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Analysis of Playground Equipment at Muskegon Public Schools: A Needs Assessment

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Dedication

We dedicate this needs assessment to the students attending Muskegon Public Schools. We hope that this information can aid in providing safe and accessible playgrounds so that all students, regardless of ability, can play together every day.

Abstract

A local school district, Muskegon Public Schools, is restructuring due to budget constraints. Therapists at Muskegon Public Schools were concerned about the safety and accessibility of the current playgrounds. The purpose of this needs assessment was to determine if any of Muskegon Public Schools' playgrounds met the students' safety and accessibility needs. To determine this, the researchers created a checklist using the *Consumer Product Safety Commission's Handbook on Public Playground Safety* (1997) and the *U.S. Access Board Summary of Accessibility Guidelines for Play Areas* (2005). The checklist was then used to assess all nine Muskegon Public School playgrounds. None of the Muskegon Public School playgrounds met all the safety and accessibility requirements. A need exists to update the Muskegon Public School playgrounds to meet the current safety and accessibility requirements. Doing this will not only improve the safety of the playgrounds, but will promote an inclusive natural play environment for all Muskegon Public School students.

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Definition of Terms

Individual Education Plan (IEP)

A written legal document that details an individual student's special education needs and what measures will be taken to meet the student's needs (Pape & Ryba, 2004).

Individuals With Disabilities Education Act (IDEA)

A federal law that ensures all children, even those with disabilities will receive a free and appropriate education. It details how to provide services for early intervention, special education, and other related services (U.S. Department of Education, 2012).

Multi-Tier System of Support

A strategy to address behavioral and academic problems utilizing a school wide approach. It is grounded in evidence and based upon data collection that allows school staff to make instructional decisions that will benefit all students (Kansas State Department of Education, 2012).

Natural Environment

Home and community settings that are deemed natural or normal for children without disabilities to interact (Case-Smith & O'Brien, 2010).

Related Services

Required developmental, corrective, and supportive services that are designed to help children with disabilities benefit from special education. Includes, but is not limited to, occupational therapy, physical therapy, psychology services, speech-language pathology, school health services, and parent counseling and training (Pape & Ryba, 2004).

Response to Intervention (RTI)

RTI is a model of school wide support services which focus on high-quality instruction and intervention matched to student needs followed by systematically looking at the student's response to education or intervention (Case-Smith & O'Brien, 2010).

Section 504 of the Rehabilitation Act

A general education accommodation plan provided to any student who meets the definition of disabled and requires modifications to benefit from a free and appropriate public education (Pape & Ryba, 2004).

Universal Design

A design principle that calls for all products and environments to be designed so that they are usable by all people without needing additional adaptation (The Center for Universal Design, 2011).

Chapter One: Introduction

Numerous school districts nationwide are being forced to reduce their budgets in order to financially survive and continually provide education for students. Locally, Muskegon Public Schools stated it will close four of nine elementary schools within the district in order to compensate for financial difficulties. A Muskegon Public School occupational and physical therapist recognized that as schools close or change student population, it is important to consider whether or not each school's playground meets the student population safety and accessibility needs. The researchers were approached by the schools' therapy team and asked to assess their playground equipment and determine which structures were safe, accessible, and beneficial to students.

Approximately 25% of students in the school district have an Individualized Education Plan (IEP) and would benefit from playgrounds that adequately fulfill their needs (L. Hayhurst, personal communication, February 12, 2012). The participation of children with disabilities in sports and recreational activities promotes inclusion, minimizes deconditioning, optimizes physical functioning, and enhances overall wellbeing. Physical activity on the playground has positive impacts on the lives of all children (Murphy & Carbone, 2008). This needs assessment addressing each of the nine elementary school playgrounds will be important to determine which playgrounds are most suitable to meet students' safety and accessibility needs.

Background & Context

Muskegon County is located in western Michigan. The western edge of the county is bordered by Lake Michigan. It is surrounded by Oceana County in the north, Newaygo and Kent Counties in the east, and Ottawa County in the south (Muskegon County Recreation Plan, 2011).

Muskegon County is comprised of 509 square miles and in 2010 had a population of 172,188 (Muskegon County, Michigan, 2011). In 2011, the population of Muskegon had a median annual household income of $29,000 and a median annual family income of $36,000. The percentage of families in Muskegon living below the poverty level was 25.3%. Muskegon's population was comprised of 59.8% Caucasian citizens, 31.3% were Black or African American, and 8% were Hispanic or Latino (Census Facts, 2011). According to 2009-2010 statistics Muskegon Public Schools have a total of 2,640 students enrolled in the elementary schools, (Muskegon Public Schools, 2012). Individualized education plans had been developed for 25% of the students (L. Hayhurst, personal communication, February 12, 2012). Therefore many students are eligible for special education and related services. Muskegon Public Schools is restructuring and is concerned about the current quality of the playgrounds at Bluffton, Glenside, Lakeside, Marquette, McLaughlin, Moon, Nelson, and Oakview elementary schools, as well as, Steele Middle School which is a seventh and eighth grade school. During the restructuring, the Muskegon Public Schools' therapy team wanted to ensure that each school was equipped with all items necessary to provide a balanced education.

According to licensing rule 400.5117(7), playgrounds in the state of Michigan must be in compliance with the 1997 Edition of the *Consumer Product Safety Commission's Handbook on Public Playground Safety* (Michigan Department of Human Services, 2011). This handbook gives specifications for: (a) playground surfacing; (b) use zones for equipment; (c) layout and designs of playgrounds; (d) installation and maintenance of equipment; (e) materials of manufacture and construction; (f) general hazards; (g) stairways, ladders, and handrails; (h) platforms, guardrails, and protective barriers; and, (i) major types of equipment (Consumer Product Safety Commission, 1997).

Playground accessibility guidelines were developed in 2005 by the United States Access Board. The United States Access Board is an independent federal agency with the mission to promote accessibility for people with disabilities (United States Access Board, 2005). The guidelines contain standards to create accessible playgrounds. The Access Board guidelines delineate: (a) under which circumstances the guidelines apply; (b) the definitions of play components; (c) what constitutes an accessible route and what play components must be on an accessible route; and, (d) other playground accessibility requirements (Kennedy, 2005).

Based on a needs assessment that considers the population, safety regulations, and accessibility guidelines, Muskegon Public Schools and the therapy team wanted to determine which schools have the most safe and accessible playgrounds. They were concerned about what equipment could be saved and repaired to meet the safety and accessibility needs of the students and what equipment no longer met standards.

Problem Statement

Due to financial difficulties being experienced by Muskegon Public Schools, the district has begun restructuring the composition of the school district. They are considering closing elementary schools to compensate. Due to the restructure, moving playground equipment was also being considered. There was concern that the playgrounds were outdated and did not adequately meet the safety and accessibility needs of students, regardless of students' level of ability. The therapy team wanted to determine what changes and improvements would be necessary to ensure that playgrounds are safe and accessible.

Purpose

The purpose of this needs assessment was to determine if any of the elementary schools' current playgrounds met the needs of Muskegon Public Schools. To determine this, each of the

nine playgrounds were visited and assessed for safety and accessibility. The researchers developed a checklist to assess each of these elements.

Based upon the needs assessment, recommendations were made to the superintendent of Muskegon Public Schools regarding which playgrounds rank highest for safety and accessibility. While considering the financial constraints, this needs assessment will assist Muskegon Public Schools administration determine what changes and improvements need to be made to their playgrounds to ensure safety and accessibility. Any changes made may impact the treatment plans developed by the schools' occupational and physical therapists. Having a safe and accessible playground will give all students the opportunity to develop in a natural play environment.

Research Questions

Research questions included: (1) Are the playgrounds in compliance with the *Consumer Product Safety Commission's Handbook on Public Playground Safety* (1997)? (2) Are the playgrounds in compliance with accessibility requirements included in the *U.S. Access Board Summary of Accessibility Guidelines for Play Areas* (2005)?

Summary

The administration at Muskegon Public School District had not recently evaluated the playground system. Performing a needs assessment of the current playgrounds provided the administration at Muskegon Public Schools with current information regarding playgrounds' safety and accessibility. In addition to the administration, occupational and physical therapists have a vested interest in the needs assessment. Improving the playgrounds has the potential to provide occupational and physical therapists additional options for therapeutic interventions. Playgrounds provide a natural environment for students to participate in therapy and work on

IEP goals even when not participating in direct therapy services. Ultimately, all Muskegon Public School students will benefit from the needs assessment and subsequent playground improvements. Due to the consolidation of schools, it was necessary to address the status of the playgrounds and if needed, make improvements.

Chapter Two: Review of the Literature

Introduction

To complete the needs assessment for Muskegon Public Schools, the researchers considered three factors: the children, the playgrounds, and the occupation of play. These factors correspond with the Person-Environment-Occupation Model of occupational therapy. This model describes how the three factors interact to influence occupational performance. As the interaction between the three factors increases, the opportunity for a positive occupational performance also increases (Law, et al., 1996). When considering the person, environment, and occupations for this needs assessment, the people were the children who use the playgrounds, the environments were the schools' playgrounds, and the occupation was play. These were explored through discussion of text books and articles found by utilizing the database CINAHL Plus and Grand Valley State University's library search engine. Search terms included, occupational therapy, playground, safety, and accessibility. Research corresponding to each of these areas was reviewed in relation to the playground needs assessment for Muskegon Public Schools.

Person

Childhood is a time for growth. As children progress from infancy to adolescence, they experience and master developmental stages. Children engage in occupations and interact with their peers and environment to develop social, cognitive, and motor abilities. Play experiences foster the development of many social, cognitive, and motor skills (Case-Smith & O'Brien, 2010; Rodger & Ziviani, 2006).

Children attending Muskegon's elementary schools are in grades kindergarten through fifth. One school is an exception and serves children in seventh and eighth grade (Muskegon Public Schools, 2012). Children have many roles including sons or daughters, siblings,

teammates, friends, students, and players. However, as children age they spend the majority of their day at school. Their student roles are filled with many occupations including reading, writing, eating, self-care and playing. While playing, children challenge their motor, sensory, and social systems. The school playground is a natural environment in which children play (Case-Smith & O'Brien, 2010).

Children often spend time outside at recess throughout their school day. At Muskegon Public Schools children get two recess breaks for a total of approximately 40 minutes of recess time each day (L. Hayhurst, personal communication, February 12, 2012). As children age, they spend less time engaging in free play than they do as infants and young children (Rodger & Ziviani, 2006).

Being able to participate in the school environment, including recess and play, is a right of all children (Carlisle, 2009; Save the Children Canada, 2000). Play is an instrumental aspect of being a child (Case-Smith & O'Brien, 2010). All children should be afforded the opportunity to play in the same environment as their peers. Participating in outdoor play promotes growth, development, and prepares children for learning. Ramstetter, Murray, & Garner (2010) performed a systematic review of several studies to examine the value of recess as an important part of the school day and were able to discover several themes. They found that recess is beneficial for the cognitive, social, emotional, and physical functioning of children. The researchers also determined that recess should be well supervised and safe. Allowing children to spend time on a playground provides an opportunity to release their physical energy and calm their minds before returning to learning (Rodger & Ziviani, 2006; Ramstetter, Murray, & Garner, 2010). These findings demonstrate the importance of being able to engage in play while at recess.

Environment

The environment in which children play includes personal, social, and physical contexts. Creating a match between the characteristics of a person and the environment facilitates the opportunity for successful occupational performance (Law, et al. 1996). Playgrounds are a natural environment in which children engage in the occupation of play (Case-Smith & O'Brien, 2010). For playgrounds, this means establishing a good fit between the playground environment and children's developmental, physical, and social abilities, so that they will be able to engage in play (Bronson & Bundy, 2001). In order to foster play for all children, the playground environment needs to be safe, developmentally appropriate, and accessible (Winter, Bell, & Dempsey, 1994).

Playgrounds that are safe, developmentally appropriate, and allow access for all children, facilitate a child's ability to play (Winter, Bell, & Dempsey, 1994). Children who have disabilities are likely to be impacted by their environment. They may receive less environmental feedback due to their physical and sensory impairments. Additionally, when a playground environment limits accessibility, children may be limited in the quantity and types of social interactions (Bronson & Bundy, 2001).

Barbour (1999) compared the play of children with low physical competence versus children with high physical competence while on two separate playgrounds. The study was limited to two small populations of second graders on two separate playground structures. However, the study provides insight into the effects of playground equipment and design on the play behaviors of children. The researcher found that children with low physical competence engaged more successfully in play activities and developed peer relationships on a playground when a larger variety of linked equipment was available as compared to equipment that was

scattered and isolated. Playground design either supports or inhibits a child's ability to play, develop social skills, and build peer relationships. When children can meet the physical demands of their environment they are more likely to engage in play activities, develop social skills, and build peer relationships (Barbour, 1999).

Safety

To determine if playgrounds are safe, caretakers should refer to *Consumer Product Safety Commission's Handbook on Public Playground Safety* (1997). This document outlines the factors that should be evaluated when determining whether or not a playground is safe (Michigan Department of Human Services, 2011). Additionally, Thompson, Hudson, & Olsen have detailed playground safety practices in their book, *S.A.F.E. Play Areas* (2007). The authors of this book have conducted numerous studies about playground safety, given presentations and are active members within the National Program for Playground Safety. Safety issues on playgrounds include improper surfacing surrounding playgrounds, out-dated playground equipment that is not spaced adequately, the misuse of playground equipment, absence or lack of playground maintenance, improper supervision, and children who are unaware of playground safety rules (Hennger, 1993; Thompson, Hudson, & Olsen, 2007).

Playground safety and associated safety aspects are the foundation for creating a nurturing environment for children to play, grow, and develop (Winter, Bell, & Dempsey, 1994). In 1997, it was reported that over 200,000 children were treated in emergency rooms for playground related injuries (Consumer Product Safety Commission, 1997). Forty five percent of public playground injuries occur at schools. Of those injuries, approximately 50% occur on climbing equipment, slides, and swings (Hudson, Olsen, &Thompson, 2008). Macpherson, Jones, Rothman, Macarthur, & Howard (2010) examined the association between playground

injury and socioeconomic status before and after the upgrading of playground equipment. The researchers gathered their data from 374 elementary including about 145,000 students. Their study showed that children who attend schools in lower socioeconomic neighborhoods are at increased risk for playground injuries when compared to their peers who live in higher socioeconomic neighborhoods.

All playgrounds should be checked for safety, both structurally and functionally. An estimated 40% of playground injuries are preventable with proper playground maintenance (Kalinowski & Bowler, 2000). Regularly monitoring playgrounds for loose and weak parts, entanglements, and corrosion is necessary. As hazards are found it is important to prioritize safety concerns and address the most severe first. Addressing hazards on the playground is essential since it has been found that children will engage in play regardless of obvious dangers (Christiansen, 2002). Having maintenance schedules is helpful to ensure that playgrounds are being inspected regularly (Christiansen, 2002; Hudson, Olsen, &Thompson, 2008).

An additional consideration for playground maintenance and safety is to monitor surfacing surrounding the playground. A variety of safe surface materials include woodchips, bark, mulch, engineered wood fiber, sand, gravel, shredded rubber, and other synthetic products. Hard surfacing, such as asphalt or packed earth is unacceptable. The required depth of the surfacing material varies based on the type of material present and whether the material is uncompressed or compressed. Safe surfacing material should surround all playground equipment. Surfacing material must extend a minimum of six feet surrounding the base of equipment. There must also be safety surfacing at the end of a slide that extends four feet greater than the height of the slide. Additionally, safety surfacing surrounding swings must extend twice the length of the height of the swing set pivot (Consumer Product Safety Commission, 1997).

Playgrounds that are constructed from wood need to be evaluated for their safety. Although, the Consumer Product Safety Commission states that chromated copper arsenate (CCA) is an acceptable treatment to preserve wood on playgrounds, recent research suggests that the presence of CCA on playgrounds may be a concern (Kwon, et al., 2004). In 2004, the United States Environmental Protection Agency banned CCA as treatment to preserve wood. Children who are playing on playgrounds treated with CCA are directly exposed to CCA and may be left with CCA residue on their hands. Since CCA was used prior to 2004, it may still be present on structures that were erected prior to the ban (Kwon, et al., 2004). Additionally, wooden playgrounds are a concern due to their susceptibility to environmental factors. As wood is worn it may become soft and be infected with mold or mildew. Insects and other animals may damage the wood. Furthermore, wood may warp causing structural changes and increase the potential for splinters (Christiansen, 2002). To promote safe play, all aspects of playgrounds should regularly be reviewed to ensure that they meet the current safety guidelines.

Developmental Appropriateness

Once the safety of a playground environment is established, developmental appropriateness can be explored (Winter, Bell, & Dempsey, 1994). The abilities of the children who utilize playgrounds are highly varied and make it difficult to address playgrounds' developmental appropriateness (Bowers & Gabbard, 2000). Playground developers should consider and match the physical, social, and cognitive development of the children the playgrounds will be serving. This addresses the idea that a child's age is not the only determinate of their abilities (Frost, Brown, Sutterby, & Thorton, 2004).

As children age it is important to challenge their motor skill development. Playgrounds for elementary children can be designed to challenge children's motor skills by containing larger

and more physically demanding equipment than those developed for younger children (Thompson, Hudson, & Olsen, 2007). Playground structures should be varied to address the needs and abilities of all children and provide more difficult challenges (Bowers & Gabbard, 2000).

As children develop and grow they may require more challenging playground equipment. For example, children in kindergarten do not have the same arm strength and sense of balance as fifth graders. As children progress through each grade level they need an opportunity to play on more challenging equipment so that they can continue to develop their upper body strength, balance, and ability to problem solve. Children who are 5 to 6 years old are able to walk on stationary platforms, children who are 7 to 8 years old can walk on objects that tip, and children who are 9 to 12 years old are able to walk on narrower items. Playgrounds foster opportunities for development through equipment of various heights and lengths which allow children to increase their climbing, balance, and socialization skills (Thompson, Hudson, & Olsen, 2007).

Meeting the developmental needs of children accessing playgrounds is essential when addressing developmental appropriateness. Bowers and Gabbard (2000) examined the age-appropriate design for safe playgrounds and gave the results of the most recent survey by the National Program for Playground Safety. They presented suggestions for improved risk management of playgrounds. The researchers were able to make adequate recommendations regarding the design of age appropriate playgrounds. They presented 10 recommended measures to be taken with children of varying ages. When playgrounds are an appropriate fit, they aid in the development of children's physical, emotional, social, and intellectual skills. However, if playgrounds are not developmentally appropriate, then children may be at risk for injury (Bowers & Gabbard, 2000).

Accessibility

In addition to playgrounds needing to be safe and developmentally appropriate, playgrounds must also be accessible. If playgrounds are not accessible children with disabilities may not be able to engage in play with their peers (Prellwitz & Skar, 2007). This leads to missed opportunities to play and participate in social interactions (Hennger, 1993).

Accessibility determines how children interact with their environment and their ability to engage in play activities. Children who are unable to access a playground often do not engage in play on playground equipment. For some children, accessing the equipment is their primary goal. This prevents the child from having the opportunity to engage in free play while on the equipment (Prellwitz & Skar, 2007). Children who use a wheelchair may spend much of their time gaining physical access to playground equipment and little time playing on the equipment. For example, a child who uses a wheelchair will take more time to maneuver through woodchips to an accessible platform than a child who is able to run between pieces of equipment.

Due to discrepancies in playground accessibility, the United States Access Board developed guidelines in 2005 to ensure that playgrounds are in compliance with the Americans with Disabilities Act. The guide is designed to outline minimum accessibility requirements and details specifications to ensure accessibility of playground equipment. The guidelines include the minimum number of accessible play components, access routes, and maneuvering spaces. Even though minimum requirements are suggested, the guide encourages designers to include accessibility options that exceed the minimum requirements. Doing this allows children of all abilities to access playgrounds in a variety of situations (United States Access Board, 2005).

Playgrounds must include accessible play components which are structures meant to provide opportunities for play, socialization, and learning. Play components must be connected

by accessible routes which can be either ground-level or elevated. The routes provide access to all entry and exit points of accessible play components. Ground-level routes must be at least 60 inches in width, while elevated routes must be 36 inches in width and connect at least 50 percent of the elevated play components. Ramps and transfer systems are commonly used to provide access to elevated play components. These are complimented by transfer supports which promote mobility between play components. Examples of transfer supports are handrails, handgrips, and custom designed handholds (United States Access Board, 2005).

When considering playgrounds and accessibility, items to include are physical access to playgrounds, a child's ability to interact and experience the playground, and the availability of a variety of playground components. Once a child is able to physically access a playground, it is important to determine whether or not the child will be able to actively participate in a variety of experiences using the equipment. Providing an accessible playground ensures that children with disabilities have an equal opportunity to play (Winter, Bell, & Dempsey, 1994).

Occupation

Occupations are activities and tasks that are completed with purpose (Law, et al., 1996). One of the primary childhood occupations is play. Play is achieved through many different forms and can be accomplished in various environments (Case-Smith & O'Brien, 2010). The United Nations Convention of the Rights of the Child states that play is a right of every child (Save the Children Canada, 2000).

Play

Play has both intrinsic and instrumental value. For a child, play serves as a source of entertainment and enjoyment, and also facilitates learning and development (Goodley &

Runswick-Cole, 2010). Children who are playful are more likely to be creative and confident (Bundy, et al., 2008).

Four types of play have been identified including cognitive or creative play, active or physical play, group or social play, and individual or quiet play. In cognitive or creative play children test their ideas and manipulate their environment. This type of play facilitates imagination and logical thinking. Active or physical play cultivates physical skills and promotes growth and mobility. Children begin to exhibit social skills and understand the dynamics of relationships during group or social play. While engaged in individual or quiet play children develop their identity and self-reliance. Engaging in each of these four types of play is necessary for a child to grow and develop (Hilderman, Thomas, Frank, & Cram, 2001).

Development of Play

According to Parten (1932), children progress through six stages of social development. Each of these six social stages can be related to play (Thompson, Hudson, & Olsen, 2007). Initially children are uninvolved. In this stage children are able to be active and move through their environment, but they do not engage or notice others' play. As children begin to notice those around them, they become onlookers. Following this, children engage in solitary play. At this stage children do not play with others, instead they play alone. This is typical of children who are 2 to 3 years old. Parallel play proceeds solitary play. Children who are in the parallel play stage will play near other children, but not with them. During this stage there is no sharing of toys. After children build their skills in the parallel stage, they begin the stage of associative play. At this stage children will begin to engage with other children, but the children may have different play goals. When play goals become shared between peers, children are demonstrating the cooperative stage of social development. Often children will begin to make rules and

participate in turn taking (Parten, 1932; Thompson, Hudson, & Olsen, 2007). Understanding the stages of social development can help those involved with facilitating children's play to delineate which stage children are at and to foster the development of their social and play skills (Thompson, Hudson, & Olsen, 2007).

Piaget's periods of intellectual development help explain the intellectual development of children and how each period impacts the type of play in which children engage. The initial period of intellectual development is the sensorimotor period. Children 0 to 24 months begin to recognize the presence of each of their senses. They use their senses to explore, gain feedback, and receive stimulation from their environment (Piaget, 1988).

As children age they progress to the preoperational period of intellectual development. During the preoperational period, children 2 to 7 years old begin to realize that others have thoughts and opinions. At this time children's egocentric tendencies begin to decrease and they participate more socially. Additionally, children in the preoperational period begin to understand concepts such as conservation. This allows them to interact with their environments, including playgrounds, in new ways. Children begin playing with their peers instead of alongside them and creatively incorporate playground equipment (Piaget, 1988).

The concrete operations period follows the preoperational period. Children ages 7 to 11 begin to develop reasoning powers and their thought processes become more logical. They begin to understand concepts such as seriation, classification, causality, time, and velocity. At this point children begin playing games with rules and follow through on assigned roles during play (Piaget, 1988).

The final stage of intellectual development described by Piaget is the formal operations period. As children develop from ages 11 to 15 they begin to utilize a more rational thought

process allowing them to enhance their problem solving abilities (Piaget, 1988; Thompson, Hudson, & Olsen, 2007; Case-Smith & O'Brien, 2010). Children's intellectual abilities impact the types of play they engage in and who they play with. Matching children's intellectual development to their play environment is needed to ensure that children are playing in developmentally appropriate play spaces (Thompson, Hudson, & Olsen, 2007).

Play and its relationship to children with disabilities

In addition to matching children's social and intellectual abilities, play opportunities must also match children's physical abilities. Children that have physical and other developmental limitations may also have deficits in play. When children who have physical limitations have a decreased number of play opportunities they become less playful (Hamm, 2006). This may be due to the fact that children with disabilities never learned the skills necessary to access playgrounds and other play opportunities. Since children with disabilities miss opportunities to play, they may not develop appropriate social-play skills. As children with disabilities try to engage in play they find it difficult to participate in the fast-paced interactions of their peers (Nabors, Willoughby, Leff, McMenamin, 2001). Compounding this with physical limitations, children with disabilities often become discouraged and miss play opportunities that their typically developing peers are afforded. When the challenges of the environment exceed children's physical abilities, the child may become anxious and not participate in play (Bronson & Bundy, 2001).

Due to various abilities, children with disabilities often experience play differently than their typically developing peers. For example, children with hearing impairments may function at a different cognitive or communicative level than their peers. Similarly, children who have visual impairments may be limited to playing in familiar environments. Children with sensory deficits

may have trouble accessing play spaces and interacting with their peers (Goodley & Runswick-Cole, 2010). These children may view play as an activity not as an occupation. For children with disabilities, their goal may be to gain access to their environment rather than engage in play (Prellwitz & Skar, 2007).

Opportunities for play are important for all children, especially in the school environment. Participating on the playground at recess helps children to develop an array of skills. While at recess children learn how to follow rules, comply with directions, practice safety, and regulate their behavior (Mancini & Coster, 2004). Recess provides a break from cognitive tasks during the school day and allows children to play, be physical, and interact socially. Additionally, recess is an opportunity for children to engage in hands-on experiences that build their intellectual and cognitive skills. It has been found that children's academic performance improves following recess breaks (Ramstetter, Maurray, & Garner, 2010). As playgrounds are assessed it is vital to recognize that playgrounds are important natural environments for children to engage in play (Case-Smith & O'Brien, 2010).

Role of OT

When treating children, occupational therapists provide services to support children's participation in activities of daily living, instrumental activities of daily living, education, work, play, leisure, rest, sleep, and social participation. These specialists work collaboratively with children, their parents, teachers, and other healthcare professionals to create interventions that foster independence (AOTA, 2011). One major role of pediatric occupational therapists is to develop the occupation of play. By observing, assessing, and implementing interventions to promote the occupational role of player, occupational therapists create opportunities for children

to improve social relationships, quality of life, physical abilities, and self awareness (Rodger & Ziviani, 2006).

Occupational therapy in the schools is a related service that is mandated by federal law. The Individuals with Disabilities Education Act (IDEA) and Section 504 of the Rehabilitation Act require occupational therapy services for students who qualify. The occupational therapists' role in the school setting is determined by which IEP goals the occupational therapist will be supporting. Overall, school occupational therapists focus on supporting student achievement in the school environment. To do this, school occupational therapists must function as part of a team that may include parents, special education teachers, general education teachers, administration, school psychologist, physical therapist, speech therapist, and paraprofessionals (Pape, & Ryba, 2004).

Team members work together to provide individualized instruction and early intervention for students who need extra support. Depending on the student's needs, direct services, monitoring, or consultation is provided by a school occupational therapist to assist the child's learning. These three types of services correlate with the varying degrees of support that a student might need. To determine what type of support the student needs, the multi-tier system of supports (MTSS) is reviewed. MTSS, also known as response to intervention (RTI), is a way to recognize and support students with learning and behavior needs in the school system. Evidence-based practice, universal screening, progress monitoring, formal assessments, and decision making based on student outcome data are all utilized to provide the best instruction for struggling students (National Center for Learning Disabilities, 2012; Kansas State Department of Education, 2012).

Therapy supports children to accomplish goals and aids in the progress of development while in the natural environment. Utilizing the natural environment for therapy provides children with the opportunity to display their strengths rather than just occupational performance concerns and creates more opportunities for modeling and support (Hanft & Ovland-Pilkington, 2000). Playgrounds are one natural environment in which children play (Case-Smith & O'Brien, 2010).

As occupational therapists strive to address play and play environments, they may work as consultants who help design accessible playgrounds and assist to develop ways to include children with disabilities on existing playgrounds (Rodger & Ziviani, 2006). Occupational therapists have a unique understanding of environmental fit. Environmental fit is the, "congruence between individuals and their environments" (Case-Smith & O'Brien, 2010, p. 25). This permits occupational therapists to capitalize on children's abilities and create ideal opportunities for play (Bronson & Bundy, 2001).

Another role of occupational therapists who are addressing play and playfulness is that of advocate. They have awareness of environmental barriers, disability, and child development that allow them to educate and advocate for the development of playgrounds that will provide the best environment for children of all abilities (Prellwitz & Skar, 2007). Occupational therapists have the skill and knowledge to assess playgrounds and determine their level of accessibility and developmental appropriateness (Winter, Bell, & Dempsey, 1994).

Summary

The influence environment has on occupation has been demonstrated. Playgrounds are natural environments where children have the opportunity to develop physical, cognitive, and social skills necessary to be successful (Bronson & Bundy, 2001). For children, the quality of their play is determined by the characteristics of their environment. In order for playgrounds to

promote development they must be both safe and accessible (Winter, Bell, & Dempsey, 1994). Unfortunately, children with disabilities often cannot access the play equipment easily, and are unable to engage in the same quality of play as their typically developing peers. Occupational therapists are in the unique position to advocate for the rights of children and collaborate with playground designers to develop safe and accessible playgrounds (Prellwitz & Skar, 2007).

Given the importance of safety and accessibility of playgrounds, the researchers reviewed these aspects using a checklist. The checklist will be detailed in the next chapter and incorporates the guidelines from *Consumer Product Safety Commission's Handbook on Public Playground Safety* and the *United States Access Board's Summary of Accessibility Guidelines for Play Areas*. Completing the needs assessment will help Muskegon Public Schools determine which of their playgrounds are in compliance with guidelines and promote equal and safe play amongst their students.

Chapter 3: Methodology

Introduction

This chapter explains the methodology of the research study. The study design selected, study location, instrument, efforts to strengthen reliability, and procedures that followed are included.

Study Design

For this research, a needs assessment study design was implemented. A needs assessment is a process that explores which requirements a particular group or organization is lacking. It is a systematic process that gathers usable information and interprets the information in order to make suggestions for policy and program change (Finlayson, 2006). In this study, the researchers gathered information about the current status of Muskegon Public School playgrounds and then made recommendations to the Muskegon Public School administration about changes that could improve the safety and accessibility of their playgrounds.

One model for needs assessments is the three-phase model. The three-phase model is divided into three phases (a) the preassessment phase, (b) the assessment phase, and (c) the postassessment phase. During the preassessment phase the researchers learn about the population and context that will be studied. As the preassessment phase progresses to the assessment phase, the researchers decide the scope of the project, choose methods for data collection, delineate a time line for the study, and determine any other resources that may be necessary. During the second phase the researchers collect and then analyze the data. Finally, during the postassessment phase the discovered areas of need are interpreted as priorities for action. The researchers develop potential solutions and then communicate their findings to the appropriate stakeholders (Finlayson, 2006).

For the playground needs assessment with Muskegon Public Schools, the researchers first met with the occupational and physical therapists to discuss their concerns regarding the playgrounds. Next, they determined if a needs assessment would be the best method to discern the school playgrounds' safety and accessibility. Subsequently, the playgrounds to be evaluated were delineated and the researchers developed a check list to assess the playground safety and accessibility. Once each playground was assessed, the researchers analyzed their findings and determined the safety and accessibility status of each playground. Finally, the researchers communicated their findings to the Muskegon Public Schools' therapy team along with suggestions they had for improving each playground.

Study Site and Population

This needs assessment was completed in Muskegon, Michigan. All elementary school playgrounds within the Muskegon Public School systems were considered. These included Bluffton, Glenside, Lakeside, Marquette, McLaughlin, Moon, Nelson, and Oakview elementary schools, as well as, Steele Middle School. No playgrounds were excluded.

Equipment and Instruments

For this needs assessment a checklist developed by the researchers was used to assess each playground (*Appendix A*). The researchers chose to develop this checklist because no other tool was found for assessing playground safety and accessibility in the literature. Additionally, the researchers strived to create the checklist so it adequately addressed the needs of the students using the Muskegon Public School playgrounds. The checklist was developed based upon the criteria found in the 1997 Edition of the *Consumer Product Safety Commission's Handbook on Public Playground Safety* and *United States Access Board's Summary of Accessibility Guidelines for Play Areas* (2005). These documents were chosen since they are the most recent national

guidelines for safety and accessibility. Since these are guidelines, there are no studies regarding their validity or reliability. To complete the checklist, the researchers needed a camera, clipboard, pens, copies of the checklist, a protractor, a measuring tape, and calipers.

Reliability

In order to increase the reliability and trustworthiness of the needs assessment, the researchers employed a field study and triangulation. The field study involved researchers utilizing the developed checklist to evaluate a local playground. A field study is when research takes place in the natural setting (Kielhofner & Fossey, 2006). Doing a field study prior to assessing Muskegon Public School playgrounds allowed the researchers to make necessary modifications to their newly developed checklist. Two researchers assessed each playground. The third researcher acted as a reviewer to compare and contrast the two researchers results. She reviewed the two checklists along with pictures taken during the assessment to ensure that all items were in agreement. Each researcher assessed six out of the nine playgrounds, so that biases were minimized.

Procedure

Before starting the assessments of Muskegon Public School Playgrounds, the researchers reviewed the reliability of the checklist by implementing a field test. Each of the researchers independently completed the checklist (*Appendix A*) to assess the Sibley Elementary School playground located in Grand Rapids, Michigan. Following the completion of the checklist, the researchers compared results. They also discussed discrepancies and unclear items. Changes to the checklist were determined by the three researchers.

To begin the assessment of the Muskegon Public School playgrounds, the researchers divided the playgrounds into three groups, each group containing three playgrounds. The

playgrounds to be assessed were identified by the Muskegon Public School administration. The researchers divided the playgrounds into groups based upon which playgrounds were geographically closest to each other. The researchers visited each set of playgrounds in pairs. On July 21st 2012, the Marquette, Oakview and Steele playgrounds were assessed by researchers A and B. On August 7th 2012, the McLaughlin, Moon, and Nelson playgrounds were assessed by researchers A and C. On September 10th 2012, the Bluffton and Glenside playgrounds were assessed by researchers B and C. Lastly, Lakeside's playground was assessed by researchers B and C on September 19th, 2012.

Upon arrival at each playground the researchers assessing the playgrounds independently completed the checklist (*Appendix A*). One researcher took pictures of the entire playground and each playground component. All pictures were taken on researcher A's camera and uploaded to a Google document. This process was repeated for all nine playgrounds.

Once all playgrounds were assessed the researchers reviewed their findings. At this time any discrepancies between the two researcher’s assessments were reviewed by the third researcher, along with the pictures that were taken at each playground. A final recommendation for each item on the checklist was made.

After all the checklists were reviewed for completeness, the researchers analyzed the checklists. Due to the nature of safety and accessibility, the researchers did not perform statistical analysis. They made a list for each item that did not meet the safety and accessibility requirements for each playground. This list was reviewed by the researchers and presented to the Muskegon Public Schools' therapy team in the form of an executive summary (*Appendix C*).

Summary

The study design, study location, instrument, equipment to be used, reliability, and the procedures were all discussed in this chapter. A three-phase model needs assessment was chosen as the most appropriate study design for the Muskegon Public School playground assessment in Muskegon, Michigan. Triangulation was explored as a strategy to increase reliability. The procedures detailed the steps that were taken by the researchers throughout the needs assessment. The next chapter will present the data and results of the needs assessment.

Chapter 4: Results and Data Analysis

Introduction

This chapter reports the findings of the Muskegon Public Schools playground needs assessment. The data analysis technique, the characteristics of the playgrounds, and the results will all be described.

Technique of Data Analysis

Following the assessment of the playgrounds each of the researchers turned her checklist into the third researcher. For example, once researchers A and B assessed a playground, they gave their checklist to researcher C. The third researcher then compared and contrasted both of the playground checklists for consistency. No discrepancies were noted between any of the completed checklists therefore there was not a need for the third researcher to resolve discrepancies.

Next, the researchers compiled a comprehensive summary. Together, they reviewed the two checklists from each playground and listed the unmet safety and accessibility guidelines for that playground (*Appendix B*). Once a list of unmet safety and accessibility requirements for all playgrounds were compiled, together the researchers reviewed this list for commonly unmet items. These findings will be discussed in the next chapter.

Characteristics of the Playgrounds and Results

The total number of unmet playground requirements varied between playgrounds. Some playgrounds had as few as 11 total unmet requirements, while others had 27 unmet requirements. The Bluffton Elementary School playground had the most unmet requirements and the Steele Elementary School's playground had the least. However, the Steele Elementary School playground had many unmet accessibility requirements. The number of unmet playground

accessibility requirements ranged from 7 to 13 items. Unmet safety requirements ranged from 1 to 18. The Steele Elementary School playground had the fewest unmet safety requirements and the Bluffton Elementary School playground had the most (Figure 1).

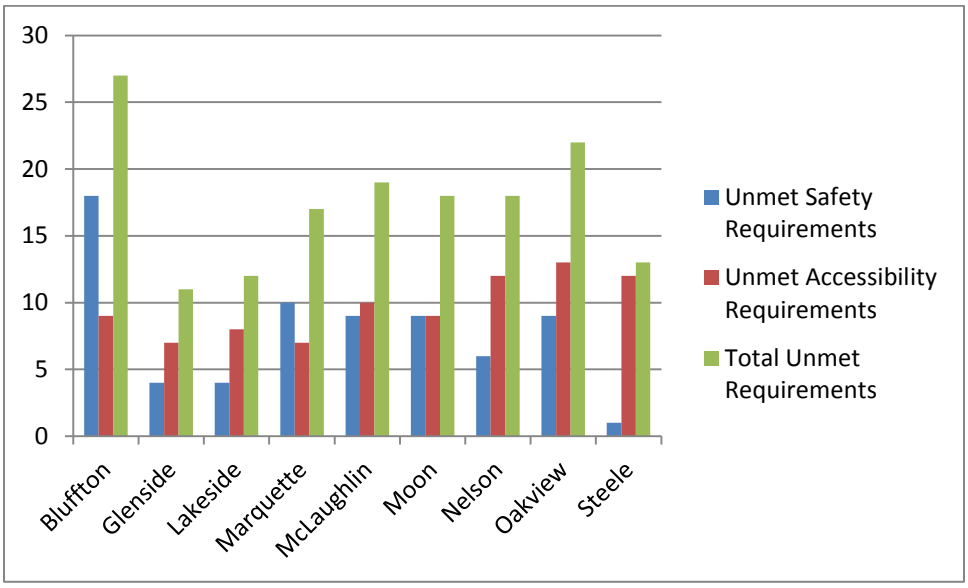

Figure 1: Checklist Results

The number of unmet safety requirements varied between playgrounds (*Appendix B*). Common problem areas included decreased safety surfacing, unsafe swings, missing slides, chipping paint, and corroding hardware. None of the playgrounds had consistent depth of safety surfacing. Many of the playgrounds had patches in which the safety surfacing was worn to the ground. This prevented pieces of equipment including, steps, slides, and balance beams from meeting safety standards since they were too high above the safety surfacing. Two playgrounds had more than two swings per bay, while others had broken or missing swings. A number of the free standing slides did not meet safety and accessibility standards. Some slides did not have handhelds to facilitate a seated position. Other slides were outdated and did not meet any guidelines for safety or accessibility.

The researchers consistently noted many unmet accessibility requirements. Only two of the playgrounds had a ground-level accessible route, but these two routes were covered by pea gravel and unusable. Ground level play components can be accessed entirely from the ground level. Elevated play components are raised and generally on elevated structures. Playgrounds should provide both components to facilitate optimal experiences for play. With the exception of one school, none of the playgrounds had ramps to elevated play components. The one ramp that was present was less than the recommended 60-inches wide. If children were able to gain access to the elevated play components on any of the playgrounds, there was not adequate maneuvering space present. Transfer systems were present at all but three schools, however, they were not on a ground -level accessible route. There were also unmet accessibility requirements at some of the transfer systems including inadequate height from safety surfacing and in between steps.

Summary

The results of the playground assessment revealed that there are many unmet safety and accessibility requirements on each playground. Recommendations to improve the playgrounds will be discussed in the next chapter.

Chapter Five: Conclusion

Introduction

This chapter discusses the findings of this needs assessment including important recommendations for each of the playgrounds. Additionally, this chapter addresses the needs assessment's connections to occupational therapy, limitations, and future study implications.

Discussion of Findings

As the Muskegon Public School District budget became more constrained, the school district found itself in a unique position to restructure. Restructuring ideas included consolidation, which would result in the closing of schools. Since 25% of Muskegon Public School students have an Individualized Education Plan, it became apparent that each of the schools must contain spaces and equipment to meet the students' needs. Therapists at Muskegon Public School recognized this as an opportunity to review the current playgrounds (L. Hayhurst, personal communication, February 12, 2012). Playgrounds are a natural play environment and could serve a therapeutic purpose (Case-Smith & O'Brien, 2010). Additionally, due to the community's overall low economic status, playgrounds that are safe and accessible would provide a space in which local children can engage in activity (Census Facts, 2011).

This needs assessment sought to discover whether playgrounds at Muskegon Public Schools were safe and accessible. The research questions included: (1) Are the playgrounds in compliance with the *Consumer Product Safety Commission's Handbook on Public Playground Safety* (1997)? and (2) Are the playgrounds in compliance with accessibility requirements included in the *U.S. Access Board Summary of Accessibility Guidelines for Play Areas* (2005)? According to this needs assessment, none of the playgrounds were in compliance with all standards set by the *Consumer Product Safety Commission's Handbook on Public Playground*

Safety (1997) and the *U.S. Access Board Summary of Accessibility Guidelines for Play Areas* (2005).

Each of the playgrounds had commonly violated safety requirements. Playgrounds at Bluffton, Lakeside, McLaughlin, Marquette, Moon, Nelson, and Oakview elementary schools all contained areas of chipped paint and corroded structures. This was likely due to outdated equipment and inconsistent maintenance of playground structures. Alarmingly, Christiansen (2002) discovered that children will engage in play regardless of obvious dangers such as sharp or loose pieces of playground equipment. For example, children play on a slide even when obstructions are present. It has been shown that creating a maintenance schedule promotes regular inspection of the playground. Having a playground maintenance schedule helps to mitigate playground related injuries (Christiansen, 2002; Hudson, Olsen, &Thompson, 2008).

Another commonly violated safety requirement was inconsistent depth of pea gravel on the playgrounds. Inconsistent depth of pea gravel may cause tripping hazards and does not provide adequate cushioning for falls (Consumer Product Safety Commission, 1997). Replacing the pea gravel with a different type of safety surfacing such as, rubber mats, would eliminate tripping hazards and provide sufficient cushioning for falls (Oklahoma Department of Labor, n.d.). Swings were also a safety concern at Bluffton, Glenside, Marquette, and Moon elementary schools. Several of the swings did not meet safety guidelines and were broken. Slides at Bluffton, Lakeside, Marquette, Moon, Nelson, and Oakview elementary schools each violated one or more slide safety standards. Most of the slides were not within proper distance from the ground. This is likely a result of inconsistent depth of safety surfacing. Slides that do not have enough safety surfacing beneath them pose a safety risk (Consumer Product Safety Commission, 1997). The prevalence of playground injuries increases when playgrounds are not properly

maintained. Forty percent of playground injuries are preventable with proper playground maintenance (Kalinowski & Bowler, 2000). Proper playground maintenance creates play environments which are safe for children with all abilities.

Several of the accessibility problems that occurred on the playgrounds were a result of accessible pathways being completely covered by pea gravel and lack of ramps to access elevated play components. Each of the playgrounds, aside from the Marquette Elementary School playground, lacked ramps. No ground level accessible routes were present at Bluffton, Lakeside, McLaughlin, Nelson, Oakview, and Steele elementary schools. The structures at Moon and Nelson elementary schools had accessible routes, but were inconsistent with requirements or covered by pea gravel. Numerous other accessibility guidelines were violated due to the absence of ramps available to access elevated play components. Changing safety surfacing from pea gravel to uniform woodchips or synthetic products such as rubber mats would also increase the ease of accessibility for children who utilize wheelchairs and walkers (Oklahoma Department of Labor, n.d.).

Accessibility determines how children interact with their environment and their ability to engage in play activities (Prellwitz & Skar, 2007). Since the Muskegon Public School playgrounds were inaccessible, children with and without disabilities are robbed of opportunities to engage in play within a natural environment. Inaccessibility prevents students from physically accessing the playground and interacting with peers who are spending their recess playing on the equipment. For example, while researchers B and C were at Lakeside elementary school, they observed a child in wheelchair remain in the parking lot throughout the entire recess because he could not access the playground. This child did not interact with any of his peers during this recess because his peers were engrossed with playing on the equipment. Children who are

deprived of opportunities to play with their peers are unable to engage in a natural play environment that fosters physical, social, and emotional development (Goodley & Runswick-Cole, 2010). Providing an accessible playground ensures that children with disabilities have an equal opportunity to play and is a requirement of the American with Disabilities Act (United States Access Board, 2005; Winter, Bell, & Dempsey, 1994).

Recommendations

Generally, the researchers recommend the same changes for all playgrounds. First, it is recommended that each of the playgrounds have a maintenance schedule put in place. This would allow for routine maintenance and repair as needed (Consumer Product Safety Commission, 1997). The playgrounds that have chipped paint or corroded structures need to be repainted and cleaned. It is also recommended that the safety surfacing be added to provide a consistent depth throughout each of the playgrounds (Consumer Product Safety Commission, 1997). This can be better attended to through a maintenance schedule. The researchers also recommended ground level accessible routes and ramps be installed at each of the playgrounds to ensure access to all of the play components (United States Access Board, 2005). A ground level accessible route would include providing a clear path that provides access to both ground level and elevated playground components. It must connect between the building and the playground, and provide access to platforms, ramps, elevators, and/or lifts. One of each type of ground level play component must be on the accessible route and half of all elevated play components must also be on the accessible route. Elevated play components can be connected through a series of ramps or transfer systems (United States Access Board, 2005). In addition to the above items, specific recommendations for each of the playgrounds are listed below:

Bluffton

- The playground is not safe or accessible and the school is closed. The researchers recommend removal of all of the structures.

Glenside

- Removal of the large plastic barriers dividing play components to eliminate tripping hazards.

Lakeside

- Adjust surfacing height beneath one of the slides so it meets the safety requirement of being 7-15 inches above the protective surfacing.
- Add handhelds to slides

Marquette

- Fix broken swings
- Uncover accessible routes by removing pea gravel
- Add safety surfacing surrounding swings
- Remove tripping hazards
- Add handhelds to slides
- Replace missing glider from zip line
- Tack down lip at end of ramp
- Slope end of accessibility route

McLaughlin

- Remove protrusion and projection points
- Add protective barriers or guardrails on elevated surfaces or remove detached metal equipment
- Replace missing glider from zip line

Moon

- Fix broken swings
- Remove swing set that has more than two swings per bay
- Remove single standing slide
- Add safety surfacing beneath slide exit region
- Replace missing glider from zip line

Nelson

- Add safety surfacing beneath balance beam
- Add safety surfacing beneath slide exit region
- Replace missing glider from zip line

Oakview

- Extend protective surfacing the minimum of 6 feet past all equipment
- Extend protective surfacing the minimum of the slides height +4 feet
- Add safety surfacing beneath slide exit region
- Add protective barrier to elevated play component

Steele

- Develop a plan to increase accessibility

Role of OT

Pediatric occupational therapists have many opportunities to enrich the lives of children. One of the major roles of pediatric occupational therapists is to provide opportunities to develop the occupation of play (AOTA, 2011; Rodger & Zivani, 2006). Additionally, occupational therapists allow children to demonstrate their strengths and address performance concerns by utilizing natural environments, including playgrounds (Hanft & Ovland Pilkington, 2000).

Occupational therapists are mandated by federal law to provide services in schools for students who qualify based on IDEA and Section 504 of the Rehabilitation Act. They work with a team of staff and parents to address goals and needs determined in the Individualized Education Plan. Depending on the Individualized Education Plan and degree of support required students may receive direct services, monitoring, or consultation. The degree of support can be determined by the MTSS otherwise known as RTI (National Center for Learning Disabilities, 2012; Kansas State Department of Education, 2012). School-based occupational therapists can utilize playgrounds as natural environments for students to work toward Individualized Education Plan goals. When treatment planning, occupational therapists should consider the use of playgrounds to address a variety of goals related to fine motor, gross motor, emotional regulation, and social skills. As children develop physical, emotional, and social skills they are able to generalize these skills to other environments including the classroom (Rodger & Zivani, 2006).

Furthermore, occupational therapists are knowledgeable regarding environmental barriers, disabilities, and child development. This knowledge allows them to advocate for the development of playgrounds that meet the needs of children with all abilities (Prellwitz & Skar, 2007). School-based occupational therapists have the opportunity to be leaders in their field by

promoting inclusion not only in the classroom but also on the playground. Occupational therapists can advocate for children by informing school administrations when playgrounds do not adequately meet the needs of the students or do not promote inclusion. They are aware of environmental fit, allowing them to create play opportunities which enhance a child's strengths while addressing performance limitations (Bronson & Bundy, 2001). Consequently, school occupational therapists may be asked to act as a consultant to design safe and accessible playgrounds and determine ways to include children with disabilities on the playground (Rodger & Zivani, 2006). When schools are unable to afford safe and accessible equipment, occupational therapists can write grant proposals based upon current evidence in an effort to gain equipment for the students.

While writing grants is one way to obtain financial support for safe and accessible playgrounds, research supporting these playgrounds will influence decisions regarding best practice in the future. Occupational therapists have countless opportunities to implement research on the importance of play for children. For example, they can develop research projects to determine the effectiveness of addressing Individualized Education Plan goals while students are playing on school playgrounds. Occupational therapists can create more research regarding best practice for playground equipment and how to design playgrounds. In addition, occupational therapists can research the quality of play for children with disabilities on playgrounds that are accessible compared to those that are not accessible. By producing research on the topic of playgrounds occupational therapists will affect best-practice in the occupation of play and the use of playgrounds.

Finally, occupational therapists have the knowledge and experience to educate members of the community, as well as, other professionals about the importance of safe and accessible

playgrounds for the development of play in children with all abilities. In-services are an opportunity to educate school staff regarding playground safety and accessibility, as well as, how the playground can be utilized to work on Individualized Education Plan goals. Occupational therapists can create community events to raise awareness about the impacts of playgrounds which are safe and accessible as well as the developmental significance of play (Rodger & Zivani, 2006).

Occupational therapists can incorporate the natural environment of playgrounds into treatment planning, develop research to support the use of playgrounds for therapy, advocate for safe and accessible playgrounds, and educate community members and other professionals about the role of play in a child's development.

Limitations

Although steps were taken to ensure that each playground was accurately assessed, this needs assessment has limitations. First, the researchers were not Certified Playground Inspectors Approved by the Bureau of Children and Adult Licensing. This may have limited the accuracy of the assessment conducted. The checklist used was created after a literature review, and has only construct validity. Through the use of triangulation, the checklist has only limited reliability. Additionally, the standards used to guide the creation of the checklist have not been updated since 1997 for safety and 2005 for accessibility. These standards will become outdated if new guidelines are established. Since the researchers created and then used their own checklist, researcher bias is possible. Lastly, specific playgrounds within the Muskegon Public School system were assessed, results from the study are not generalizable to other playgrounds or school districts.

Suggestions for Further Research

Given that the Muskegon Public School playgrounds were unsafe and inaccessible, future research should address best practices for playground design and accessibility. This will allow for more directed recommendations. This needs assessment found numerous safety concerns; however, these can be addressed through maintenance schedules, addition of safety surfacing, and removal of single pieces playground equipment. The main concern that was found was the absence of accessible playgrounds. The literature review has established the need for accessible playgrounds for all children (Bronson & Bundy, 2001; Carlisle, R. P., 2009; Case-Smith & O'Brien, 2010; Rodger & Zivani, 2006; Winter, Bell, & Dempsey, 1994). Future research could explore what playground activities students who do not have access engage in and how that impacts their development. An additional focus for future research could include techniques to update playgrounds to promote accessibility. Once there is a plan to update playgrounds, research could explore the level of engagement of children with disabilities pre and post playground modifications. Since playgrounds are a natural play environment for children, this is an appropriate research area for occupational therapists.

Conclusion Summary

Due to budget concerns and impending district-wide restructuring, the therapy team at Muskegon Public Schools approached the researchers about completing a playground needs assessment. The therapists had concerns that the playgrounds did not meet the student population's needs. Since the therapists knew that playgrounds are a natural play environment which facilitates children's development and that students spend an average of 40 minutes on school playgrounds daily, the therapists felt it is important to ensure that school playgrounds

meet the needs of the student population. It was determined that the place to start was to evaluate the playgrounds for safety and accessibility.

The needs assessment found that none of the Muskegon Public School playgrounds met current safety and accessibility guidelines. This is concerning for both the school district and for health care professionals who work with students with disabilities. Playgrounds that are unsafe and inaccessible limit students' opportunity to engage in play in a natural environment (Prellwitz & Skar, 2007). This information will be shared with Muskegon Public School administration in hopes to enlighten the administration about the need to update the playground system.

This needs assessment should encourage the administration at Muskegon Public Schools to implement changes to their playground system including creating a system of maintenance and adding features to promote accessibility. Literature has shown that having a safe and accessible environment promotes play among children and that engagement in play in natural environments promotes development (Case-Smith & O'Brien, 2010; Hanft & Ovland Pilkington, 2000; and Winter, Bell, & Dempsey, 1994).

Additionally, this study reveals a role for school occupational therapists to advocate for the developmental needs of all students, including those with disabilities. Occupational therapists have knowledge about disability and development that can be shared with school administrators to influence decisions concerning items such as playground development.

An executive summary (*Appendix C*) has been disseminated to Muskegon Public Schools detailing current safety and accessibility concerns, along with possible solutions. Since restructuring of the district is needed, the Muskegon Public School administration is encouraged to utilize the resource they have in their therapy team to design and implement playground improvements.

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Appendix A

Safety and Accessibility Checklist

Safety and Accessibility Checklist

Completed by: _____

Location: _____

Date: _____

Playground Safety Checklist

Surfacing	Yes	No	Not Applicable
Is surfacing material safe? (i.e. woodchips, bark, mulch, engineered wood fiber, sand gravel, shredded rubber or other synthetic product)			
Does surfacing extend a minimum of 6ft past all equipment, this comprises the use zone.			
Does surfacing for slides extend a minimum of the slide's height +4 feet.?			
Does the surfacing for swings extend a minimum distance of twice the height of the pivot point?			

Maintenance	Yes	No	Not Applicable
Is all of the equipment securely anchored into the ground?			
Is all of the equipment free of chipping paint?			
Is all of the hardware free of corrosion?			
Is all of the hardware secured?			
Are the hooks closed with a gap no greater than .4 inches?			

General Hazards	Yes	No	Not Applicable
If equipment is wood, is it smooth and free from splinters?			
Is all equipment free of sharp points, corners, and edges?			
Is all equipment free of protrusions & projections?			
Is all equipment free of pinch, crush, and shearing points?			
Are all openings between 3.5 inches and 9 inches to prevent head entrapment?			
Is the playground free of tripping hazards?			
Are suspended cables, ropes, and wires away from high traffic areas?			

Rung Ladders	Yes	No	Not Applicable
Are the rungs on the ladder evenly spaced?			
Are spaces between rungs between 3.5 inches & 9 inches?			
Are width of rungs at least 16 inches?			
Is rung diameter between .95 inches & 1.55 inches?			

Stepladders	Yes	No	Not Applicable
Is tread width at least 16 inches ?			
Is tread depth on an open step at least 3 inches?			
Is tread depth on a closed step at least 6 inches?			
If steps are closed do they prevent accumulation of sand, water, or other materials between steps?			

Stairways	Yes	No	Not Applicable
Is step width at least 16 inches?			
Is tread depth on an open or closed step at least 8 inches?			
If steps are closed do they prevent accumulation of sand, water, or other materials between steps?			

Handrails	Yes	No	Not Applicable
Do handrails extend the full length on both sides of stepladders and stairways?			
Is the vertical distance from the top edge of steps to the top of handrails between 22 inches & 38 inches?			
Is the diameter of the handrail between .95 inches and 1.55 inches?			

Platforms, Guardrails, & Protective Barriers	Yes	No	Not Applicable
Does the platform have openings to allow for drainage?			
Are guardrails or protective barriers present on elevated surfaces ≥ 30”?			
Are protective barriers present on elevated surfaces ≥ 48”?			

Guardrails	Yes	No	Not Applicable
Is the top guardrail surface at least 38 inches high and the lower edge is no more than 28 inches above the platform?			

Protective Barriers	Yes	No	Not Applicable
Is the top surface of the protective barrier at least 38 inches high?			

Stepped Platforms	Yes	No	Not Applicable
Is the maximum difference in height between stepped platforms is no more than 18 inches?			

Horizontal Ladders and Overhead Rings	Yes	No	Not Applicable
Is the space between adjacent rungs of overhead ladders greater than 9 inches?			
Is the center-to-center spacing of horizontal ladder rungs no more than 15 inches?			

Sliding Poles	Yes	No	Not Applicable
Is the sliding pole continuous with no protruding welds or seams?			
Is the horizontal distance between the pole and platform used for access at least 18 inches?			
There is no point on the sliding pole that is more than 20 inches away from the edge of the access structure?			
Is the pole at least 60 inches above the level of the access platform?			
Is the diameter of the sliding pole no greater than 1.9 inches?			

Climbing Ropes	Yes	No	Not Applicable
Is the climbing rope secured at both ends and not able to loop back on itself creating a loop with a perimeter greater than 5 inches?			

Balance Beams	Yes	No	Not Applicable
Does the height of the balance beam not exceed 16 inches?			

Merry-Go-Round	Yes	No	Not Applicable
Is the rotating platform continuous and circular?			
Are their adequate hand grips available that meet handrail guidelines?			
Does the surfacing for swings extend a minimum distance of twice the height of the pivot point?			

Seesaws	Yes	No	Not Applicable
Is there shock-absorbing material embedded in the ground underneath the seesaw seats (ex. partial car tires)?			
Are there handholds are provided at each seating position?			
Is the maximum attainable angle between a line connecting the seats and the horizontal is 25 degrees?			

Slide Platform (for all slides)	Yes	No	Not Applicable
Is the length of the platform on the free standing slide a minimum of 22 inches?			
Is the slide surrounded by protective barriers and guardrails?			
Are no spaces present between the platform and start of the slide chute?			
Are there handhelds available?			
Is there an aid to facilitate the user to a sitting position at the beginning of the slide (ex. Handholds)?			

Sliding Section of Straight Slide	Yes	No	Not Applicable
Is the average incline no more than 30 degrees?			
Does the flat open chute have sides with a 4 inch minimum extending up on both sides the entire length of the slide?			

Exit Region of Slides	Yes	No	Not Applicable
Is the exit region horizontal and parallel to the ground and have a minimum length of 11 inches?			
Does a slide over 4 feet in height have an exit region between 7-15 inches above the protective surfacing?			
Are the slide edges rounded or curved?			

Embankment Slide	Yes	No	Not Applicable
Does the chute have a maximum height of 12 inches above the ground surface?			

Tube Slide	Yes	No	Not Applicable
Is the internal diameter of the tube no less than 23 inches?			

Roller Slide	Yes	No	Not Applicable
Is the space between adjacent rollers and between the end of rollers less than 3/16 of an inch?			

Spring Rocker	Yes	No	Not Applicable
Is the spring rocker equipped with handgrips and footrests?			

General Swings	Yes	No	Not Applicable
Can all structures only be removed with the use of tools?			
Are all hooks pinched closed?			

Single-Axis Swings	Yes	No	Not Applicable
Are each of the use zones free from other equipment's use zones?			
Is there no more than two single axis swings hung in each bay of the supporting structure?			
Is the vertical distance from the underside of an occupied swing seat no less than 16 inches from the protective surface?			
Are the swing hangers spaced no less than 20 inches apart?			

Tot Swing	Yes	No	Not Applicable
Are all the criteria for single-axis swings followed?			
Is the vertical distance from the underside of an occupied tot swing no less than 24 inches from the protective surfacing?			
Is the maximum attainable angle between a line connecting the seats and the horizontal is 25 degrees?			

Multi-Axis Tire Swings	Yes	No	Not Applicable
Is the tire swing suspended using three suspension chains connected to a single swivel mechanism?			
Is the tire swing in a bay without any other swings?			
When pushed to its highest point is the tire swing a minimum of 30 inches from the side supports?			

Playground Accessibility Checklist

Playground Component Information	Number
Number of Ground Level Play Components	
Number of Ground Level Component on Accessible Route	
Number of Different Types of Ground-Level Play Components	
Number of Elevated Play Components	
Number of Elevated Components on Accessible Route	

Grounds-Level Accessible Routes	Yes	No	Not Applicable
Are routes at least 60-inches wide?			
Are any slopes 1:16 or less?			
Are slopes at boundary transition 1:12 or less?			

Ramps	Yes	No	Not Applicable
Are ramps at least 60-inches wide?			
Is the slope 1:12 or less?			
Do the ramps rise less than 12-inches?			

Landings	Yes	No	Not Applicable
Are landings at least 60-inches long?			
Are landings as wide as the ramp they are connected to?			

Maneuvering Space Where Ramps are Provided	Yes	No	Not Applicable
Is there one maneuvering space on the same level of the play component?			
Is the slope less than 1:48 in all directions?			

Handrail	Yes	No	Not Applicable
Are there handrails located on **both** sides of the ramp connecting the play component?			
Are the handrails 20 to 28-inches above the ramp surface?			

Transfer systems	Yes	No	Not Applicable
Are transfer systems at least 24-inches wide?			

Transfer Platforms	Yes	No	Not Applicable
Are transfer platforms 11 to 18-inches high?			
Are transfer platforms at least 24-inches wide?			
Are the sides of the transfer platforms free of obstructions?			

Transfer Steps	Yes	No	Not Applicable
Are transfer steps at least 24-inches wide?			
Are transfer steps at least 14-inches deep?			
Are transfer steps less than 8-inches high?			

Transfer Supports	Yes	No	Not Applicable
Are transfer supports present at transfer platforms and transfer steps?			

Clear Floor or Ground Space	Yes	No	Not Applicable
Are clear floor spaces at least 30-inches by 48-inches?			
Is the slope less than 1:48 in all directions?			

Maneuvering Space	Yes	No	Not Applicable
Is at least one maneuvering space present at the same level as an elevated playground component?			
Is the turning circle at least 60-inches in diameter?			
Is the slope less than 1:48 in all directions?			

Entry Points	Yes	No	Not Applicable
Are entry points at least 11-inches high?			
Are entry points no higher than 24-inches?			

Play Tables	Yes	No	Not Applicable
Are play tables at least 24-inches high?			
Are play tables at least 30-inches wide?			
Are play tables at least 17-inches deep?			

Reach Range	Yes	No	Not Applicable
Are items to be reached for in the range 18 to 40-inches from the ground?			

Glossary of Terms

Term	Definition
Accessible Route	"A pathway specifically designed to provide access for individuals with disabilities, including those using wheelchairs or mobility devices" (United States Access Board, 2005, pp. 19). Accessible routes can be ground level or elevated.
Clear Floor Space (also known as Ground Space)	"Provides unobstructed room to accommodate a single stationary wheelchair and its occupant at a play component on an accessible route" (United States Access Board, 2005, pp. 33).
Elevated Play Component	"A play component that is approached above or below grade and that is part of a composite play structure consisting of two or more play components attached or functionally linked to create an integrated unit providing more than one play activity" (United States Access Board, 2005, pp. 4).
Entrapment	"Any condition that impedes withdrawal of a body or body part that has penetrated an opening" (United States Access Board, 2005, pp. 3).
Entry Points (and Seats)	"Features of play components where individuals would transfer, sit, or gain access" (United States Access Board, 2005, pp. 35).
Ground Level Play Component	"A play component that is approached and exited at the ground level" (United States Access Board, 2005, pp. 5).
Guardrail	"An enclosing device around an elevated platform that is intended to prevent inadvertent falls from the platform" (United States Access Board, 2005, pp. 3).
Landing	"The level surfaces at the top and bottom of each ramp run" (United States Access Board, 2005, pp.26).
Maneuvering Space	"The space required for a wheelchair to make a 180-degree turn" (United States Access Board, 2005, pp. 34).
Play Component	"An element intended to generate specific opportunities for play socialization, or learning. Play components may be manufactured or natural, and may be stand alone or part of a composite play structure" (United States Access Board, 2005, pp. 5). They include rocking, swinging, climbing, spinning, and sliding.
Play Tables	"Surfaces, boards, slabs, or counters that are created for play" (United States Access Board, 2005, pp. 36).
Protective Barrier	"An enclosing device around an elevated platform that is intended to prevent both inadvertent and deliberate attempts to pass through a barrier" (United States Access Board, 2005, pp. 3).
Ramp	"A walking slope that has a running of slop of greater than 1:20" (United States Access Board, 2005, pp. 5).
Reach Ranges	"Recommended designated regions of space that a person seated in a wheelchair can reasonably extend their arm or hand to touch, manipulate, move, or interact with an object or play

	component" (United States Access Board, 2005, pp. 37).
Transfer Platform	"A platform or landing that an individual who uses a wheelchair or mobility device can use to lift or *transfer* onto the play structure and leave the wheelchair or mobility device behind at ground-level" (United States Access Board, 2005, pp. 29).
Transfer System	"Provides access to elevated play component within a composite system by connecting different levels with transfer platforms and steps" (United States Access Board, 2005, pp. 28).
Use Zone	"The surface under and around a piece of equipment on to which a child falling from or exiting from the equipment would be expected to land." pp.3

Appendix B

Summary of Unmet Safety and Accessibility Requirements from each Playground

Bluffton

Unmet Safety Requirements

- Surfacing did not extend a minimum of 6ft past all equipment.
- Surfacing for slides did not extend a minimum of the slide's height + 4ft.
- Presence of chipping paint
- Presence of corrosion
- The wood structuring was not free of splinters
- The equipment was not free of sharp points, corners and edges
- The equipment was not free of protrusions and projections
- The equipment was not free of pinch, crush, and shearing points
- The playground was not free of tripping hazards.
- There were not guardrails or protective barriers present on elevated surfaces greater than 30"
- The maximum difference in height between stepped platforms was more than 18" (20")
- On horizontal ladders and overhead rings the center to center spacing was greater than 15"
- On the sliding section of straight slides the average incline was greater than 30 degrees
- On the sliding section of straight slides the flat open chute did not have sides with a 4 inch minimum extending up on both sides the entire length of the slide
- The exit region of slides was not horizontal and parallel to the ground nor does it have a minimum length of 11"
- Slides over 4ft high did not have an exit region 7-15 inches above the protective surfacing.
- The slide edges were not rounded or curved.
- On single axis swings there were more than two swings hung in the bay of each supporting structure (3)

Unmet Accessibility Requirements

- There were no ramps available so that children in wheelchairs could access the elevated play equipment.
- The ground-level accessible routes were completely covered by gravel
- No ground-level playground components were available on an accessible route
- No elevated playground components were available on an accessible route
- There were no transfer systems
- Transfer platform did not meet requirements
- There were no transfer steps
- There were no maneuvering spaces due to no ramps
- There were no transfer supports due to no transfer systems

Total Unmet Safety Requirements: 18

Total Unmet Accessibility Requirements: 9

Total Unmet Requirements: 27

Items for concern

- The playground equipment itself is not safe. There is chipping paint, corrosion, and potential for splinters on all of the equipment.
- Guardrails and protective barriers are not available making the equipment unsafe for use.
- The slides do not comply with a majority of the safety requirements.
- There are more than two single axis swings hung in the bay of each supporting structure.
- None of the equipment is accessible for children in wheelchairs

Glenside

Unmet Safety Requirements

- Playground was not free of tripping hazards
- Presence of chipping paint
- The vertical distance from the underside of occupied swing seats was less than 16” from the protective surface
- On the tot swing, the vertical distance from the underside of an occupied swing was less than 24” from the protective surfacing

Unmet Accessibility Requirements

- Ground-level accessible route was completely covered by gravel
- No ground-level playground components were available on an accessible route
- No elevated playground components were available on an accessible route
- No ramps were present
- No maneuvering spaces were present due to no ramps
- No handrails were present due to no ramps
- The turning circle in maneuvering spaces was not consistently 60 inches in diameter

Total Unmet Safety Requirements: 4

Total Unmet Accessibility Requirements: 7

Total Unmet Requirements: 11

Items for concern

- The large plastic barriers can make it difficult for children to safely move from various play components
- No ramps available for children to access the equipment in wheelchairs
- None of the equipment is accessible for children in wheelchairs

Lakeside

Unmet Safety Requirements

- Presence of chipping paint
- Presence of corrosion
- Handhelds were not available on all slides to help facilitate a seated position.
- The exit region on one of the slides over 4 ft did not have an exit region 7-15 inches above the protective surfacing

Unmet Accessibility Requirements

- No ramps were present
- No ground-level accessible routes were present
- No ground-level playground components were available on an accessible route
- No elevated playground components were available on an accessible route
- No maneuvering spaces were present due to no ramps
- The transfer platform was not between 11”-18” high.
- Some entry points were higher than 24” high
- All items to be reached for were not within the range of 18”-40” from the ground

Total Unmet Safety Requirements: 4

Total Unmet Accessibility Requirements: 8

Total Unmet Requirements: 12

Items for concern

- Some of the play components were not safe. There was chipping paint, corrosion, and potential for splinters on all of the equipment.
- One of the exit regions of a slide was on the ground.
- None of the equipment was accessible for children in wheelchairs

Marquette

Unmet Safety Requirements

- Surfacing was less than twice the distance of the height of the pivot point behind the swing set
- Presence of chipping paint
- Presence of hardware corrosion
- Three broken swings were present
- Presence of openings between 3.5 and 9 inches
- Presence of tripping hazards
- Presence of suspended cable in high traffic area
- Space between adjacent rings on overhead rings was greater than 9 inches
- Abscence of handhelds on slides
- Slide over 4 feet in height had an exit region greater than 15 inches above the protective surfacing

Unmet Accessibility Requirements

- The ground-level accessible routes were completely covered by gravel
- The ground-level accessible routes slopes at boundary transition were greater than 1:12
- Ramps were less than 60 inches wide
- Ramps rise was greater than 12 inches
- Due to uneven pea gravel transfer platforms were greater than 18 inches high
- One transfer support was not present
- Clear floor spaces were not at least 30 inches by 48 inches

Total Unmet Safety Requirements: 10

Total Unmet Accessibility Requirements: 7

Total Unmet Requirements: 17

Items for concern

- Inconsistent depth of pea gravel
- Sliding grip was missing from the glider zip line
- Lip at the end of ramp not tacked down
- Accessible pathway ends without a slope causing a tripping hazard
- Accessible routes covered by pea gravel
- Ramp was not wide enough to accommodate all wheelchairs

McLaughlin

Unmet Safety Requirements

- Presence of chipping paint
- Presence of hardware corrosion
- Protrusions and projections were present
- Steps did not prevent accumulation of materials between steps
- Guardrails or protective barriers are not present on elevated surfaces greater than 30 inches
- Protective barriers were not present on elevated surfaces greater than 48 inches
- The center-to-center spacing of horizontal ladder rungs were greater than 15 inches
- The horizontal distance between the sliding pole and platform used for access was less than 18 inches
- The sliding pole was less than 60 inches above the level of the access platform

Unmet Accessibility Requirements

- No ground-level accessible routes were present
- No ground-level playground components were available on an accessible route
- No elevated playground components were available on an accessible route
- No ramps were present
- No landings were present
- No maneuvering spaces were present due to no ramps
- No handrails were present due to no ramps
- Transfer platforms were less than 11 inches high
- Clear ground space was not present
- Maneuvering space was less than 60-inches in diameter

Total Unmet Safety Requirements: 9

Total Unmet Accessibility Requirements: 10

Total Unmet Requirements: 19

Items for concern

- Inconsistent depth of pea gravel
- Sliding grip was missing from the glider zip line
- None of the equipment was accessible for children in wheelchairs

Moon

Unmet Safety Requirements

- Surfacing material was unsafe and not present in some locations
- Chipping paint was present
- Hardware corrosion was present
- One broken swing was present
- Height of the balance beam exceeded 16 inches
- One slide platform did not meet safety requirements
    - The step ladder had a tread width of less than 16 inches
    - The length of the platform was less than 22 inches
    - There was space between the platform and the start of the slide chute
    - No aid was present to facilitate the user to a sitting position at the beginning of the slide
    - The average slide incline was greater than 30 degrees
- Slides were greater than 12 inches above the ground surface
- One set of swings had 3 swings per bay
- Some swings were closer than 16 inches from protective surfacing

Unmet Accessibility Requirements

- The ground-level accessible routes were completely covered by gravel
- No ground-level playground components were available on an accessible route
- Less than half of elevated playground components were available on an accessible route
- No ramps were present
- No landings were present
- No maneuvering spaces were present due to no ramps
- No handrails were present due to no ramps
- Transfer platforms were greater than 18 inches high
- Maneuvering space was less than 60-inches in diameter

Total Unmet Safety Requirements: 9

Total Unmet Accessibility Requirements: 9

Total Unmet Requirements: 18

Items for concern

- Inconsistent depth of pea gravel
- Sliding grip was missing from the glider zip line
- None of the equipment was accessible for children in wheelchairs

Nelson

Unmet Safety Requirements

- Presence of chipping paint
- Presence of hardware corrosion
- Presence of pinch, crush, or shearing points
- Steps did not prevent accumulation of materials between steps
- The height of the balance beam exceeded 16 inches
- The exit region of the slide was greater than 20 inches

Unmet Accessibility Requirements

- No ground-level accessible routes were present
- No ground-level playground components were available on an accessible route
- No elevated playground components were available on an accessible route
- No ramps were present
- No landings were present
- No maneuvering spaces were present due to no ramps
- No handrails were present due to no ramps
- Transfer platforms were greater than 18 inches high
- One transfer step was greater than 8 inches high
- Ground space was not clear from gravel
- Maneuvering space was less than 60-inches in diameter
- Items being reached for were outside of the 18 to 40-inches from the ground

Total Unmet Safety Requirements: 6

Total Unmet Accessibility Requirements: 12

Total Unmet Requirements: 18

Items for concern

- Inconsistent depth of pea gravel
- Sliding grip was missing from the glider zip line
- None of the equipment was accessible for children in wheelchairs

Oakview

Unmet Safety Requirements

- Surfacing did not extend at least 6 feet past all equipment
- Surfacing for slides did not extend a minimum of the slide's height + 4 feet
- Surfacing for swings did not extend a minimum of twice the height of the pivot point
- Presence of hardware corrosion
- Presence of between 3.5 and 9 inches which can cause head entrapment
- Spaces between rungs on rung ladders were greater than 9 inches
- Tread depth on a step for stairway is less than 8 inches
- Protective barriers were not present on all elevated surfaces greater than 48 inches
- Slide over 4 feet in height had an exit region greater than 15 inches above the protective surfacing

Unmet Accessibility Requirements

- No ground-level accessible routes were present
- No ground-level playground components were available on an accessible route
- No elevated playground components were available on an accessible route
- No ramps were present
- No landings were present
- No maneuvering spaces were present due to no ramps
- No handrails were present due to no ramps
- No transfer systems were present
- No transfer platforms were present due to no transfer systems
- No transfer steps were present due to no transfer systems
- No transfer supports were present due to no transfer systems
- Clear ground space was not present
- Maneuvering space was less than 60-inches in diameter

Total Unmet Safety Requirements: 9

Total Unmet Accessibility Requirements: 13

Total Unmet Requirements: 22

Items for concern

- Inconsistent depth of pea gravel
- None of the equipment was accessible for children in wheelchairs

Steele

Unmet Safety Requirements

- Presence of openings between 3.5 and 9 inches which can cause head entrapment

Unmet Accessibility Requirements

- No ground-level accessible routes were present
- No ground-level playground components were available on an accessible route
- No elevated playground components were available on an accessible route
- No ramps were present
- No landings were present
- No maneuvering spaces were present due to no ramps
- No handrails were present due to no ramps
- No transfer systems were present
- No transfer platforms were present due to no transfer systems
- No transfer steps were present due to no transfer systems
- No transfer supports were present due to no transfer systems
- Maneuvering space was less than 60-inches in diameter due to no elevated play components

Total Unmet Safety Requirements: 1

Total Unmet Accessibility Requirements: 12

Total Unmet Requirements: 13

Items for concern

- None of the equipment was accessible for children in wheelchairs

Appendix C

Executive Summary

Analysis of Playground Equipment at Muskegon Public Schools: A Needs Assessment Executive Summary

Kailee Chandonnet, Elizabeth Elam, & Leah Lucas
Master of Science in Occupational Therapy Research Project

Abstract

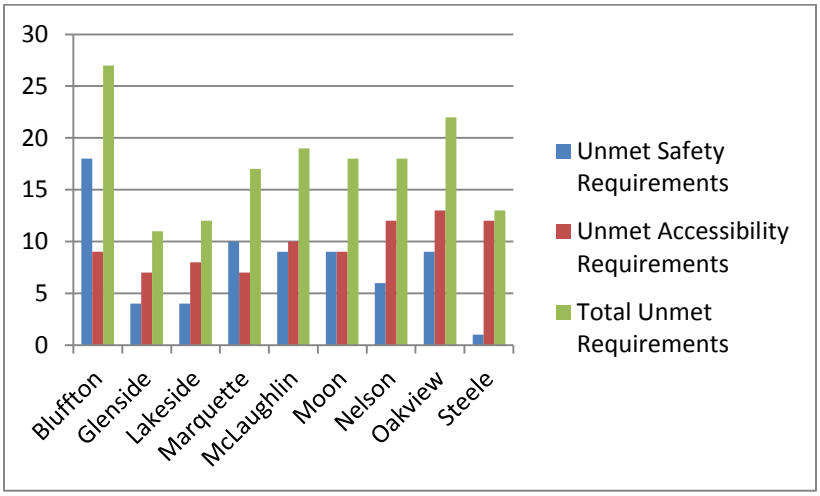
Purpose: The purpose of this needs assessment was to determine if any of Muskegon Public Schools' playgrounds met the students' safety and accessibility needs.

Method: To determine this, the researchers created a checklist using the *Consumer Product Safety Commission's Handbook on Public Playground Safety* (1997) and the *U.S. Access Board Summary of Accessibility Guidelines for Play Areas* (2005). The checklist was then used to assess all nine Muskegon Public School Playgrounds.

Results: None of the Muskegon Public School Playgrounds met all the safety and accessibility requirements.

Conclusions: A need exists to update the Muskegon Public School playgrounds to meet the current safety and accessibility requirements. Doing this will not only improve the safety of the playgrounds, but will promote an inclusive natural play environment for all Muskegon Public School Students.

Checklist Results



Findings

Safety Needs

Common problem areas included decreased safety surfacing, unsafe swings, missing slides, chipping paint, and corroding hardware. The most pressing need was inadequate depth of safety surfacing.

Accessibility Needs

Playgrounds either did not have an accessible route (i.e., sidewalk that connects to the playground structures) or the accessible route was covered by pea gravel, making it unusable.

General Recommendations

Safety

- Each school establish a maintenance schedule for the playgrounds
    - This will promote regular review of the playgrounds for safety concerns
- Playgrounds with chipped paint or corroded structures should be repainted or cleaned
- Safety surfacing should be added to each of the playgrounds
    - It is important to provide a consistent depth throughout each of the playgrounds
    - The exit regions of slides should be 7-15 inches above safety surfacing
    - The recommended overall depth of pea gravel is a minimum of 9 inches

Accessibility

- Ground level accessible routes and ramps be installed at each of the playgrounds to ensure access to all of the play components
    - A ground level accessible route would include providing a clear path that provides access to both ground level and elevated playground components.
    - It must connect between the building and the playground, and provide access to platforms, ramps, elevators, and/or lifts.
    - One of each type of ground level play component must be on the accessible route and half of all elevated play components must also be on the accessible route.

What Can Occupational Therapy Do?

- Consult for updating playgrounds
- Incorporate playgrounds into treatment planning, supporting MTSS
- Utilize natural environments to facilitate child development
- Educate staff and community on the role of play in development
- Seek out and develop proposals for grant funding to support the creation of safe and accessible playgrounds

References

United States Access Board, (2005). *About the U. S. Access Board.* Retrieved from http://www.access-board.gov/about.htm

Consumer Product Safety Commission, (1997). Handbook for Public Playground Safety. Washington, DC.