 2017. "Bison's Bluff water & sand play." Spring Valley, Illinois. Image. Retrieved from https://www.yelp.com/biz_photos/bisons-bluff-schaumburg?select=S2lzFT16PO5WkVgt3nfBaA

Justin C. 2020. "Climbing structure at Mountains Edge Regional Park" Las Vegas, Nevada. Image. Retrieved from https://www.yelp.com/biz_photos/mountains-edge-regional-park-las-vegas-2?select=1q1Vpe9qFV DnqIsoNpvVeQ&userid=WxDj6mmyrJi5q5nHKJ6H7w

Kappelman, Julia. 2019. "Spinner at Gasworks Park" Seattle, Washington. Image.

Karla D. 2015. "San Jose Rotary Garden." San Jose, California. Image. Retrieved from https://www.yelp.com/biz_photos/rotary-playgarden-san-jose?start=210

Kirby-Yung, Sarah. 2015. "Hastings Park Parkour Course." Vancouver, British Columbia. Image. Retrieved from https://twitter.com/sarahkirby_yung/status/622555353004158977/photo/2

Landzine. 2014. "Zorlu Playground." Istanbul, Turkey. Image. Retrieved from <http://landezine.com/index.php/2014/08/playground-at-zorlu-centre-by-carve>

LAR 705 (Si Chen, Mikala Fitzgerald, Julia Kappelman, Grant Pasowicz, August Titus, Haley Wienberg). 2020. "Martin Luther King Jr Square Park as designed by the fall 2020 studio" Site Plan.

Melissa G. 2015. "Exploration Park dry creek" Katy, Texas. Image. Retrieved from https://www.yelp.com/biz_photos/exploration-park-katy?select=K47Z3UpU0r3DYfXdskwBEA

Pasowicz, Grant. 2020. "Regional community map" Diagram.

Playground Centre. 2018. "2 meter slide" Auckland, New Zealand. Image. <https://www.playgroundcentre.com/showcases/royal-road-reserve-auckland/>

Playground Centre. 2018. "Royal Road Reserve jumping pads." Auckland, New Zealand. Image. Retrieved from <https://www.playgroundcentre.com/showcases/royal-road-reserve-auckland/>

Playground Centre. 2014. "Seesaw ship." Logan City, Australia. Image. Retrieved from <https://www.playgroundcentre.com/showcases/logan-city-council-qld-carnation-park/>

Rosy P. 2018. "Log staircase at Evelyn's Park" Bellaire, Texas. Image. Retrieved from https://www.yelp.com/biz_photos/evelyns-park-bellaire?select=X_Y7Cp3oIMp0Bm4lFQGKrg

Tiara B. 2020. "Lizard painted hopscotch." Spring Valley, Illinois. Image. Retrieved from https://www.yelp.com/biz_photos/bisons-bluff-schaumburg?select=zNkV5XJ_nujPdsqwrVYMDg

V.F. 2019. "Exploration Park." Katy, Texas. Image. Retrieved from https://www.yelp.com/biz_photos/exploration-park-katy?select=K47Z3UpU0r3DYfXdskwBEA

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GLOSSARY

Intergenerational: Interactions and relationships between or among people of different generations (Brownell & Resnick, 2005).

Intergenerational Playground: Outdoor spaces intentionally designed for play and social interactions across different generations.

Multi-generational: Different generations of people included independently of other generations (Brownell & Resnick, 2005).

National Recreation and Park Association (NRPA): Current association formed in 1966 from merger of NRA with other associations. This association is focused on recreation and playground safety (Frost et. al., 2004).

Play: An activity that is outside of normal everyday tasks that is not meant to be serious and is determined by motives and attitudes with no reward beyond play itself (Rainwater, 1922; Gray, 2017).

Playground: A space that is designed specifically for play and catered toward specific age groups (Hamler, 2019).

Playground Association of America (PAA): was an association formed in 1907 focused on creating playgrounds. Became the Playground and Recreation Association of America in 1910. Renamed again in 1930 to the National Recreation Association (NRA) (Frost et. al., 2004).

Play Space: An outdoor space with a variety of programmed and unprogrammed activities that may include multiple types of equipment. Playgrounds are often included within a play space (Hamler, 2019).

IRB APPROVAL



TO: Dr. Jessica Canfield
Landscape Architecture/Regional and Community Planning
Seaton Hall

Proposal Number: 10340

A handwritten signature in black ink, appearing to be "Rick Scheidt", written over a horizontal line.

FROM: Rick Scheidt, Chair
Committee on Research Involving Human Subjects

DATE: 12/14/2020

RE: Proposal Entitled, "Intergenerational Playground Design: A safe and inclusive design approach for playgrounds in public parks"

The Committee on Research Involving Human Subjects / Institutional Review Board (IRB) for Kansas State University has reviewed the proposal identified above and has determined that it is EXEMPT from further IRB review. This exemption applies only to the proposal - as written - and currently on file with the IRB. Any change potentially affecting human subjects must be approved by the IRB prior to implementation and may disqualify the proposal from exemption.

Based upon information provided to the IRB, this activity is exempt under the criteria set forth in the Federal Policy for the Protection of Human Subjects, **45 CFR §104(d), category: 2, subsection: ii.**

Certain research is exempt from the requirements of HHS/OHRP regulations. A determination that research is exempt does not imply that investigators have no ethical responsibilities to subjects in such research; it means only that the regulatory requirements related to IRB review, informed consent, and assurance of compliance do not apply to the research.

Any unanticipated problems involving risk to subjects or to others must be reported immediately to the Chair of the Committee on Research Involving Human Subjects, the University Research Compliance Office, and if the subjects are KSU students, to the Director of the Student Health Center.