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School of Occupational Therapy

The Role of Occupational Therapy in the Design of an Accessible and Inclusive Playground for East Washington Elementary School

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Abstract

East Washington Elementary School needed a new playground that was more accessible and inclusive for children of all developmental abilities. The doctoral capstone student used current evidence to determine features of accessible and inclusive playgrounds and presented these findings to school officials. These features included pour-in-place rubber surfacing, accessible routes between play components, and ground level play components to provide sensory stimulation. The doctoral capstone student advocated and lead the development of the inclusive playground project through meeting with playground company representatives, participating in a newspaper interview, writing a donor letter, creating a playground Facebook page, and completing five grant applications focused on purchasing individual, ground-level play components and accessible playground surfacing. Following the completion of the student's doctoral capstone experience, school officials are better equipped with the knowledge and specific tools required to begin construction to make the school playground more inclusive for children of all developmental abilities. An inclusive playground is critical to decrease the likelihood of peer isolation on the playground and the potential for occupational deprivation (Moore & Lynch, 2015).

Literature Review

Introduction

Occupational therapists strive to empower individuals, groups, and communities to fully participate in meaningful occupations by identifying and addressing internal and external barriers to occupational performance (American Occupational Therapy Association, 2014). For children, one of the most meaningful occupations is play, defined by Parham & Fazio (1997, p. 252) as “any spontaneous or organized activity that provides enjoyment, entertainment, amusement, or diversion.” This occupation includes both *play exploration*, or “identifying appropriate play activities including exploration play, practice play, pretend play, games with rules, constructive play, and symbolic play” and *play participation* or “participating in play, maintaining a balance of play with other occupations, and obtaining, using and maintaining toys, equipment, and supplies appropriately” (American Occupational Therapy Association, 2014, p. S21).

Numerous studies have shown that a child’s environment can either restrict or enable a child’s participation in the occupation of play (Moore & Lynch, 2015; Egilon & Traustadottir, 2009; Stanton-Chapman & Schmidt, 2016). Besides a child’s home, their school is the setting in which they spend the majority of their time. Based on this information, it is important for occupational therapists to consider the quality of play that children are able to participate in while they are in the school environment. Children who do not have appropriate play environments at home or at school are at risk for occupational deprivation, or an inability to participate in a meaningful occupation because of barriers or restrictions outside of one’s control (Moore & Lynch, 2015).

Importance of Playground Play

The most commonly recognized play environment found in elementary schools is the school's playground. On the school playground, children participate in many different types of activities including playing on equipment, organized sports and activities, active and chasing games, traditional playground games, nature play, rough and tumble play, anti-social behavior, and non-engagement in active play (Massey, Ku, & Stellino, 2018). According to Massey, Ku, and Stellino's 2018 study, participation in different playground activities is influenced by factors such as gender and the presence or absence of play-based interventions in elementary schools, such as play activities organized by adults.

The benefits of play are widely supported in literature and include improving gross motor abilities, social skills, self-esteem, self-confidence, and emotion regulation (Miller et al., 2016). In addition, play helps children build and master important developmental skills, develop cognitive reasoning, and express their individuality (Nestor & Moser, 2018). A study by Brez and Sheets (2017) found that children in grades 3-5 demonstrated improved sustained attention following play during recess. Hyndman, Benson, and Telford (2016) reported additional psychological benefits including improved intrinsic motivation, competence, and a sense of belonging. A reduction in play has both physical and psychological consequences including an increase in childhood obesity and antisocial behavior (Howard, Miles, Rees-Davies, & Bertenshaw, 2017).

Accessibility and Inclusivity of School Playgrounds

While the benefits of playground play are widely recognized, some children, particularly children with disabilities, are at risk for difficulties accessing playground equipment appropriately (Moore & Lynch, 2015). Accessibility refers to the fit between an individual's functional capacity and environmental demands, and is protected by official accessibility guidelines such as the Americans with Disabilities Act (Moore & Lynch, 2015). Children who are unable to access playground equipment due to the physical playground environment are at risk for decreased quality of play and decreased interactions with peers. This decreased social interaction may potentially lead to secondary disabilities, or disabilities resulting from problems related to one's primary disability (Moore & Lynch, 2015).

While accessibility is an important feature for school playgrounds, the concept of inclusivity is of equal concern. According to the Accessible Playground Toolkit (Indiana Department of Natural Resources Division of Outdoor Recreation, 2016), inclusivity refers to the right of all individuals to participate in appropriate activities with their peers. Children with disabilities that are developmental, social, or sensory in nature may find challenges with playgrounds other than accessibility. For example, Stanton-Chapman and Schmidt (2016) report that children with autism may wander aimlessly around playgrounds that do not meet their sensory needs. The authors also note that equipment adapted for children with physical disabilities may segregate children, especially if the equipment is located in its own area (Stanton-Chapman & Schmidt, 2016).

Theoretical Framework

In order to design an accessible, inclusive elementary school playground, school officials and playground contractors must consider a variety of factors. Occupation-based models, such as the Person-Environment-Occupation-Performance (PEOP) model can assist occupational therapists with this process. The focus of the PEOP model is on how a variety of elements related to the client, their environment, and the occupation that is meaningful to them, can affect their occupational performance (Cole & Tufano, 2008). In order to maximize play participation among children at East Washington Elementary School (EWES), one must consider how aspects of the playground environment may support or hinder play based on physiological, psychological, neurobehavioral, cognitive, and spiritual factors (Cole & Tufano, 2008).

Erik Erikson's theory of psychosocial development provides a theoretical framework to understand the importance of play and how play during middle childhood impacts a child's development. Erikson proposed that individuals move through 8 stages of psychosocial development, with each stage having a crisis that must be solved before moving on to the next stage (Cole & Tufano, 2008). Stage 4 occurs during middle childhood, with the crisis of industry (accomplishment) versus inferiority. In this stage, children are constantly comparing themselves to their peers and competing for recognition and achievement (Cole & Tufano, 2008). In terms of play, children need to be able to fully participate in the same activities as their peers. If children are not able to participate in play, they may be excluded and ridiculed by peer groups, leading to feelings of inferiority and low self-esteem. By helping to design a playground that is more inclusive for a variety of developmental needs, the hope is to foster a sense of belonging and accomplishment when children are able to play with their peers.

Designing an Accessible and Inclusive Playground

One factor to consider in the design of an accessible and inclusive playground is how children with physical disabilities will be able to utilize the playground equipment. A scoping review conducted by Moore and Lynch (2015) identified a variety of playground features that made playground play difficult for children with physical disabilities including inappropriate ground cover, inaccessible routes, insufficient ramps leading to play equipment, and an imbalance between the amount of elevated and ground level play components. Stout (1988) was an early advocate for playground accessibility reporting that sand and pea gravel for surfacing can make play difficult for children that use mobility devices such as wheelchairs. He reports that rubber surfacing can increase both safety and mobility (Stout, 1988). For playgrounds with multiple components or activity areas, there should be a legible and accessible pathway between these components (Masiulonis, 2014). Moore and Lynch (2015) report that children are often limited in play experiences by being unable to reach elevated components or having ground-level components that lack diversity.

Another consideration frequently cited in the literature is related to providing equipment to meet a variety of sensory modulation needs. Children with sensory processing disorder demonstrate many differences related to playground play including avoiding team activities, using simpler play schemes, and participating in more solitary play (Miller et al., 2017). Equipment with a variety of sensory-related features can help to facilitate the play of children with sensory needs. For example, gliders can provide gentle vestibular stimulation, playground slides of different sizes and varieties can assist with gravity exploration, and climbing structures provide proprioceptive input. In addition, playgrounds can be created with equipment to include a variety of colors, textures, and noises (Stout, 1988).

Lastly, factors related to playground equipment and layout must be considered to encourage socialization and prevent children of varying abilities from being segregated. Social participation is important for children in order to develop peer relationships and transition into adulthood (Stanton-Chapman & Schmidt, 2017). The consideration of social factors helps to further demonstrate the important distinction between accessibility and inclusion. Moore and Lynch (2014) reported finding playgrounds with accessible structures that were segregated from the rest of playground. Segregating play areas for children with disabilities puts them at risk for decreased socialization and exclusion from typically developing peers (Moore & Lynch, 2014). Masiulonis (2014) describes how many modern play structures include transfer decks so that individuals who use wheelchairs can transfer on to the play surface. However, when a child must crawl around to access the structure, that structure does not promote social inclusion with peers (Masiulonis, 2014).

Conclusion

In conclusion, elementary school playgrounds are frequently flawed in that their elements are not accessible and inclusive for children who have a variety of play-related needs and interests. Play is a critical occupation for school-aged children and impacts a child's physical, social, and emotional development. Occupational therapists can utilize the Person-Environment-Occupation-Performance (PEOP) model to assist with identifying factors related to the child and the playground environment that may support or hinder their play exploration and play participation. With a wide array of knowledge regarding child development and environmental modifications, occupational therapists are key consultants for school officials and playground contractors hoping to design a playground that will fit the needs of all of their students.

Needs Assessment

A needs assessment was completed by analyzing the current playground environment at EWES as well as completing interviews with current students. These assessment methods allowed for gaining important information about the current physical barriers for a safe, inclusive play environment as well as insight into students' wants and needs for their new playground. The environmental assessment consisted of a playground site visit to look for features proposed by Moore & Lynch (2015) as barriers to inclusive play. During interviews, students were asked a variety of questions aimed at increasing understanding of their play preferences and behaviors.

Moore & Lynch (2015) described 4 playground features that make play difficult for children with disabilities including: inappropriate ground cover, inaccessible routes, lack of ramps leading to elevated play components, and an imbalance between elevated and ground level components. All 4 of these features are present on the current playground at EWES and are shown below in figures 1-4.

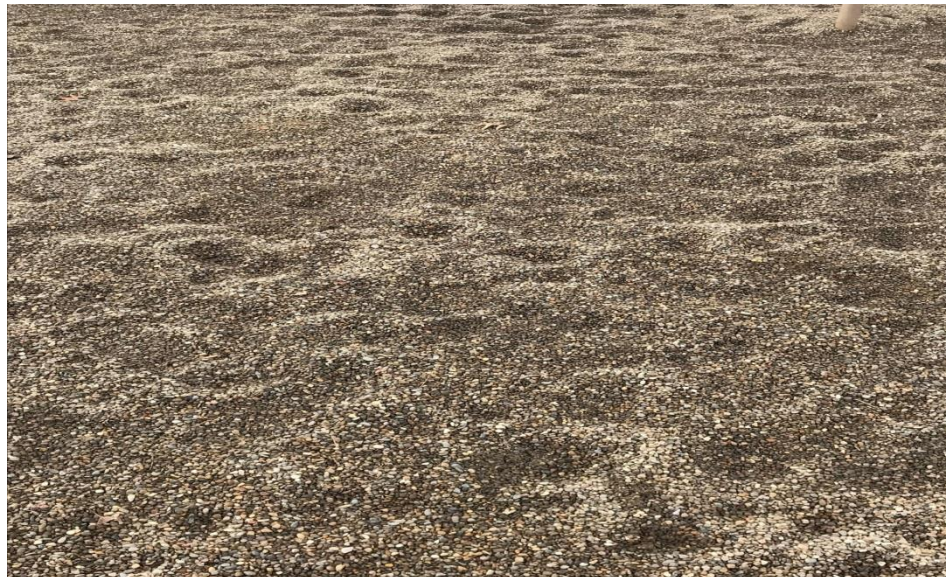


Figure 1. This pea gravel is the current ground cover that is used under the playground equipment. This surfacing would make it very difficult for a child who uses a wheelchair or other mobility device to access the playground equipment.



Figure 2. These barriers used to contain the pea gravel demonstrate an accessible route between play components. Children who use a wheelchair or other mobility device would find difficulty moving from the blacktop area into the play area shown.



Figure 3. This photo demonstrates the elevated component of the playground that lacks a ramp.



Figure 4. This is the playground's second elevated component. This equipment, as well as the equipment in figure 3 provide no ground level play opportunities.

These play areas that are inaccessible for children with physical disabilities put children at risk for decreased socialization and exclusion from typically developing peers (Moore & Lynch, 2014). Decreased socialization and exclusion is critical to prevent due to social participation being essential for children to develop relationships and transition into adulthood (Stanton-Chapman & Schmidt, 2017).

In addition to these barriers for children with physical disabilities, the current playground environment does not provide a wide variety of features for sensory exploration or equipment to encourage socialization between children of varying abilities. According to Stout (1998), children with sensory needs would benefit from new playground equipment that provides a wide variety of opportunities for proprioceptive input, gravity exploration, and vestibular stimulation, as well as a wider variety of colors, textures, and noises. These opportunities are currently limited, even for children who are able to overcome the pea gravel and the barriers used to contain it.

Following completion of the environmental assessment, interviews with EWES students were completed in order to gain a better understanding of students' play behaviors as well as what they would like to see on their new playground. Twenty-five children participated in interview groups of two to three students. The 25 children included 10 males and 15 females. The group consisted of three children in kindergarten, two children in first grade, eight children in second grade, seven children in third grade, and five children in fourth grade. The small groups were each asked the same three interview questions followed by an opportunity for the children to look at three potential options for the new playground area.

The first question that the children were asked was as follows: What do you like to do on the playground? All answers given fell into the following seven categories: kickball, tag, climbing, hanging on the rings, swinging, sliding, and hiding from boys. The most common activity reported among the 25 children was climbing. Not surprisingly, when asked what their favorite part of the playground was, the most common answers were related to monkey bars or other bars on the playground. Children also reported that they enjoyed the "purple equipment with spinning rings, the slides, and the swings.

The children interviewed were also asked: "If you got to design your own playground for school, what would you put on it?" and "How does playing on the playground make you feel?" Children reported that they would design a playground with more places to climb, more places to hide (for tag), more swings, and a new "jungle gym" to climb on. When asked about their feelings while playing, most children said it made them feel "happy", "good", and "fun". One fourth grade student stated: "Amazing. It's like we've had to do work all day but now we get to finally get outside and get some fresh air".

Comparison of Project to Existing and Emerging Areas of OT

By working with East Washington Elementary to develop an inclusive playground, the OT student is gaining advanced skills related to complex environmental modifications, which is considered to be an emerging practice area. The American Occupational Therapy Association (AOTA) recently published an official position paper in 2015 stating “...the evaluation and provision of complex adaptations and modifications to environments where people complete daily life occupations is within the scope of occupational therapy practice” (AOTA, 2015, p. 6913410010p1). Complex environmental modifications go beyond basic environmental modifications such as grab bars or tub transfer benches and may include working with team members like contractors, architects, or interior designers (Young, Van Oss, Wagenfeld, 2014).

OT’s role in complex environmental modifications for a school playground is similar to the role of OT in home modifications. The goal of home modifications is to change an individual's living space in order to make it more secure, safe, and user-friendly to increase independence (Fagan & Sabata, 2016). Similarly, the goal of complex environmental modification is to alter, modify, or create a new space for an individual, group, or community that will increase their daily participation in that space (AOTA, 2015). The areas of home modifications and complex environmental modifications differ in that home modifications may include more simple recommendations such as low-tech technology, off-the-shelf equipment, and adaptive hardware (Fagan & Sabata, 2016). Complex environmental modifications, as the name implies, include more advanced structural changes and assistive technologies that may not be found at retail or medical equipment stores (AOTA, 2015).

This project has both similarities and differences to school-based OT, which is a traditional area of practice. Serving as a consultant for the modification of a school playground

has the same goal as traditional school-based practice: to improve occupational performance and participation (AOTA, 2015; AOTA, 2016). However, this project does not involve a significant amount of time spent directly with students, like school-based practice. While school-based practice promotes occupational participation in a variety of ways including conducting activity analyses, providing assistive technology, educating teachers, and assisting with transition planning, complex environmental modifications are largely focused on how the external environment can support or hinder occupational performance.

Implementation

East Washington Elementary School (EWES) had been dreaming about renovating their playground area for several years. After completing many small fundraisers and receiving a large grant from the superintendent for the project, the school was ready to start making some big moves. A playground committee was organized consisting of the school's principal, PTO president, and P.E. teacher. As each committee member had a full-time job during the day, there was a need for someone who could serve as a leader and make the playground development project a top priority. I came to EWES on January 7, 2019 to advance my skills in leadership and advocacy by serving as a consultant and new member of the playground committee. My occupational therapy background provided a unique perspective during the planning stages of this project. Throughout my doctoral capstone experience, I served in a variety of leadership roles to advance the development of the new playground.

Choosing playground equipment and surfacing

As a future occupational therapist, I have a passion for ensuring that all individuals are able to fully participate in their meaningful occupations despite any internal or external barriers. In this case, I was evaluating the student population at EWES and their ability to participate in

the occupation of play on their school playground. The overall goal for my doctoral capstone experience was to help EWES renovate their playground in a way to make it more accessible and inclusive for children of all developmental abilities. The first step in this process was to conduct a literature review to determine the features present in inclusive playgrounds. These features included accessible surfacing, accessible routes between play components, and a variety of both elevated and ground level play components.

Following the literature review, I was more aware of the features of inclusive playgrounds and felt confident in my ability to present this information to the playground committee as well as companies providing playground equipment. The playground committee was very open to my ideas and gave me permission to obtain quotes from different companies for different types of equipment. Throughout my doctoral capstone experience, I was in constant contact with playground companies to discuss different options for layout, equipment, and surfacing. The playground committee ended up with various equipment and layout options from companies including Little Tikes Commercial, Playworld Systems, Inc. and BCI Burke Co. All potential equipment and layout options included elements of inclusive design, with some options having more inclusive elements than others. The option chosen would be dependent on the finalized budget.

Grant Writing & Fundraising

While at the beginning of my doctoral capstone experience EWES had approximately \$80,000 set aside for playground renovation which was not enough to achieve the vision for the new playground. In addition to leading the research on playground companies and types of equipment, I also set a goal to lead fundraising initiatives through writing grants and an advocacy letter.

At the beginning of my doctoral capstone experience, I conducted extensive research to locate grants that the school would be eligible to apply for. I created a document listing five potential grants that were available from national, state, and local funding sources. These funding sources included Lowes, Subaru Indiana Automotive, Walmart, the Kids Heart Challenge through the American Heart Association, and the Washington County Community Foundation. During my time at EWES, I completed all five of the grant applications. Completing these applications required collaboration with the playground committee and school corporation treasurer. In addition to completing the applications, I determined dates that each grant would potentially be awarded and presented this information to the playground committee to assist with the development of the playground budget.

In addition to preparing grant applications, I also supported the project by writing a persuasive letter that was sent to 60 community businesses in order to acquire additional funding for the playground renovation project. This letter included an introduction of myself and my doctoral capstone project, information about the benefits of play and the role of occupational therapy, my vision for the playground, and the fundraising that has been completed so far. Each letter included a chart with donor recognition levels to show how businesses could benefit from donating to the playground campaign. These benefits were for donations ranging from \$100-\$5,000 and included: advertisements on the EWES and EWES PTO Facebook pages, EWES website, EWES newsletter, an invitation to the playground opening ceremony, business name on a plaque displayed at EWES, and business name on a sign on the new playground. The benefits received would depend on the amount of money donated. These donor letters were mailed on March 8, 2019 and have brought in \$1,650 so far.

Advocacy

In addition to leadership, another major focus area of my doctoral capstone experience was advocacy. Engaging in advocacy efforts was critical to help EWES staff members as well as the community of Washington County understand the importance of play, the role of occupational therapy in play, and the importance of EWES building a new playground that is more inclusive for children of all abilities. I served as an advocate by explaining occupational therapy and inclusive play during meetings with playground committee members as well as with playground equipment companies.

In order to advocate for play and the profession of occupational therapy to the larger community, I created the East Washington Elementary Playground Facebook page and participated in a newspaper interview with a reporter for the Salem Leader, a newspaper that is distributed throughout Washington County. On the playground Facebook page, I would share information about the status of the playground renovation, recognize fundraising efforts, and information on how community businesses could get involved in the project. During the newspaper interview, I discussed the need for the new playground, the role I am playing in the project as an occupational therapy student, the importance of play, and the need for an inclusive playground environment.

Leadership

My leadership skills played a critical role in the advancement of the EWES playground project. Due to playground committee members having extremely busy schedules including duties as principal, teacher, and PTO president, I completed various tasks necessary to keep the project moving. For example, I was responsible for identifying a professional land surveyor and setting up a meeting with him to determine details about how the land would need to be prepared

before the installation of new playground equipment. My leadership skills helped to get the community of Washington County and the town of Pekin to be more involved in the playground project by sharing information on the East Washington Elementary Playground Facebook page and with the county newspaper. Lastly, my leadership skills help to obtain more funding for the project. By sending out a letter to community businesses, I was able to raise an additional \$750 for the playground in two weeks. I am expecting further donations from these letters.

Promoting Staff Development

I was able to promote staff development at EWES by educating staff members to increase their knowledge of play among school-aged children as well as the importance of inclusive play. Following this education, staff members can better recognize the need to help facilitate play during the school day so that children can receive the many developmental benefits. While my doctoral capstone experience is almost complete, staff members can use the knowledge of inclusive design during later phases of playground renovation. Funding at this time only allowed for renovation of one play area, but the next phase may include buying equipment for a grassy area that is completely bare at this time.

Discontinuation & Outcome

My doctoral capstone experience project responded to a variety of needs for the students, staff, and EWES as a whole. Based on the literature review and needs assessment, it was evident that EWES needed a new playground that was more accessible and inclusive for children with a variety of needs. As a doctoral capstone student, I addressed this need through a variety of leadership and advocacy efforts including advocating for inclusive design with playground committee members, working with playground equipment companies to choose inclusive

surfacing and equipment, creating the EWES Playground Facebook page, participating in an a newspaper interview about the playground project, completing five grant applications, and writing and sending a persuasive letter to 60 local businesses to obtain more funds for the project.

Following completion of the implementation phase of my project, I met with the EWES playground committee to discuss the discontinuation and outcome of the project. At this time, no final decisions have been made regarding the playground, as the committee is awaiting the results of the five grant applications that I completed. In addition, the school could potentially receive more funding from the 60 community businesses that received the donation letter a few weeks ago. Once the school receives notification from the grants that I completed, which will be during May and June, a finalized budget will be established and decisions on equipment and surfacing can be made.

During the final playground committee meeting, committee members were provided a folder with all information that I had obtained from playground companies including diagrams of equipment options and quotes for equipment and surfacing. In addition, the committee members were informed of the five grants that I applied for and the approximate dates that the funds would be awarded. Committee members, as well as the school's new principal, were provided with all contact information for playground company representatives that I was in contact with during my doctoral capstone experience. During the final meeting, I informed the committee that I would remain involved in the playground development project as needed. This involvement may include continuing to update the playground Facebook page that I created, recognizing business donors, assisting with organizing a future playground opening ceremony, and

completing all follow-up paperwork for grants that the school receives. The committee was very excited that I wanted to remain involved in the project.

Overall, I was able to achieve most of the goals set for my doctoral capstone experience. While the school was not able to begin playground construction during my time there, I was able to fully advocate for the need for an inclusive playground and provide school officials with the necessary resources to put the plans into action. I completed five professional and thorough grant applications that have a good likelihood to be accepted for funding this summer.

Overall Learning

My doctoral capstone experience playground project was not only beneficial to East Washington Elementary, but it was beneficial for my personal development as an advocate and leader for occupational therapy services. In a rural community like Pekin, many individuals have never heard of occupational therapy and do not understand the developmental benefits of play or the importance of providing an inclusive playground environment. Through the variety of tasks that I completed for the playground project, I helped school officials, teachers, parents, community businesses, and grantors expand their knowledge of the wide scope of services that occupational therapy has to offer.

While I have not yet heard back from any of the five grant applications that I have completed, I am confident that I submitted very organized and well-written proposals that are likely to be granted. My collaboration with my site mentor, other playground committee members, the school superintendent, and a seasoned grant writer helped to increase the chances for receiving funding for the playground while also expanding my leadership and advocacy skills.

Overall, my time at East Washington Elementary for my doctoral capstone experience has helped me develop skills that will be critical for my career as an occupational therapist. My communication skills, both written and verbal, have greatly improved as a result of continuously communicating with school officials, teachers, and community members about occupational therapy and the role that I am playing in the playground development project. Participating in a newspaper interview would normally be way out of my comfort zone, but I chose to do this because I knew that it would be good practice for myself as well as good publicity for the playground.

I have also greatly improved my leadership and advocacy skills during my doctoral capstone experience. Usually I am someone who prefers to be in the background rather than being in charge, but I knew that I would be taking the lead during this playground project. When I first started at EWES, many individuals were confused by the idea of an accessible and inclusive playground at first, and not really open to the idea. After providing extensive education and advocating for students who have different needs, these individuals changed their views and were more accepting of the project. If I had not come to EWES for my doctoral capstone experience, I believe that the school would end up with a very different playground at the end, potentially a playground that would deprive some children of the ability to fully participate in the occupation of play on their school playground.

While I was not providing direct OT services at EWES, I was able to gain valuable experience as a leader, educator, and advocate. These advanced skills will be extremely beneficial as I transition to a career of providing direct services in a more traditional setting. I have seen first-hand how much of a difference it can make for clients when you advocate and lead initiatives for them to be able to fully participate in their meaningful occupations.

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