CREATING INCLUSIVE EXPERIENCES IN CHILDREN'S MUSEUMS FOR CHILDREN WITH AUTISM SPECTRUM DISORDER

by

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ABSTRACT

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This study examined daily programming and inclusion efforts for children with Autism Spectrum Disorder (ASD) at a singular study site, a children's museum located in a suburban community of Illinois. The purpose of this study was to identify, through survey, observation, and peer interviews the current accessibility barriers at the study site and suggest ways to prevent them through inclusive design strategies. Interviews with children's museums around the country focused on how children's museums may be able to expand their inclusion efforts to overcome these barriers including designing programming to provide inclusive experiences for children with ASD. These interviews championed the use of a variety of inclusion efforts including utilizing Universal Design for Learning Guidelines in program development and engaging community partners. Survey results showed that visitors to the site utilized these environments for leisure and supplementary educational opportunities. However, due to various barriers related to the Museum environment and characteristics of ASD, children with the disorder are not always able to have a positive experience. Observations conducted at the study site revealed that while the Museum offers many accessibility resources to visitors, its current daily programming is unsupportive of a neurodiverse audience. Outcomes from this study resulted in recommendations to improve the experiences of children with ASD

at the study site by investing in staff training and resources, designing programs that comply with Universal Design for Learning Guidelines, and cultivating and maintaining community partnerships. In addition, strategies for measuring the effectiveness of these recommendations were identified. This, in turn, may be relevant and beneficial to ASD programming development and delivery at other museum sites around the country.

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DEDICATION

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Chapter 1: INTRODUCTION

Museums have the potential to influence an individual's learning throughout every stage of life (AAM 2008). Today, children's museums are becoming increasingly relevant as institutions of informal learning for children under 10 years of age. These institutions provide children and their caregivers an open environment where they can interact with a plethora of subject matter and materials in numerous ways (Jeffery-Clay 1998). Children's museums are also open-ended, hands-on, sensory rich institutions that can support a variety of different learning styles. Therefore, they have the potential to be inclusive learning environments for a neurodiverse audience. This unique learning environment exists in many children's museums and can offer a wealth of informal learning opportunities to young visitors, including those with Autism Spectrum Disorder (ASD).

This thesis focuses on children with ASD and their experiences in children's museums. Children with ASD represent a growing audience for children's museums that may benefit from their hands-on, open-ended learning environments. However, children with ASD may be prevented from these learning opportunities due to factors that influence their visit, like overwhelming crowds or unsupportive facilitation. As the potential audience for informal learning opportunities grows--so does the importance of transforming children's museums into inclusive institutions that are designed for everyone. To support children with ASD, museums currently recognize that these visitors have diverse learning needs that necessitate the implementation of a broad variety of educational strategies, resources, and environmental modifications. This commitment to providing an inclusive educational environment in museums aligns with

the view of inclusion in formal education settings; that all individuals should be a part of the general education community (Pratt 1997). In response to this growing audience, many institutions have developed and implemented strategies such as sensory kits, special hours, accessibility events, and staff disability awareness training in hopes to improve the museum experience for individuals with ASD. These efforts are relevant, but are we really offering and supporting an equitable and inclusive experience for children with ASD? I think the answer for many institutions is "not yet," and the findings of this study support such a conclusion.

In their most recent report, *Facing Change: Insights from AAM's DEAI (Diversity, Equity, Accessibility, and Inclusion) Working Group,* the American Alliance of Museums (AAM) echoed a similar concern about the status of inclusion in museums. "While we acknowledge and respect our predecessors' efforts, reviewing AAM's history around Disability, Equity, Accessibility, and Inclusion led to several questions, particularly as we discovered that multiple past plans had featured similar sets of recommendations. The biggest of our questions: Why haven't we seen more change (2018)?"

Also, as a part of this recent report, the DEAI Working Group produced a set of definitions for Diversity, Equity, Accessibility, and Inclusion:

- **Diversity –** Diversity is all the ways that people are different and the same at the individual and group levels. Even when people appear the same, they are different.
- **Equity –** Equity is the fair and just treatment of all members of a community.
- **Accessibility –** Accessibility is giving equitable access to everyone along the continuum of human ability and experiences.
- **Inclusion –** Inclusion refers to the intentional, ongoing effort to ensure that diverse individuals fully participate in all aspects of organizational work, including decision-making processes. (AAM 2018)

“Inclusion” is a trendy term found on museum websites, particularly within mission, vision, and value statements, and strategic plans that relate to exhibits and programs. It is vital to recognize that conversations regarding inclusion in museums are not solely related to the experiences of individuals with disabilities. Individuals with disabilities are just one example of the many, long and diverse struggles for equity and inclusion that exist in the museum field. Museum inclusion efforts refer to a much larger conversation that expands across the museum field and pertains to all “who have historically been relegated to the margins of society due to legacies of racism, ableism, sexism, heterosexism, xenophobia, and all other forms of injustice” (AAM 2017). Currently, many museums are striving towards creating more inclusive environments for audiences who have historically been underrepresented or marginalized. Individuals with disabilities represent one of the audiences where there is still room to expand these efforts (Deng 2015).

Historically, individuals with disabilities have belonged to this underserved audience. As reported by the American Alliance of Museums (AAM) (2015), individuals with disabilities represent the largest minority group in the United States today, comprising approximately 56 million Americans. The Institute on Disability reported that in 2015, 7.2% of individuals with disabilities in the United States were children between 5-17 years old, and children under 5 represented 0.4% of the total number of individuals (Kraus 2017). Supporting more inclusive museum experiences for individuals with disabilities is mutually beneficial for visitors and the institution. One in five people in the United States have some type of disability (in other words, 20% of the population), and when combined with their family members, friends, and companions, this becomes a

huge potential museum audience and significant proportion of the population (AAM 2015).

Based on the disability rights legislation of the 1960s-2010s, museums have made improvements to their physical environment that make them more accessible to individuals with physical disabilities. However, the meaning of the term “accessibility” has broadened over time including an increased understanding about neurodiversity, influencing museums to expand their efforts to ensure access for individuals with developmental and intellectual disabilities as well. It is recognized that accessibility is an organizational commitment that can create a larger, more diverse audience for museums to welcome into their institutions. “Accessibility begins as a mandate to serve people who have been discriminated against for centuries; it prevails as a tool that serves diverse audiences for a lifetime (Majewski 1996).”

This study focuses on inclusion for children with ASD as the ongoing effort to ensure these individuals can experience the learning opportunities available in children’s museums, to use design strategies which make their programs and exhibits supportive of a diverse audience, and to collaborate with this audience and listen to what they need and want. Inclusion is a created environment where people feel supported, listened to, and able to do their personal best (AAM 2014). Providing an equitable and inclusive experience for all is essential for the sustainability and relevancy of museums (AAM 2008).

If children’s museums dedicate time and funding to make their programs and exhibits more inclusive for children with ASD, they will end up creating a more welcoming and effective learning environment for everyone**.** Therefore, the purpose of

this study was to identify, through peer museum interviews, survey, and observation the current barriers at a particular study site and to suggest ways to overcome them in order to be supportive of an inclusive experience for children with ASD. Research and methods focused on three main questions:

1. What are the current barriers to children with ASD when visiting a children's museum?
2. How should a museum invest their time and resources (including human resources) to improve inclusion efforts?
3. How can programming within a children's museum be designed and implemented to provide an inclusive experience for children with ASD?

This study focused on a singular study site, a children's museum located in a suburban community of Illinois referred to throughout this study as "the Museum.". The Museum serves as an example of an institution that is striving to create more equitable experiences for visitors with ASD, but is falling short regarding their commitment to time, design strategies, and the dedicated efforts necessary to move towards more inclusion for child visitors with ASD. This thesis is organized in the following manner:

The second chapter, *Contextualizing Inclusion Efforts for Children with ASD*, discusses various factors that impact the discussion of inclusion in children's museums for this audience. The section entitled *Movement Towards Accessibility and Inclusion* includes an overview of the legislation that led to the current discussions of inclusion in the museum field. *Understanding Your Audience: Autism Spectrum Disorder* discusses the characteristics and prevalence of ASD. The section entitled *Identifying Barriers* gives an overview of the barriers that may be present in a children's museum environment for individuals with ASD. Finally, *Influence of Informal Learning*

Environments will focus on the learning opportunities in children's museums in relation to the Contextual Model of Learning, Constructivism, Universal Design, and Universal Design for Learning.

The third chapter, *Methodology and Institutional Setting,* discusses the purpose of the study and the various methods utilized including: peer museum interviews, survey, and observation. This chapter provides an overview of the *Study Site* including Museum Staff, Facilitation Staff Training, a History of Daily Programming at the Museum, and their Current Accessibility Efforts for Children with ASD.

In the fourth chapter, *Peer Museum Interviews,* discussion focuses on interviews that were conducted with staff members of a group of children's museums from across the United States. Staff from these institutions were interviewed to identify shared barriers; with the hopes of developing some helpful insights and effective practices that museums can engage in to move further towards inclusion. Staff from the following institutions were interviewed: ¡Explora!, Kohl Children's Museum, Wow! Children's Museum, Sciencenter, Iowa Children's Museum, The Peoria Playhouse Children's Museum, Portland Children's Museum, and Madison Children's Museum.

The fifth chapter of this thesis, *Survey*, presents the findings of an Accessibility and Inclusion Survey that was conducted with visitors in order to assess the Museum's current inclusion efforts and identify barriers that exist in at the study site for children with ASD. Survey participants included caregivers, teachers, and therapists of children with ASD.

The sixth chapter of this thesis, *Observations,* turns to observational with an eye toward identifying strategies for improvement in daily programming that would support a

more neurodiverse audience at the Museum on a consistent basis. The observed programs included: *Storytime, Music Time, Block Building,* an Art Studio, and *Sensory Story & Play Time.*

The seventh chapter of this thesis, *Discussion*, pulls together the findings from the three methodologies of this study and discusses how they impact the contexts of a learning environment: personal, social, and physical (Falk and Dierking, 1992). In addition, recommendations are made for improvements to the Museum's daily and special programming that will make experiences at the Museum more inclusive to a neurodiverse audience. It is recommended that the Museum invest time and funding to properly train their staff to work with diverse audiences and to develop resources for use for children with ASD. In addition, it is recommended that they design programs utilizing UDL to support a neurodiverse audience including those with ASD. Finally, the Museum should continue to cultivate and maintain relationships with partners in their community that work with this specialized audience. This chapter includes specific ways that the Museum can measure the aforementioned recommendations and inclusion strategies including surveying facilitation staff about daily programming, having supervisors observe and evaluate daily programs, conducting daily program surveys with visitors, and having community partners observe and evaluate daily programs specifically in regard to children with ASD.

The eighth chapter, *Conclusion*, summarizes the findings of the study methods, the recommended ways for the Museum to improve daily programming, and the proposed ways to measure the effectiveness of recommendations and inclusion strategies.

Chapter 2: CONTEXTUALIZING INCLUSION EFFORTS FOR CHILDREN WITH ASD

Movement Towards Accessibility and Inclusion

In the National Endowment for the Arts *Design for Accessibility: A Cultural Administrator's Handbook* (2003), the authors identify the difference between accessibility and inclusion as the difference between a means and an overall goal, “Remember that accessibility is only one means to a larger goal--inclusion in the cultural community of people of all ages, with and without disabilities.” Providing physical access to an experience or space is just one factor of what it means to have an inclusive or equitable experience. The movement towards accessibility in museums for individuals with disabilities began as one framed around compliance with federal regulations regarding physical access; it continues today as conversations deepen about what it means to provide an equitable experience for all.

The foundation for the movement towards accessibility in museums began with the Architectural Barriers Act of 1968 (ABA). The ABA requires access to facilities designed, built, altered, or leased with federal funds after August 12, 1968. Facilities such as United States post offices, national parks, social security administration offices, U.S. courthouses, schools receiving federal funding, public housing, and mass transit systems. The ABA is enforced through standards for accessible design which are regulated by the Department for Defense, Department of Housing and Urban Development, General Services Administration, and the U.S. Postal Service. These design standards indicate where access is required and provide detailed specifications for the design of building elements such as ramps, parking, doors, restrooms, etc.

These requirements do not address the activities conducted in these facilities (United States Access Board 2018).

The Rehabilitation Act of 1973 continued to build on this movement. The Rehabilitation Act prohibits discrimination on the basis of disability in programs conducted by federal agencies, in programs receiving federal financial assistance, in federal employment, and in the employment practices of federal contractors. This pertains to the museum field because Section 504 of the Rehabilitation Act covers institutions that receive federal funding from federal grant making agencies such as the National Science Foundation, National Endowment for the Arts, National Endowment for the Humanities (ASTC 2018), and the Institute of Museum and Library Services. In addition, Section 508 requires federal agencies' information and communications technology to be accessible to people with disabilities. Even though Section 508 only applies to federal agencies, many other institutions have adapted these standards to ensure their technology infrastructure is accessible (Art Beyond Sight 2014).

The Americans with Disabilities Act (ADA) of 1990 marked a considerable expansion on the laws prohibiting discrimination against individuals with disabilities. The ADA defines someone with a disability as a person with a physical or mental impairment that substantially limits one or more major life activities, a person who has a history or record of such an impairment, or a person who is perceived by others as having such an impairment. (U.S. Department of Justice 2009). The federal civil rights law guarantees equal opportunity for individuals with disabilities in employment, public accommodations, transportation, state and local government services, and telecommunications by requiring businesses of all sizes that serve the public to remove

existing barriers, ensure accessibility in new and remodeled facilities, and to support effective communication through auxiliary aids. Specifically, Titles II & III of the ADA requires businesses to follow specific architectural standards for new and altered buildings, provide auxiliary aids when necessary to ensure effective communication, and support the relocation of previously inaccessible programs. Title II applies to those operated by state or local governments and Title III applies to privately-owned businesses and nonprofits. Museums (except for the Smithsonian Institution) fall into one of these two categories. Per the ADA, these businesses must make reasonable modifications in order to ensure that their facilities, goods, and services are accessible to people with disabilities, as long as these modifications are without undue financial and administrative burden (ASTC 2018). In 2010, the revised ADA Standards for Accessible Design were adopted with updated requirements for newly designed and constructed or altered state and local government facilities, public accommodations, and commercial facilities.

Since the 1970s, many museums have made improvements to the accessibility of their buildings and programs for visitors with disabilities (U.S. Department of Justice 2009). These efforts are guided by the ongoing discussion of accessibility and inclusion in two of the largest leading museum organizations in the United States: The Association of Children's Museums (ACM) and the American Alliance of Museums (AAM). Founded in 1962, the ACM serves as a professional member service organization for more than 400 members in the children's museum field (ACM 2018). According to their Diversity Statement, ACM believes that children's museums have qualities that make them prime champions of diversity and inclusion. Children's

museums are leaders in developing inclusive experiences through their exhibits, educational programs, advocacy work, and community relationships that reflect their diverse communities (ACM 2018).

Since 1906, the American Alliance of Museums has guided the museum field by developing standards for best practices, serving as a professional networking platform, driving research, and providing standards-based assessment programs. In 1991, AAM published their report *Excellence and Equity,* which advocates for museums to change their view of how they serve society; it introduces inclusion as the respect and reflection of the nation's diversity within museum operations and programs and highlights the educational role of museums as a core part of their public service (AAM 2008). "Museums should be more welcoming places for all people regardless of their age, ability, education, class, race, or ethnic origin. We must make a concerted long-term effort to become involved with our communities and to inaugurate programs that are responsive to the needs and wishes of our potential constituents (Ibid:17)." Within this report, AAM set standards for the continued improvement of the field's impact on society. Some of these goals are especially relevant to the relationship of museums to individuals with disabilities:

- Develop and expand research methods that will test and document how people learn in the museum environment. Apply the findings to exhibition and program development.
- Develop educational experiences for school children, families, and adults that reflect a knowledge of the different learning styles visitors bring to museums.
- Experiment with exhibition and program strategies and innovative technologies to enhance the capacity of museums to reach a wider audience through exhibitions and programs. (Ibid:19)

In addition, a recommendation was made for museums to reach out to audiences with special needs and collaborate with them to ensure museum programs, exhibits, services, and information are accessible to these audiences (Ibid).

Since setting the stage for inclusion in *Excellence and Equity,* the American Alliance of Museums has:

- Included diversity and inclusion in several of its strategic plans
- Convened external task forces to develop action plans for the field
- Created internal inclusion teams
- Hired staff members devoted to addressing DEAI
- Issued a national diversity statement with affiliate organizations
- Worked to integrate DEAI into museum excellence programs
- Published numerous related articles, fact sheets, toolkits, and other resources (AAM 2018)

In 2014, the American Alliance of Museums continued their drive for inclusion with the issuing of their Diversity and Inclusion Policy Statement. This statement was made to support the transformation of "diversity and inclusion from a special initiative to an institution-wide business practice (Art Beyond Sight 2014)." The Diversity and Inclusion Policy Statement reads:

> The American Alliance of Museums respects, values and celebrates the unique attributes, characteristics and perspectives that make each person who they are. We believe that our strength lies in our diversity among the broad range of people and museums we represent. We consider diversity and inclusion a driver of institutional excellence and seek out diversity of participation, thought and action. It is our aim, therefore, that our members, partners, and key stakeholders reflect and embrace these core values. (AAM 2014)

In their most recent strategic plan, AAM calls for diversity, equity, accessibility, and inclusion to be integral to museums' structure and programs as they are essential components of museums' service to society (AAM 2016). In the Spring of 2017, AAM organized the Working Group on Diversity, Equity, Accessibility, and Inclusion (DEAI).

This group was comprised of 20 museum professionals who represented a variety of perspectives, organizational sizes, and disciplines, including Laura Huerta Migus, Executive Director of the Association of Children's Museums. Together, the group examined current inclusion efforts and suggested what position the field could take to support DEAI. This evaluation resulted in the report *Facing Change: Insights from AAM's DEAI Working Group* (AAM 2018). From this report, AAM (2018) produced five insights about what is necessary to support effective DEAI efforts in museums:

1. Every museum professional must do personal work to face their unconscious bias
2. Debate on definitions must not hinder progress
3. Inclusion is central to the effectiveness and sustainability of museums
4. Systemic change is vital to long-term, genuine progress
5. Empowered, inclusive leadership is essential at all levels of an organization

These insights are imperative for museums to pursue and at the same time they generally reiterate the organization's previous statements about inclusion. In addition, while some of these statements are potentially measurable, AAM does not provide any specific metrics to understand what constitutes successful inclusion. Systemic response to this pressing issue will remain unrealized without the recommendation of measurable strategies to implement within the museum environment. In order, to create more inclusive experiences for individuals with ASD, it is vital to understand this audience, their needs, and what barriers exist for them within a children's museum environment.

Understanding Your Audience: Autism Spectrum Disorder

It is estimated that 1 in 59 children in the United States have been identified with ASD (CDC 2018). ASD is a range of developmental disabilities that can cause significant social, communication, and behavioral challenges. Individuals with ASD experience deficits in communication and social interaction, and restrictive, repetitive

behavioral patterns. Socially, individuals may have difficulty reciprocating emotionally and developing/understanding relationships. They may have difficulty communicating both verbally and nonverbally. Individuals with ASD may also exhibit an inflexible adherence to routine, extreme fixation on specific subjects, and sensory processing difficulties. (American Psychiatric Association 2013; Greenspan and Wieder 2006) Over the past few decades, the number of ASD diagnoses has grown exponentially due to the broadening of diagnostic criteria and increased awareness due to an expanded effort to research a historically misunderstood and misrepresented condition (Wing 2005; Wolff 2004).

The first clinical account of autism, “Autistic Disturbances of Affective Contact,” was published in 1943 by Leo Kanner in the journal *The Nervous Child*. He characterized the eleven children in this report as having a lack of interest in social interactions, repetitive behaviors, and a resistance to change or insistence on sameness. Kanner viewed autism as a distinct neurodevelopmental disorder that he separated from other known genetic syndromes, brain injuries, and severe intellectual disabilities (Kanner 1943). Even though Kanner saw autism as distinct from schizophrenia, during this time period cases like these were considered forms of childhood schizophrenia (infantile psychosis). Over the next few decades, the understanding of the characteristics of autism expanded to include difficulties with social development and communication skills, resistance to diverging from a familiar routine, repetitive movements or behaviors, and an onset of symptoms in early childhood (Volkmar and Reichow 2013). In 1980, autism was introduced as a new condition in the Diagnostic and Statistical Manual of Mental Disorders, Third Edition (DSM-III). It was

categorized under the generic term “pervasive developmental disorder” (PDD), which disassociated it from childhood-onset schizophrenia (Harris 2016). Between DSM-III and the publication of DSM-IV, research of the period attempted to understand the range of the disorder and how age and IQ range influenced diagnosis. A sub-category of PDD, known as pervasive developmental disorders not otherwise specified (PDD-NOS) was created and three new disorders were recognized in DSM-IV including childhood disintegrative disorder, Asperger’s disorder, and Rett’s disorder.

In 2013, the American Psychiatric Association published DSM-V which removed the subdiagnoses in favor of a single term: autism spectrum disorder. Characteristics of the disorder included social reciprocity, communicative intent, and restricted and repetitive behaviors. Diagnoses would now be based on characteristics under two areas of diagnostic criteria: social communication/interaction and restricted and repetitive behaviors. An individual’s symptoms must cause functional impairment for a diagnosis of ASD (Hyman 2013). ASD is a “spectrum” disorder as it presents itself differently among individuals. ASD is approximately 4.5 times more common in males than females (1 in 42 males; 1 in 189 females). The disorder presents itself before age 3, with some children exhibiting characteristics within the first few months of life. (CDC 2017) ASD is non-discriminatory, occurring in all racial, ethnic, and socioeconomic groups. The condition ranges from mild to very severe, with individuals varying widely in their abilities, intelligence and behaviors (Langa et al. 2013).

Autism is a complex, life-long condition. Affected individuals may experience extreme difficulty engaging appropriately in their environment, maintaining environmental awareness, and handling changes that occur in their environment (Shore

2001). Individuals with ASD may experience sensory processing difficulties, including hyper- and hyposensitivity to sensory stimuli in their environment. In other words, people with ASD have difficulty registering, processing, organizing and reacting appropriately to sensory information that arises from their environment (Chistol et al. 2018). Sensory information may include loud noises, strong smells, bright lights, certain foods, and textures. Due to the “sensory distortions” individuals with autism may experience, learning environments can often be overwhelming and confusing (Shore 2001). Sensory overload is just one example of a barrier found in children’s museums for individuals with ASD.

Identifying Barriers

The children’s museum environment will likely present issues related to all three core areas of ASD characteristics, including: social-interaction difficulties, communication challenges, and a tendency to engage in repetitive behaviors (Autism Speaks 2017). Providing more inclusive environments that support play and informal learning for children with ASD is important because of the barriers these individuals may face related to the nature and frequency of play opportunities. The term “barriers” is used here instead of “challenges” because while some factors of a learning environment present challenges for neurotypical individuals, these same factors may prevent or discourage a child with ASD from participating at all. For example, children with ASD may spend a greater amount of time devoted to self-care, therapy, and educational remediation. Many institutions may have limited hours of operation at times that may not be suitable for children with a busy weekly schedule. In addition, the potentially busy or crowded environment of a children’s museum, especially on weekends, may be

overwhelming for a visitor with ASD. In response, some museums have designed and implemented special accessibility hours or events for children with disabilities and their families. While parents may enjoy these special events for their fewer crowds and less stress, they still desire full inclusion for their children. Currently, many feel their options are limited to segregated programs (Kulik and Fletcher 2016).

In addition to logistical barriers, environmental barriers can impact a child's access to play spaces and opportunities (Rodger and Ziviani 1999; Langa et al. 2013). Children with ASD may be impacted by the amount of sensory information in a museum environment, such as lights, sounds, smells, or touch (Ideishi et al. 2013). The colorful, bright environments and exhibits that may stimulate learning for some individuals—may also present a distracting, troubling environment for others such as those with ASD. Visiting a children's museum for the first time is often an exciting or stimulating activity for children. However, for some individuals with ASD, diverging from a familiar routine and visiting new places without proper preparation can also be a concerning barrier. For caregivers, a child's unpredictable behavior in a public place, especially those that are unfamiliar, can be a barrier to visiting a children's museum (Golden and Walsh 2013; Langa et al. 2013). Sometimes what appears to be a *typical* museum visit, may be unpredictable and uncomfortable for families with members with ASD as the risk of judgement and criticism from other visitors or staff is always present (Kulik and Fletcher 2016). Children with ASD may not be identifiable to museum staff, volunteers, and other visitors, because of a lack of understanding and training related to the disorder (Kulik and Fletcher 2016). Therefore, families with ASD members who are having a negative experience can be misunderstood as a child behaving badly or a case of bad parenting.

This lack of understanding creates a barrier to providing a stress-free, welcoming environment for individuals with ASD and their families.

Finally, children with ASD may experience barriers in children's museums because of the highly social nature of these environments. Children with ASD have persistent deficits in social communication and social interaction. They may have difficulties interacting with their peers, expressing their needs and wants, sharing in imaginative play opportunities, and adjusting their behavior in an unfamiliar environment (American Psychiatric Association 2013).

The prevalence of ASD in children today makes it vital for museums to advance their inclusion efforts and support this prospective audience:

> With 1.1% of children in the United States diagnosed with autism spectrum disorder, understanding how children with ASD and their families experience the museum can help broaden our ability to serve them, as well as, provide the right types of technological adaptations that help them learn inside the museum. (Langa et al. 2013)

Every child has a unique personal context and experiences a children's museum environment in a different way. If museums focus only on the characteristics of a disorder to create a seemingly inclusive environment, they will fall short in supporting their diverse audience. Creating and supporting meaningful experiences for all visitors should be the goal of museums as learning institutions. Instead of creating separate experiences or objectives for children with disabilities; the goal should be finding ways to integrate practices that benefit all children and improve the program quality for every child (Buysse 2011). High-quality inclusion means removing physical or structural barriers and providing multiple ways to support learning and development; championing a sense of belonging through participatory play and learning activities; and ensuring a

strong foundation through collaboration with key partners and investment in staff responsible for implementing inclusive programs (DEC/NAEYC 2009). Many institutions have been striving to create accessible, inclusive experiences for their visitors—and still have not made a deep enough commitment to their educational role (AAM 2008). While many museums have tried to understand their visitors and how they influence the museum experience, it is vital that institutions study themselves to understand what aspects of their exhibits, programs, and staff impact this experience. The unique learning environment that exists in many children's museums can offer a wealth of informal learning opportunities to young visitors, including those with ASD.

Influence of Informal Learning Environments

Today, children's museums, as well as other types of museums, are becoming increasingly relevant as institutions of informal learning. Schools, community organizations, and families utilize these environments for leisure and supplementary educational opportunities. Children spend a significant portion of their time outside of classrooms and daycare. On average, children under age 13 spend approximately 26 hours per week in formal education settings (Hofferth and Sandberg 2001). Therefore, a large portion of their time spent learning is in informal environments. Children's museums may appear primarily to many as a place for leisure, but play has a significant impact on children's learning. Children learn through play, which often occurs outside of formal education settings (Hofferth and Sandberg 2001). In recent years, research has explored the potential benefits of utilizing children's museums as a supplement to classroom curriculum. According to Henderson and Atencio (2007: 248), "[inquiry-based museums] provide teachers with a means to extend children's learning beyond what

occurs in the classroom and provides teachers with many opportunities to engage children in collaborative, dialogical, and self-directed explorations that are a core feature of play-based learning."

In her study of children's museums as supplementary learning environments, Rapp (2005) discovered that the inquiry-based children's museum appealed to both children with exceptional learning needs and those without. While exploring the museum's exhibits, students classified as having a disability could not be distinguished from typical students based on their behavior and performance in the museum. Rudy (2004), recognized that children's museums employ multisensory approaches to education that are beneficial for a wide range of individuals regardless of their perceived differences. This type of approach is effective because of the many factors that can influence the efficacy and quality of a learning environment.

Contextual Model of Learning

Falk and Dierking (1992) identify three contexts that interact to form a museum visit: personal, social, and physical, this theory is known as the Contextual Model of Learning. Each of these contexts intersect in a learning environment and affect an individual's experience. The **personal context** is an individual's experiences and knowledge; it includes their interests, motivations, and concerns. This is the context the visitor brings into the museum. It is vital for museum educators to understand and acknowledge that each visitor brings a unique perspective and knowledge to a learning situation (CAST 2018). Personal context serves as the basis for how an individual experiences a museum's exhibits, its programs, and how individuals build upon their existing knowledge. The personal context also refers to an individual's learning style or

method of perceiving (Maxwell and Evans 2002). The **social context** is whomever a visitor encounters inside the museum (visitors, family members, friends, volunteers, staff members, etc.). Facilitation from museum staff and volunteers to visitors is also a part of the social context. The **physical context** is the museum itself—the building, objects, environment—what is to be explored and experienced by the visitor. The unique and complex environments of museums are a significant determinant in the potential for learning, and extremely influential to the overall museum experience of individuals with ASD. For example, museums [especially children's museums] may have many competing environmental factors, including lighting, noise, and colors (Maxwell and Evans 2002). These factors can cause sensory overload for an individual with sensory processing issues.

The social context and physical context of a museum learning environment can be influenced the educational theory or pedagogy that determines the design of a museum's programs and exhibits. Many children's museums, like the site for this study, create and implement programming and exhibits following the pedagogical tenets of Constructivism.

Constructivism

Constructivism is an educational theory which postulates that individuals are creators of their own knowledge; they encounter new information, assess it against previous knowledge or experiences, and then build on their understanding most often with the help of others. A museum environment (in both the physical and social sense) can help visitors to build connections to their pre-existing knowledge by providing opportunities for them to link what they already know to new concepts explored in a

museum exhibits, objects, programs, etc. When visitors make these links, their learning is enhanced (Jeffery-Clay 1998). Forman and Hill describe constructive play as a cycle:

> Constructive play…builds on itself to increase the competence of the child. This competence, in turn, increases the child's pleasure by making even more creative acts possible. The cycle repeats itself, with the new creative acts becoming yet another form of play at a higher level of understanding until they are mastered. (1984)

Constructivist children's museums focus on providing exhibits and programming that support open-ended, discovery-based learning; championed by the belief that children learn by doing rather than by observing. Children's museums encourage children to follow their own motivations and curiosity within a supportive physical and social environment. This type of free choice learning environment supports their ability to construct their own personal understanding (Bamberger and Tal 2007). Children take these experiences outside of the museum and continue to build new knowledge. According to Hein (2001), there are several practices necessary for museum that operate under a constructivist pedagogy. The celebration and encouragement of personal meaning making is central to Constructivism. Children's museums that engage in Constructivist pedagogy do not present specific content that children are expected to learn. Rather, they provide opportunities and materials that children can interact with and develop, test, and build upon their prior knowledge. The emphasis is on process rather than content. Furthermore, Constructivist museums refrain from judging visitors' interpretations against standard, academic knowledge. Successful exhibits and programs support an increase in individuals' willingness to explore, investigate, question, and challenge; rather than advancing their ability to master a subject (Hein 2001).

Children's museums based in Constructivism may support an adult-child learning partnership or collaborative learning opportunities, where this expanded learning and problem-solving can thrive. Social constructivists, like Vygotsky (1978), believe that children, can learn beyond their actual developmental level through guidance or collaboration with adults and/or peers of a more advanced developmental level. Children are capable creators of their own values and meanings. Adults and more experienced peers help mediate learning and guide the experience (Thompson 2015). This type of interaction is known as scaffolding.

Scaffolding involves a varying level of child autonomy in a learning experience combined with the temporary assistance of an adult (who may be a family member, caregiver, or museum staff member) or more experienced peer. The adult encourages a learner towards a successful learning experience by providing support and guidance through a task and gradually reducing the amount of assistance as the child gains greater confidence and understanding of the task. They help a learner go from what they know to what else they could know. For example: a child and facilitator are playing with building blocks. The child is stacking building blocks on top of each other. The facilitator gains the child's attention and begins building the blocks into a bridge formation. As they watch the child appropriate this skill, the facilitator may ask open-ended questions about other ways they could construct the bridge together. Once this formation is modeled confidently by the child or the child loses interest, the facilitator may move onto a different construction.

Children's museum exhibits and programs are often designed to support scaffolding experiences; presenting opportunities within a single exhibit for a caregiver

or facilitator to build on a child's knowledge as it grows. Scaffolding is individualized to the needs of each child; therefore, it is often improvised and somewhat subtle between facilitators and children in informal learning environments like children's museums. Research has been conducted on the importance and benefits of child-adult/peer interactivity in children's museums (Benjamin et al. 2010; Andre et al. 2017; Foutz and Emmons 2017). Findings have shown that supporting exhibits with facilitation strategies and hands-on activities can help children build skills in understanding, concept knowledge, teamwork, communication, group communication, and critical thinking (Andre et al. 2017).

While it is necessary to provide individuals with the resources they need to succeed in informal learning environments (Bovee 2000), a museum's programs and exhibits should be designed in a way that supports an effective learning environment for everyone (Matthews 2009). An effective learning environment is unique for every individual. Each child brings their own conceptual structure into an experience, interacts with others in a unique way, and is influenced differently by the physical environment. To fully support their audience, museums should ensure they are developing exhibits and programs that are inclusive of a variety of different learning styles and ability levels. They must seek to understand the varied motivations of their audience, support social interaction and cooperative play, and craft a setting that dissolves the potential physical barriers to learning success. To support effective learning environments for a diverse audience many museums have designed exhibits according to Universal Design standards. To ensure their programs are also inclusive, museums may consider utilizing the Universal Design for Learning Guidelines to design and facilitate their programs.

Universal Design

Universal Design (UD) was developed following the Disability Rights Movement, which inspired changing legislation regarding accessibility throughout the 1960s-1990s. The challenge of retrofitting and modifying built environments to make them accessible to individuals with disabilities prompted architects and designers to develop a method of design that anticipated the needs of a diverse audience. The Principles of Universal Design were conceived and developed by The Center for Universal Design at North Carolina State University. UD is defined as "the design of products and environments to be usable by all people, to the greatest extent possible, without adaptation or specialized design (The Center for Universal Design 1997)." The seven principles include:

1. **Equitable Use** – The design is useful and marketable to people with diverse abilities.
2. **Flexibility in Use** – The design accommodates a wide range of individual preferences and abilities.
3. **Simple and Intuitive Use** – Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.
4. **Perceptible Information** – The design communicates necessary information effectively to the use, regardless of ambient conditions or the user's sensory abilities.
5. **Tolerance for Error** – The design minimizes hazards and the adverse consequences of accidental or unintended actions.
6. **Low Physical Effort** – The design can be used efficiently and comfortably and with a minimum of fatigue.
7. **Size and Space for Approach and Use** – Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility. (The Center for Universal Design 1997)

Curb cuts are a popular example of UD and how this method of design can be beneficial for everyone. Curb cuts allow for an individual using a wheelchair to access a sidewalk while also supporting easier travel for strollers, bicyclists, and for individuals who may

have difficulty negotiating curbs. While the goal of UD is to remove barriers from the physical environment, the goal of Universal Design for Learning (UDL) is to eliminate barriers in learning environments.

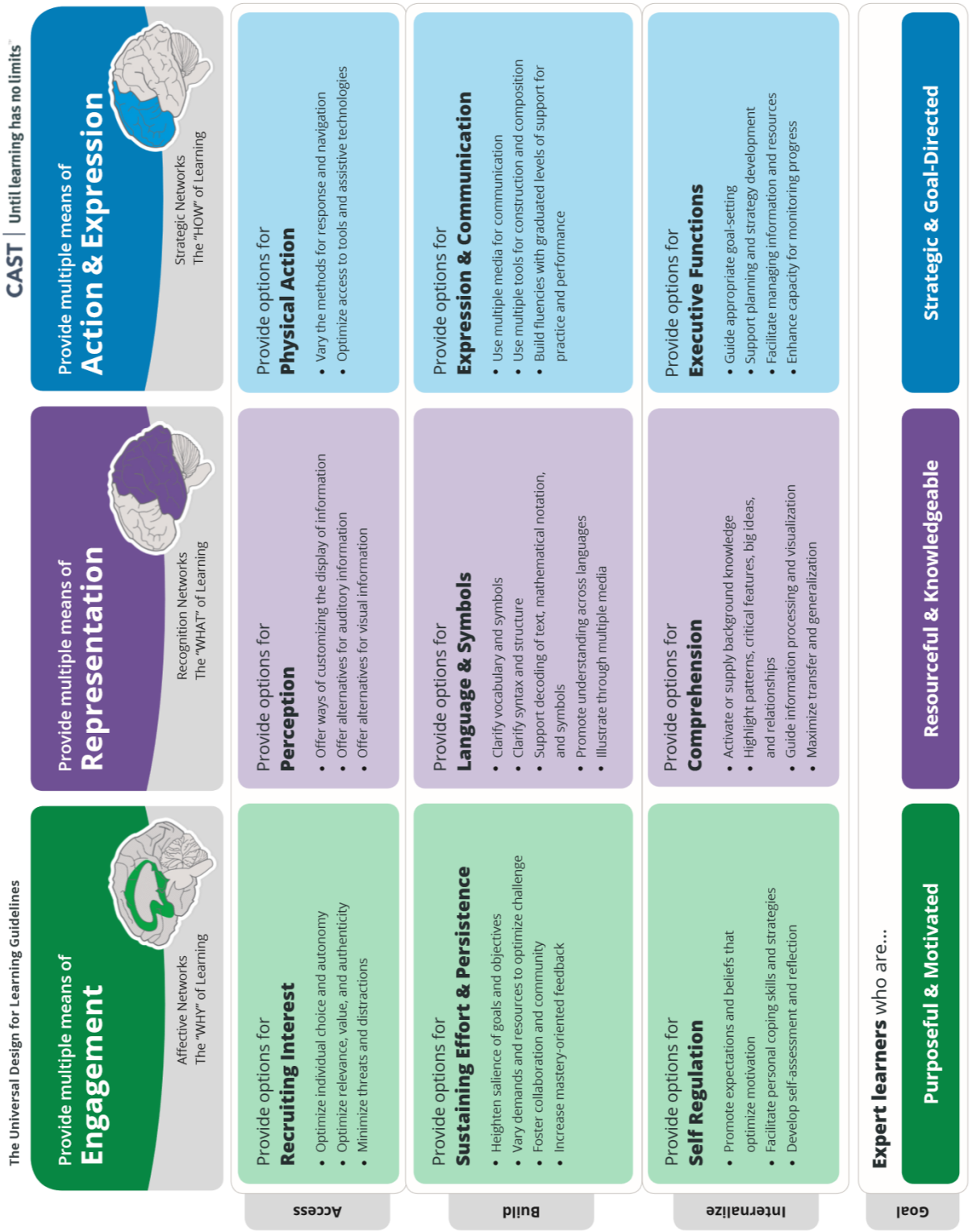
Universal Design for Learning

The foundations for UDL began in early civil rights and special education legislation and developed out of the UD movement and advancements in architectural design, expansions in education technology, and discoveries about how the brain is affected during learning (Ralabate 2011). UDL (Figure 2.1) is a researched-based set of principles developed by the Center for Applied Special Technology (CAST) in the late 1990s. UDL principles focus on the "why, what, and how" of learning to guide the design of accessible and effective learning environments. It includes multiple strategies to stimulate interest and motivation for learning, present information and content in different ways, and differentiate the ways that students can express what they know (CAST 2018). UDL is a more successful approach to inclusion than assistive technology or accessible design because:

- People often visit museums in neurodiverse social groups like families and school groups
- It allows for individuals with disabilities to learn alongside people without disabilities
- It enables flexibility and choice with when, what, why, and how individuals decide to participate and learn (NISE 2008)

Institutions should invest the time and resources to prepare and educate staff in UDL so that their exhibits and programs include all children from the beginning (Lieberman 2017).

Figure 2.1: Universal Design for Learning Guidelines (CAST 2018)



The approaches to understanding learning and teaching (pedagogy) reviewed here characterize it as an active process wherein individuals rely on their prior knowledge and previous experiences to build understanding and make meaning out of new situations in both a physical and social sense (Hein 2005). As institutions of informal learning, children's museums offer children an open-ended environment where they can engage in hands-on activities; motivated by their own curiosity and creativity. These experiences can be further enhanced by the facilitation and guidance of adults and more experienced peers. Each experience, learning process, and outcome remains unique to the individual. The personal, social, and physical aspects or modes of "context" emphasized in the Falk and Dierking approach come together to influence a visitor's experience. The distinctive quality of visitors and what they bring to the museum experience and, as a consequence, should each be, in turn, important parts of any process of evaluation. The distinctive quality of visitors and what they bring to the museum experience necessitates a flexible learning environment. Museums should develop their programs and exhibits with a UDL lens, so they can create more supportive learning environments for all children. In addition, institutions should ensure that their staff and volunteers receive training related to serving a neurodiverse audience. Finally, the museum environment, including exhibits and programmatic spaces, should be designed from the beginning to support everyone. While providing the necessary accessibility resources and supports is important, utilizing inclusive design strategies may prevent the need for costly alterations and will make the learning environment for effective for all visitors.

Chapter 3: METHODOLOGY AND INSTITUTIONAL SETTING

Introduction

Three methods were utilized in this study to help determine the current barriers at the study site. Results were collated as recommendations, so the study site can explore their role as a more inclusive site for children with ASD. Research and methods focused on three main questions:

1. What are the current barriers to children with ASD when visiting a children's museum?
2. How should a museum invest their time and resources (including human resources) to improve inclusion efforts?
3. How can programming within a children's museum be designed and implemented to provide an inclusive experience for children with ASD?

This multi-faceted approach included peer interviews, survey, and observation. This study utilized these three different methods in order to evaluate museum inclusion for children with ASD from multiple viewpoints in an effort to provide a more nuanced perspective. For example, peer museum interviews sought museum professionals' perspectives from children's museums from across the United States that were involved in accessibility at their institutions. Findings from the survey reflected the opinions and experiences of caregivers, teachers, and therapists that visit the Museum with children with ASD. Observations provided a detailed account of the current daily and special programming at the Museum and how the environment, quality of interaction and facilitation, and content of these programs may impact an individual with ASD. Such an multimethodological approach also provides distinctive methods for generating measurable data for Falk and Dierking's approach to understand the context of free choice learning.

Peer Museum Interviews

Staff members from eight children's museums from across the United States were interviewed to identify shared challenges in providing an inclusive environment for children with ASD. The interviewer hoped to gather some helpful insights and effective practices that museums could engage in to move further towards inclusion including and beyond the study site. Staff from the following institutions were interviewed for this study: ¡Explora!, Kohl Children's Museum, Wow! Children's Museum, Sciencenter, Iowa Children's Museum, The Peoria Playhouse Children's Museum, Portland Children's Museum, and Madison Children's Museum. Each of the institutions had dedicated sensory-friendly hours and accessibility resources, as a response to the common barrier of sensory-overload during crowded, noisy days at the museum. In addition, funding, time, and space were identified as common barriers within many of the museums. The strongest correlation between the peer institutions were their ongoing relationships with partners in the community that helped them resolve some of these issues. In addition, two of the museums identified the benefits of using Universal Design strategies and how it eased the creation of inclusive experiences at their organizations.

Accessibility & Inclusion Survey

An Accessibility & Inclusion Survey was developed specifically for this study by the author. This survey was conducted online with three main constituent groups who have visited the study site with children with ASD. This method was utilized to assess the Museum's current inclusion efforts from the perspective of visitors who accompany/care for children with ASD and to identify barriers that exist in the Museum for children with ASD. Survey results indicated that most respondents saw the Museum

as an exciting or unfamiliar environment where the child could be entertained and spend time with classmates, family, and/or friends. In addition, participants were motivated to visit the Museum, so the child/children could learn and connect to an area of their interest. A variety of tools, resources, and modifications were identified as helpful by participants. The benefit of having accessibility tools, environmental modifications, and designated sensory-friendly events were all highlighted by participants as helpful for creating a positive experience for the child. Participants felt that large crowds and noise level were a significant barrier to the children. Most respondents stated that the child/children had not participated in any classes, camps, and/or programs at the Museum--but would be interested. Perceived barriers to their participation included unknown environmental factors and the need for additional support during such a program if their caregiver was not present. Free, daily programs were identified as possible opportunities for children with ASD to participate in regularly occurring programs at the Museum.

Observations

The Museum's daily programs including *Storytime, Music Time, Block Building,* and Art Studio visits were observed in order to identify strategies for improving museum resources and staffing that would support a more neurodiverse audience at the Museum on a consistent basis. Daily programs represent learning opportunities, outside of exhibitions, at the Museum that are free and regularly available to visitors. The Museum's *Sensory Story & Play Time* was specifically designed for visitors with ASD and takes place during accessibility events. Therefore, it was observed in conjunction

with the other daily programs to evaluate if and how this program provided a more inclusive experience.

During observations, basic information was gathered about the participants including the number of participants and perceived approximate age range. In addition, observations focused on how participants (including staff and visitors) interacted during the program, vocalized statements that reflected the program's activities or environment, and tools, resources, and/or modifications that were observed during a program. Areas of need for specific tools, resources, and/or modifications that could be identified through observation were also noted. Through observation, it was identified that the daily programs could benefit from UDL, as the current facilitation, program content, and learning environment lacked what was necessary to make the daily programs inclusive to children with ASD. The Museum's *Sensory Story & Play Time* program served as an example of a supportive environment for a neurodiverse audience. Therefore, aspects of this program could be implemented in the current daily programmatic offerings to help make them more inclusive as well.

During this study, multiple staff members at the study site were interviewed about the history of daily programming at the Museum, staff positions and training, and the Museum's current efforts related to inclusion for children with ASD.

Study Site

The study site is a private, non-profit children's museum located in a suburban community in Illinois. The community has a population of approximately 147,000, and a median household income of approximately $110,000, almost double the U.S. median household income of $59,039. (U.S. Census Bureau 2018) Median household income

means 50% of households have income above that amount and half have income below that amount. While the study site is in one of Illinois' more affluent suburbs, it serves a diverse audience. The Museum served visitors from over 500 zip codes in Illinois during fiscal year 2016-2017 many of whom have a wide range of socioeconomic backgrounds. In fiscal year 2016-2017, the Museum had 8,391 member families. Twenty percent (1,672) of these families benefit from a reduced-cost membership, which is offered to families who qualify for financial assistance. (Annual Report 2017) Census reports indicate that 4.4% of residents in the city where the study site is located identified as having a disability (U.S. Census Bureau 2018). This compares to 11.1% of people in Illinois (Erickson 2017) and 12.6% of the U.S. population (Kraus 2017). In the 2015 State Autism Profile for Illinois, it was reported that approximately 7.02% of the children with disabilities (ages 3-21) who receive special education services in Illinois have autism; this number rose from 1.46% in 2000 (Easter Seals 2015).

The study site serves over 300,000 visitors annually. It has approximately 18,000 square feet of exhibit space that is designed primarily for children 0-10 years old. The Museum's exhibits and programs are primarily based in S.T.E.A.M. content (science, technology, engineering, art, and math). The Museum has created a learning framework that serves as a foundation behind the design of their exhibits and programs. The learning framework contains the following tenets:

- Remain innovative by informing our work through current research
- Explore the intersection of Art, Math, and Science with accurate, age-appropriate content
- Promote persistent, self-directed learning and encourage risk taking and learning from failure
- Provide opportunities to use real tools, materials, and equipment
- Engage all children and their adult partners in child-led play experiences that encourage curiosity, exploration, and collaboration

- Create unique opportunities for open-ended, process-oriented experiences with the potential for multiple outcomes
- Foster inclusivity for all children and their adult partners
- Be mindful of commercial influence (Learning Framework 2018)

The mission, vision, and core beliefs of the institution reflect the commitments in their learning framework. These statements highlight hands-on exploration, the power of play as a basis for constructing knowledge, the child-adult learning partnership, and igniting the potential of children to learn through play (Who We Are 2018). In addition, the Museum also has a dedicated Inclusion Statement:

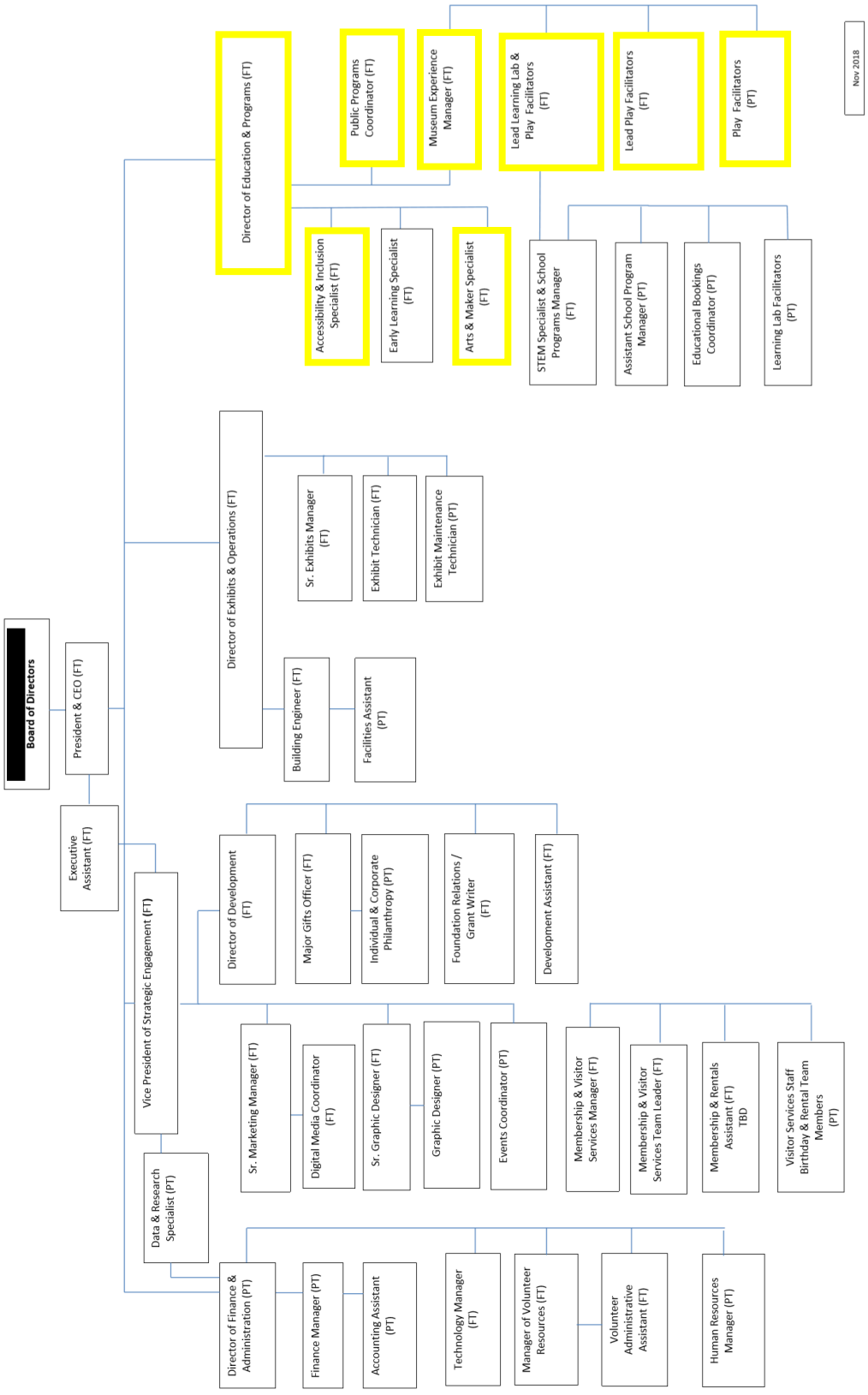
> …we believe that our strength lies in diversity among the broad range of people that we serve. [the Museum] respects, values, and celebrates the unique attributes, characteristics, and perspectives that make each person who they are. We are committed to providing a safe, accepting environment with unique learning opportunities for all children and families who visit the Museum. (Who We Are 2018)

The Museum's learning framework, mission statements, and inclusion statement all reflect Falk and Dierking's (1992) three contexts that impact an experience and learning environment. For example, respecting and celebrating the personal characteristics and perspectives that visitors bring into the Museum (personal context), engaging children and their adult partners in child-led play experiences (social context), and providing a safe, accepting, and unique learning environment (physical context). These commitments reflex a strong foundation and passion for providing an experience that is supportive of a universal audience. The Museum's President & CEO has expressed support of this project and approved the use of the Museum as a study site further attesting to the Museum's commitment to valuing and improving the experience of visitors with ASD.

Museum Staff

Currently, the Museum has 29 full-time staff and 66 part-time staff. The Museum's staff are divided into six departments, including: Executive, Finance and Administration, Marketing and Sales, Education and Programs, Exhibits and Operations, and Development as evident in the Museum's organizational chart (see Figure 3.1).

Figure 3.1: Study Site Organizational Chart (2018)



The Education and Programs department is the largest department at the Museum and is directly related to their accessibility and inclusion efforts. The department is led by the Director of Education and Programs, and consists of eleven additional full-time positions, including: Museum Experience Manager, Public Programs Coordinator, Art and Maker Specialist, STEM Specialist and School Programs Manager, Early Learning Specialist, Accessibility and Inclusion Specialist, Assistant School Programs Manager, a Lead Play Facilitator, and three Lead Learning Labs and Play Facilitators. The rest of the department is made up of part-time staff, including an Education Bookings Coordinator, Learning Lab Facilitators, and Play Facilitators. Positions in this department that are especially relevant to the design and delivery of daily and special programming are highlighted in the organizational chart (Figure 2.1). More detailed descriptions of these positions can be found in Appendix A.

Facilitation Staff Training

The Lead Play Facilitator, Lead Learning Labs and Play Facilitators, and Play Facilitators are responsible for facilitating the child/adult visitor interaction with exhibits and daily/special programming. In addition, Museum volunteers assist staff in facilitation throughout the Museum. Investing in the training of facilitation staff is vital to the success of daily programming, because they have a direct impact on the experience of visitors.

Facilitation staff begin their training at the Museum through a training website, which includes Museum history, an overview of the Museum's exhibits, radio procedures, dress code, emergency procedures, facilitation, and Wakanheza. The Wakanheza Project™ is a set of principles and strategies, designed by Saint Paul-

Ramsey County Public Health (2018), that help individuals, agencies, businesses, and communities prevent or de-escalate stressful situations in public. In turn, these efforts create a more welcoming environment for children and their families. The Wakanheza Project™ includes six principles: judgement, culture, powerlessness, empathy and respect, environment, and the moment. In summary, the principles revolve around the idea that suspending one's judgements or personal beliefs, showing understanding and empathy towards others, and creating a welcoming environment, can support more healthy interactions between children, adults, and families. In turn, the strategies and principles of The Wakanheza Project™ can help to prevent family violence (Saint Paul-Ramsey County Public Health 2018).

After completing modules on the training website, staff spend approximately five shifts on the exhibit floor, shadowing Lead staff or more experienced Play Facilitators. New staff shadow daily programs during this part of their training and learn the basic responsibilities of facilitating these programs. According to the Museum Experience Manager, these basic responsibilities include: gathering materials prior to the program (5 minutes), placing a sign outside the program space, facilitating activities during the program, counting and recording the number of child and adult participants, and putting supplies away after the program (5 minutes). There is currently no Lead or Manager supervision during daily programming, and no evaluation system in progress. There is also no direct relationship between the Accessibility and Inclusion Specialist and the facilitation staff. In addition, other than shadowing peers, there is no training specifically allocated towards facilitating daily programs during the onboarding process or ongoing

training initiatives (such as might be built into the annual staff performance review process).

After onboarding, there are approximately fourteen (1.5 hour) training sessions for facilitation staff throughout the year. These trainings relate to customer service, accessibility, the Art Studio, facilitation of the exhibits, emergency training, etc. In addition, facilitation staff participate in short, 15-minute trainings prior to their shift every day. These meetings tend to focus on any important updates regarding the Museum's exhibits, events, procedures, etc. The Museum Experience Manager points to staff turnover in the Public Programs Coordinator position as the main reason behind the lack of daily program facilitation training; because of frequent turnover, training for daily program facilitation has not received the attention it deserves. The lack of facilitator training has led to some negative visitor feedback about the quality of daily programming compared to their expectations. In turn, the number of staff members who can facilitate daily programs has been reduced to those who appear or claim to be comfortable facilitating daily programs. According to the Museum Experience Manager, this reduction in able staff leads to logistical headaches when attempting to schedule facilitators.

According to the Museum's Manager of Volunteer Resources, there are three types of Museum volunteers that can be found assisting facilitators in the Museum. Museum volunteers are trained by the Manager of Volunteer Resources with the help of other members of the Education and Programs team. Museum Assistants, or the base level of museum volunteer, are given a general, 1-1.5-hour training about the museum and how to reset exhibits. These volunteers clean and reset exhibits throughout the

day. Play Assistants receive an additional 1-1.5 hours of training focused on facilitating with families in the Museum's exhibits. Generally, Play Assistants perform many of the same duties as Play Facilitation staff. However, these individuals are not responsible for any emergency procedures. Their main objective is to maintain a clean, safe environment and to facilitate play. The third type of volunteer is specifically recruited for the Art Studio. Art Studio volunteers receive basic training from the Manager of Volunteer Resources and additional training related to the Art Studio and facilitation from the Art and Maker Specialist. Museum volunteers are not responsible for facilitating daily programming, with the exception of the Art Studio.

History of Daily Programming at the Museum

The Director of Education and Programs and Museum Experience Manager were interviewed about the history of daily programming at the Museum. According to the Museum Experience Manager, daily programming began in the form of exhibit pop-ups just over a decade ago. Each exhibit "neighborhood" or thematic area of the Museum's permanent exhibits had a binder with about five activities from which staff could choose. Some of the activities required staff facilitation, while others were in the form of exhibit enhancements (i.e. interactive toys or manipulatives that related to the exhibit area). They recalled that exhibit pop-ups made the facilitators' shifts more interesting and gave them another way to interact with visitors. In addition, this type of programming was relatively inexpensive as the activities or manipulatives chosen for each neighborhood were reusable. Exhibit pop-ups were not advertised to visitors, rather staff could choose to do an activity depending on the visitor traffic in a neighborhood. While this type of pop-up was a fun surprise for visitors, they noted that the Museum's marketing team

was unable to advertise them due to their pop-up nature. In turn, the Museum was unable to use the programming as a marketed enhancement to a museum visit. In addition, they recalled that transitioning activities during daily staff rotation was sometimes difficult because staff could potentially inherit an activity from another team member that they were not as comfortable facilitating. In early 2015, the Museum experienced a flood that forced it to close for a period of nine months during reconstruction. The Museum Experience Manager noted that exhibit pop-ups ended with the flood and did not return when the museum reopened in late 2015. In fact, the Museum had no form of free daily programming, with the exception of the Art Studio, until fall of 2017 with the introduction of a new Director of Education and Programs.

According to the Director of Education and Programs, during their interview during the hiring process the Museum's Executive Leadership team expressed the desire for more daily programming at the Museum. However, the team had inconsistent feelings about whether to charge visitors to participate in daily programs. In response, the Director of Education and Programs described a daily program system that they had setup at a Museum in a previous role which included various program types including times for storytelling. After they joined the Museum in the summer of 2017, the Director of Education and Programs designed a similar program structure for the Museum including, *Storytime*, *Music Time*, and *Block Building*. These free daily programs were originally scheduled to occur at multiple times throughout the Museum's general operating hours. Programming began in late September 2017. According to the Museum Experience Manager, training for the Museum's Play Facilitators and Lead Learning Labs and Play Facilitators did not begin until the Museum's annual

maintenance period which takes place in early September. Therefore, the majority of staff training for daily programming took place after the programs had already begun. They stressed that the quick initiation of the new programming and subsequent lack of training had an impact on the quality of facilitation and the overall programs. For example, the majority of such staff members had no background in teaching music. Therefore, even though they had the equipment necessary to run the program, they lacked the training required to support effective facilitation. In addition, digital technology (e.g. the use of an iPad to project digital books onto a screen) was introduced after the initiation of the *Storytime* program without sufficient training, which made the facilitating staff nervous and uncomfortable about using the technology. For the remaining portion of fiscal year 2017-2018 (July 2017-June 2018), a staff member was removed from the exhibit floor to facilitate daily programs, absorbing the cost for facilitation into general staffing costs. There was no budget for daily programming, therefore materials and equipment were purchased by piecing together funds from various budget lines.

In January 2018, the decision was made to modify daily programming to reduce the number of sessions and exclude *Block Building*. Observations for this study took place prior to the removal of *Block Building* as a specific daily program. According to the Director of Education and Programs, the Museum reduced the number of programs due to a lack of attendance during some session times (i.e. late afternoon sessions had very low attendance). In addition, *Block Building* was removed because of logistical issues. For example, *Block Building* took place on the second level of the Museum which is staffed by one facilitator. Therefore, that facilitator was removed from the exhibits during *Block Building*. According to the Museum Experience Manager, staff had difficulty multi-

tasking (i.e. facilitating a program and maintaining a safe/clean exhibit environment at the same time). In addition, the facilitation that happened during *Block Building* was similar to interactions already happening between staff and visitors outside of daily programming. Therefore, the Museum felt that this type of facilitation would continue without a specific program. The Museum Experience Manager noted that the absence and frequent turnover of the Public Programs Coordinator position affected daily programming. This staff member is responsible for the development of program content and related training of facilitation staff with the exception of the Art Studio which is the responsibility of the Art and Maker Specialist. The Museum hired a new Public Programs Coordinator in May 2018.

Currently, there are three daily programs that occur during a typical day at the Museum: *Storytime*, *Music Time*, and the Art Studio. *Sensory Story & Play Time* occurs during the Museum's two accessibility events: *Third Thursdays* and *Family Night Out*. The current Public Programs Coordinator, who maintains the *Storytime* and *Music Time* programs, recognized that these programs are suffering due to a lack of training and an understanding of how to use the materials available. One of their main position goals for fiscal year 2018-2019 is to improve these programs by enhancing the content available to facilitators, providing them with more training opportunities, and establishing a system for reviewing the quality of these programs.

The Public Programs Coordinator is currently working with members of the Lead Learning Lab and Play Facilitation team to develop felt stories, activities that incorporate books and instruments in the Museum's collection, and songs and activities that incorporate movement. They hope that providing more specific content, including

planned lessons and activities, will support facilitators that have less experience with program delivery. In addition, they are working with the Museum Experience Manager to schedule and implement trainings for facilitators that are specifically related to daily programming. These trainings will focus on introducing the facilitation staff to new content for *Storytime* and *Music Time*, give them strategies they can use to facilitate programs in a more interactive way, and provide them with time to practice facilitation with their coworkers. Finally, the Public Programs Coordinator noted that evaluation is another priority for daily programming. Visitor experience of daily programs will be collected through participation surveys. In addition, they plan to conduct observations of staff facilitating the programs to gather insight into where to focus ongoing training. It may also be helpful for supervisors to communicate with facilitation staff after programs understand how they feel about the current programming and what strategies may help improve it.

The Public Programs Coordinator noted that even though improvements for daily programs are one of their current goals, they often feel conflicted about where to devote their time. They indicated that they feel an ongoing pressure to deliver quality large-scale events and paid program opportunities on a regular basis which takes up the majority of their time. Therefore, they struggle to find time to focus on daily programming initiatives. The Public Programs Coordinator noted that bringing in community partners to facilitate some daily program sessions has helped relieve current staffing constraints and provided visitors with expanded content. The Museum Experience Manager noted that additional funds were written into the current budget to provide an additional Play Facilitator into the daily schedule to avoid taking a staff

member from the exhibit floor. However, they are currently unable to schedule an additional Play Facilitator due to current position vacancies and a lack of applicants.

Current Accessibility Efforts for Children with ASD

As previously mentioned, the Museum has two existing accessibility programs that directly relate to children with ASD. The first accessibility program, *Third Thursdays*, occurs once a month and is open to the public. The Museum stays open late and provides special programming for visitors with accessibility or medical issues. The only environmental modification during this program is turning down or providing special lighting in the Art Studio. Special programming begins at 4:00 p.m. (the Museum's usual closing time) and can include a trained comfort dog, sensory art projects in the Art Studio, afterschool programming with specialists to assist with specific IEP (Individualized Education Program) and at-home goals, and a *Sensory Story & Play Time*. Accessibility resources are readily available during this evening program and are displayed at the front desk. This program requires general admission or membership for entry.

The second accessibility program at the Museum, *Family Night Out*, is a pre-registered, after-hours event for children with special needs and their families. This program focuses on serving those with ASD and other sensory processing disorders as well as physical disabilities. At the beginning of this study, this program occurred quarterly. However, due to its popularity and increased funding through grants and private donors, this program is now offered once per month between the months of September and June. *Family Night Out* is free for visitors, but pre-registration is required. Registration is capped at 225 guests to maintain a quieter, less busy

environment. Specialized programming during this event includes: family yoga, *Sensory Story & Play Time*, non-profit and for-profit special needs service vendors, sensory art projects in the Museum's Art Studio, and a visit with a trained comfort dog. Accessibility resources are readily available during this evening program and are displayed at the front desk (see Figure 2.2).

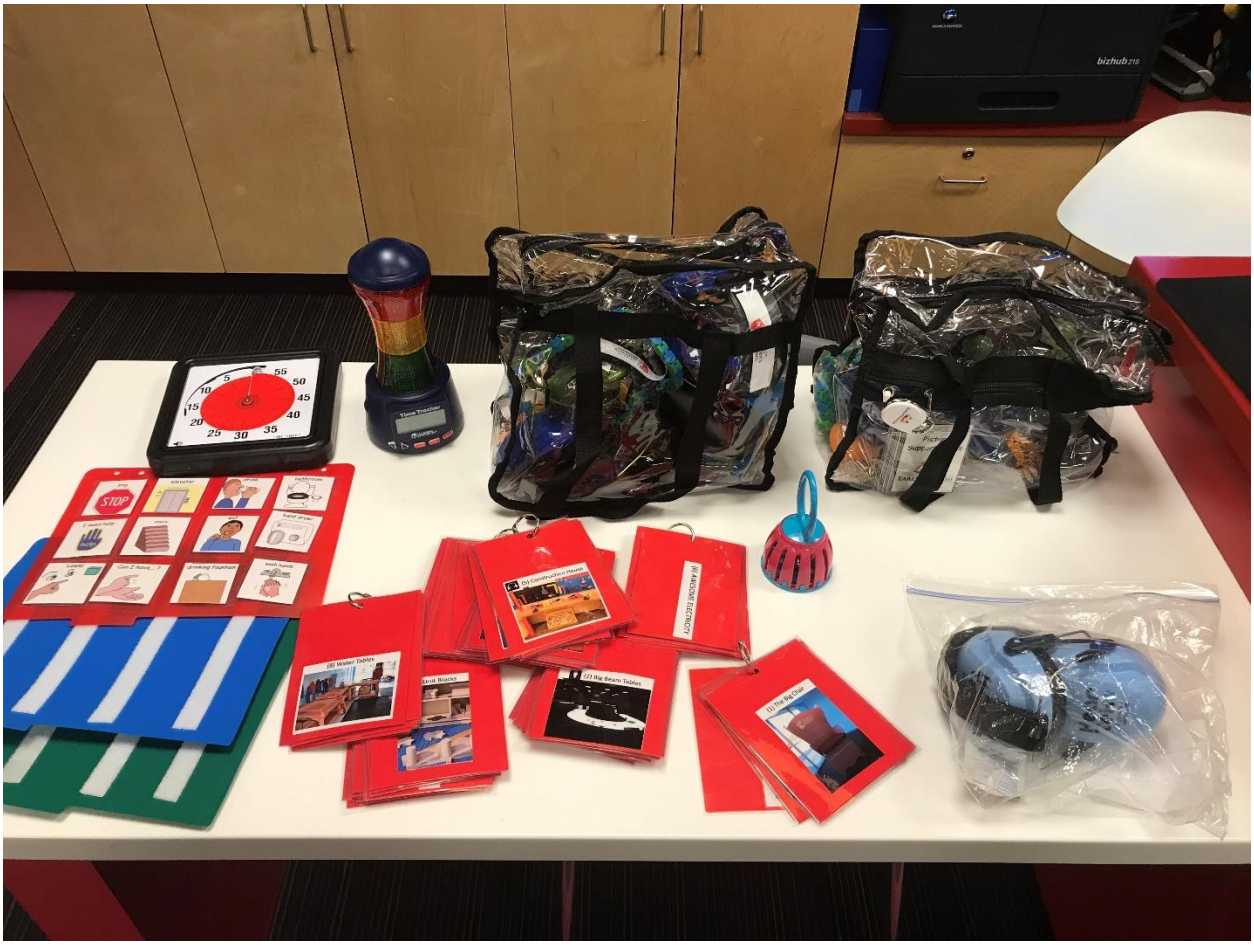


Figure 3.2: Resources at Accessibility Events

In addition to their two accessibility programs, the Museum offers a variety of resources for individuals with disabilities. These resources are listed on their website's Accessibility & Inclusion page. Resources include: noise-reducing headphones, time timers, time trackers, social narratives (e.g. Social Stories), a therapeutic play guide, picture communication symbol guides, an adult-size wheel chair, fidget toys, exhibit flip

cards, and a Velcro picture binder. These resources are kept in a cabinet at the front desk and are available for check-out using a photo ID. There is no sign indicating the availability of these resources, but a pamphlet about the Museum's accessibility resources is on display at the front desk. The Museum has a few environmental modifications for visitors with ASD including some alternative seating, a family restroom, and a quiet room. The Museum's quiet room has a sofa, dimmed blue lighting, a marble wall, and fidget toys. The Accessibility & Inclusion page contains descriptions and dates for upcoming accessibility events, downloadable versions of their social narratives and guides, "Know Before You Go" tips about what to expect in their music and water exhibits, and a link to the Museum's virtual tour. The virtual tour allows visitors to see the Museum's exhibit and layout before their visit. This helps to alleviate concerns for some children who experience anxiety about new venues. The Museum offers complimentary admission for licensed one-on-one caregivers and therapists when they accompany a child requiring medical assistance.

According to the Accessibility and Inclusion Specialist, the Museum incorporates accessibility and inclusion as a focus in training quarterly. Trainings have involved the entire museum team and front-line team and have been conducted in-house and by consultants. The Museum would like to offer accessibility and inclusion training on a more consistent basis in the future. According to the Accessibility and Inclusion Specialist, more training about understanding ASD and other sensory processing disorders is necessary to increasing the confidence of staff who work with this audience.

Accessibility and inclusion are often brought up in the planning process for programming, however except for *Sensory Story & Play Time*, the museum has yet to

incorporate inclusion efforts into daily programming. The museum has explored offering camps specifically designed for children with ASD, however the cost to develop and implement this type of program was too costly. According to the Accessibility and Inclusion Specialist, many other therapeutic organizations already offer this type of program. Therefore, it would be better to partner with another facility that already has many of the necessary resources to offer a specialized program.

The study site engages with various community partners regarding accessibility and inclusion at the Museum. The Museum has an Accessibility Inclusion Diversity and Equity Committee (AIDE) made up of employees from various departments at the Museum, including the President & CEO, Director of Finance and Administration, Executive Assistant, Digital Marketing Coordinator, Public Programs Coordinator, a Lead Learning Labs and Play Facilitator, two Visitor Services Team Members, Human Resources Manager, and Accessibility and Inclusion Specialist. The committee meets bi-monthly. AIDE is the force behind creating and maintaining an inclusive culture at the Museum. This committee discusses and recommends ways to enhance the Museum's current inclusion efforts and makes recommendations to the Executive Leadership team. The Accessibility and Inclusion Specialist also coordinates an Autism Roundtable that aides in the creation of new programs and initiatives related to this audience. This group is comprised of various community partners, including:

- Occupational Therapists: North Central University, Lewis University, Midwestern University, and Marionjoy Rehabilitative Hospital (Pediatric OT)
- Therapeutic Day Schools, Private Sector Therapists, and Educators: Helping Hands, Little Friends, Turning Pointe, Giant Steps, earlyVention, and a preschool teacher
- 10 parents of children with a range of special needs

The Accessibility and Inclusion Specialist identified funding as the greatest barrier regarding inclusion. The Museum currently has a small budget that is dedicated to inclusion efforts. This budget is supplemented with grants, private donations, and in-kind services. They state that there is just not enough money or space for everything they would like to do regarding inclusion.

Chapter 4: PEER MUSEUM INTERVIEWS

Introduction

Requests for interviews were sent by phone or email to representatives from fifteen children's museums from across the United States. These institutions were chosen because of their visible accessibility and inclusion efforts, usually found online or by reference from another organization and their status as a children's museum. Representatives from eight children's museums responded to the request for an interview, including ¡Explora! (Albuquerque, NM), Kohl Children's Museum (Glenview, IL), Wow! Children's Museum (Lafayette, CO), Sciencenter (Ithaca, NY), Iowa Children's Museum (Coralville, IA), The Peoria PlayHouse Children's Museum (Peoria, IL), Portland Children's Museum (Portland, OR), and Madison Children's Museum (Madison, WI). In addition, the Accessibility and Inclusion Specialist at the study site was interviewed. Each interview lasted approximately 45-90 minutes. Interview questions were developed by the researcher and focused on basic information about the institution, staff and training, programs and resources, and funding and support. For a list of interview questions, see Appendix B. Interviews were conducted to identify shared obstacles in providing inclusive experiences for children with ASD; in the hopes to develop some helpful insights and effective practices that museums can engage in to move further towards inclusion.

Findings

¡Explora!

¡Explora! is a 501(c)(3) non-profit, science, technology, and art learning center located in Albuquerque, New Mexico. The Museum's mission is "¡Explora! creating opportunities for inspirational discovery and the joy of lifelong learning through

interactive experiences in science, technology, engineering, art, and math (¡Explora! 2018)." The Museum's exhibits are designed to engage visitors of all ages. ¡Explora! is approximately 48,000 sq. ft. and has 120 staff; 60 full-time staff and 60 part-time staff (including high school interns). They also offer educational programs for Pre-K – 8th Grade. As a part of their *Cradle through Career STEM Learning Strategic Focus,* the Museum continues to develop and implement programming for Early Explorers, ages 0-4 years, Young Scientists, ages 5-12, and Future Science Leaders, ages 13-adult. Over 316,000 people experienced ¡Explora! during fiscal year 2016-2017 (Ibid). The representative interviewed from ¡Explora! was Sarah Pratt. She is a Project Manager; helping to manage and run educational programming at the Museum. She also serves as a member of the Museum's Autism Project and IDEA (Inclusion, Diversity, Equity, and Access) teams.

According to Sarah, the term "accessibility" refers to physical ways of providing access to a space (accessible parking, proper signage, etc.) The term "inclusion" has a more broad or philosophical meaning; making individuals feel welcome. For example, supporting individuals of all abilities in the same class or program and/or the thought process behind how they plan and invite people to their space. The Museum does not currently have an inclusion statement, but inclusion is something that she reports keeps coming up in discussions regarding an update to the Museum's core values.

¡Explora! has about 25 staff that actively think about accessibility on an ongoing basis as members of the Autism Project and/or IDEA teams. These teams are cross-departmental and involve staff from Visitor Services, Administration, Community Engagement, Education, and Exhibits. Explora's Director of Education and Director of

Visitor Services are most directly involved in accessibility and inclusion at the Museum. Over the past three years, ¡Explora! has developed new resources, summer camps, and sensory-friendly events for children and families affected by ASD. This 3-year Autism Project is funded by the Institute of Museum and Library Services and United Way of Central New Mexico.

As a part of the Autism Project, the Museum partnered with the New Mexico Autism Society to provide ASD 101 training to their front-line staff. These trainings have covered what autism is, what it looks like, what it means in the museum environment, and various accessibility resources. They have also held all staff trainings related to behavior and de-escalation with board-certified behavioral therapists. When asked if Sarah felt that staff has the tools and training necessary to introduce inclusive strategies during programs, she responded that they still have some areas for improvement. Currently, they are working to find time for both educators and frontline staff to attend trainings together on a more consistent basis. However, she noted that some training can be difficult to practice without an organic or real-life experience (e.g. de-escalation). This is one of the main challenges they are still working on. Another barrier to inclusion that ¡Explora! is facing is capacity; the amount of time, thought, and preparation necessary to design and implement new inclusion practices. While staff have a strong passion and interest for this work, they often feel like they are short on time.

According to Sarah, ¡Explora! is still in the early stages of incorporating accessibility and inclusion into the planning process for programs and events. However, their work on the Autism Project combined with their open-ended philosophy has helped them develop social narratives (e.g. Social Stories), visual schedules, sensory

resources, and modifications to their camps to create a more inclusive experience. One initiative during the Autism Project was the creation of EXPLORA-tions camps for children with autism and their peers. These are week-long camps for children ages 5-7 and 7-10. Their Companion Camp for Siblings and Friends of Children with Autism was designed for children K-4th Grade. Strategies for making these camps more inclusive included:

- Providing visual instruction for the day, week, and individual activities
- Providing sensory stories for the camp experience
- Limiting the attendance (8 registrants per camp instead of 15)
- Increasing the staff presence and supplementing with volunteer occupational therapy students from a nearby university (approximately a 1:1 adult to camper ratio)
- Providing a sensory break tent space for campers and various resources (time timers, sensory fidgets, headphones, etc.)

In addition to camps, ¡Explora! offers sensory friendly hours every other month during the school year on Sunday mornings before the Museum opens to the public. In addition, they offered two sensory friendly events per month during the summer on Sunday evenings after the Museum closed. These summer sensory events were included within the grant funding for the Autism Project. ¡Explora! also offers various resources helpful to visitors with ASD including: a sensory map, social narratives, fidgets, and visual schedules. Pre-visit resources and a list of on-site resources are available online. Visitors can access on-site resources at the front desk or ask a staff member to access one of the kits located throughout the Museum. Sarah commented that as they build trust within the community, visitors feel welcome to bring their own resources from home as well.

Sarah believes ¡Explora!'s greatest strength to providing an inclusive experience is their staff's passion. Initially, she wondered when individuals left the organization, if

the inclusion work would continue to be supported. She now feels confident that ¡Explora!'s inclusion efforts are an organizational passion. Staff are interested and invested in applying inclusion practices to their jobs and they want to continue learning. Sarah noted the importance of sharing stories and talking about the relationships staff are making with this community; how these conversations continue to inspire them to keep working towards inclusion.

Kohl Children's Museum

Kohl Children's Museum (KCM) of Greater Chicago is a 501(c)(3) non-profit children's museum located in Glenview, IL. The Museum's mission is to "be an essential leader in providing playful experiences that inspire every child (Kohl Children's Museum 2018)." The Museum's exhibits are designed to be interactive, hands-on experiences for children birth to 8. KCM is approximately 46,700 sq. ft. (23,000 sq. ft. of public space) with an additional 2-acres of outdoor exhibit space. The Museum has 80 staff; 30 full-time staff and 50 part-time staff. KCM opened their current location in 2005. The facility was built from the ground up, based on the principles of Universal Design. Over 315,000 people experienced KCM during fiscal year 2016-2017 (Kohl Children's Museum 2017). The representative interviewed from KCM was Stephanie Bynum, Vice President of Programs. In her role at the Museum, Stephanie oversees three departments: Education, Exhibits, and Visitor Experience.

One of the Museum's core values represents their commitment to inclusion: "All Museum facilities, exhibits and programming are accessible by children in the same manner, regardless of differing levels of physical, auditory, visual, social-emotional, or cognitive ability (Kohl Children's Museum 2018)." They also have a dedicated Diversity

Statement that echoes this core value. Stephanie says the museum's greatest strength regarding accessibility and inclusion is that it is baked into their philosophy as an organization; Universal Design has been a driving force for the Museum since the beginning. For example, when they are designing programs, Universal Design is one of the first things they think about; they want to make sure the widest range of people can access the program. Annually, the Museum conducts an audit on their exhibit design to evaluate how the physical environment affects individuals with disabilities. The Museum's website also undergoes an annual accessibility evaluation.

Stephanie identified busier days as the Museum's greatest barrier regarding accessibility and inclusion. The typical noise and crowds brought on by days with high attendance are not usually conducive to children with disabilities. In response, KCM encourages visitors to come to the Museum on days that typically have lower attendance. The Museum also provides quieter visitation times like *Everyone at Play* and exclusive member mornings. *Everyone at Play* events are free accessibility events that offer families time to experience the Museum's exhibits and programs in a less-crowded, more relaxed environment. For these events, the Museum provides small manipulative toys, a quiet area, dimmed lighting, and quieter announcements. In addition, the Museum invites partner organizations to these events that provide therapy dogs, OT/PT services, art therapy, etc. Attendance is pre-registered and limited to 300 visitors for these accessibility events. However, no visitors are turned away on the day of the event, including those who have not pre-registered. Currently, *Everyone at Play* events are sponsored. However, Stephanie noted that these events are a priority for the Museum and they would happen without sponsorship.

The Museum works with numerous organizations on accessibility and inclusion efforts. Notably, they worked with Pathways.org to create the *Parent's Guide to Kohl Children's Museum of Greater Chicago*. This resource was created to help parents and their children navigate which exhibits they want to experience during their visit to the Museum. Pathways.org is a non-profit foundation dedicated to providing free resources, to caregivers and professionals, to support child growth and development (Pathways.org 2018). The guide is available in English and Spanish on the Museum's website and at their Admission's Desk.

According to Stephanie, KCM is always looking to improve and learn more regarding accessibility and inclusion, "We are doing a lot of great things, but we could always do more." As new research comes out, the Museum continues to look at their exhibits with a critical eye. In addition, they activity engage with their community and encourage feedback from their partner organizations and visitors.

Wow! Children's Museum

Wow! Children's Museum is a 501(c)(3) non-profit children's museum located in Layfette, Colorado. The Museum's mission is to engage "all families in educational, hands-on experiences that connect curiosity, creativity, and discovery (Wow! Children's Museum 2018)." Their exhibits are designed for children ages one to eleven and cover a variety of subjects, including STEM, art, music, dance, theater, health, and practical life (Ibid). The Museum has fifteen staff; five full-time staff and ten part-time staff. During fiscal year 2016-2017, the Museum served over 91,000 visitors. The representative interviewed from Wow! Children's Museum was Alexandra Wong, Community Educator.

In her role at the Museum, Alexandra writes and facilitates the Museum's on-site and off-site programs.

Wow! Children's Museum has a dedicated statement that defines the museum's commitment to inclusion:

> WOW! Children's Museum is committed to being a gathering place for all Boulder County children and families. We believe in the power of learning through play to improve our lives and community. We respect, value and celebrate the unique attributes, characteristics and perspectives that make each person who they are. We also believe that bringing diverse individuals together allows us to better understand, support and engage our community. It is our aim, therefore, that our Museum and programs are accessible, meaningful and welcoming to all audiences. (Ibid)

As a part of their inclusion efforts, the Museum hosts Sensory Friendly Playtime; a free, low sensory program for children with autism spectrum or sensory processing disorders. For this event, the Museum limits the number of attendees (20 families), lowers sound and light levels, and provides adaptive equipment (e.g. noise cancelling headphones and weighted vests). If available, the Museum has an occupational therapist or art therapist at the event to help facilitate low sensory activities. This program is sponsored by KidSPOT Pediatric Therapies and the Play for All Initiative. Play for All is a donor supported initiative that allows the Museum to offer reduced-price memberships to families in financial need, discounted field trips and outreach visits for schools, and free admission to Sensory Friendly Playtime events (Wow! Children's Museum 2017). The Museum also offers a downloadable social narrative on their website.

Wow! Children's Museum recently received grants from both IMLS and the Dodge Family Fund to help fund their new exhibit *Forest of Light.* This new exhibit is sensory friendly, encourages play between children of all abilities, and incorporates

creativity skills, sensory experiences, and emotional and social wellness (Wow! Children's Museum 2018). The Museum's exhibit designer worked with occupational therapists during the design process. *Forest of Light* includes: a darkened forest space, an interactive river, a giant pin wall, a life size lite brite, a fluttering kaleidoscope, and a hideout hollow. According to the Museum, the sensory play in this exhibit "supports language development, cognitive growth, fine and gross motor skills, problem solving skills, and social interaction (Ibid). Alexandra views the exhibit as one of the Museum's greatest accomplishments supporting accessibility and inclusion.

Alexandra noted how accessibility and inclusion impacts the planning process for programs and events at the Museum. During programs, staff try to highlight one sensory experience at a time, give children the chance to get up and move around, incorporate a fun game into classes, keep the room design simple, and bring books into all their classes for children who need a break. In addition, for visiting school groups, Alexandra provides a schedule for the day's activities and pictures of the staff members who will facilitate the program. These strategies help students understand what to expect when they arrive at the Museum and make transitions easier.

When asked what barriers Wow! Children's Museum has regarding accessibility and inclusion, Alexandra noted that other Museum visitors can sometimes be the biggest barrier to guests with ASD. For example, visitors have made complaints about children with ASD in the past and it can be difficult to get visitors to feel comfortable around individuals with disabilities. The Museum has worked with occupational therapists to provided training for their staff about how to respond to these guests.

Sciencenter

The Sciencenter is a non-profit, hands-on science museum located in Ithaca, New York. The Sciencenter is a member of both the Association of Science-Technology Centers (ASTC) and ACM. The Museum is accredited by AAM. The Museum's mission is "To inspire excitement for science through interactive exhibits and programs that engage, educate, and empower (Sciencenter 2018)." The Sciencenter is 32,000 sq. ft. and has 27 staff members (seven or eight of whom are part-time). Nearly 110,000 guests experienced the Sciencenter in 2017. The representative interviewed from the Sciencenter was Emily Belle, Education Facilitator. In her role, Emily interacts directly with visitors and facilitates Museum programs. She is also responsible for neurodiversity training and sensory hours at the Museum.

According to Emily, the Sciencenter views accessibility as expanding access to the Museum by removing barriers. Inclusion is a product of removing barriers; by making the Museum more accessible they are becoming more inclusive. Emily noted that accessibility has been an ongoing priority for the Museum and its community, staff, and members. The Museum has a dedicated statement regarding inclusion:

> The Sciencenter is an inclusive organization that values diversity. We aspire to be an environment for our guests and our team where diversity is understood, recognized, respected, and celebrated to enrich the community overall and the individual lives of all members of the community. As a trusted community resource, we are a welcoming and sensitive place for all people regardless of gender, age, race, religious background, language, socio-economic status, ability, sexual orientation, or ethnicity. (Ibid)

Accessibility resources and programs are a shared responsibility between departments. The Museum provides multiple social narratives, picture schedules, and calming kits for visitors. These resources can be found on the Museum's website and at the front desk.

Calming Kits include sunglasses, noise-cancelling headphones, gloves, fidget and tactile toys (e.g. bendy straws and coated wires), and a visual analog timer. The Museum provides additional resources for camps and programs.

Programs at the Sciencenter serve three main age groups: Early Explorers (0-5), Young Scientists (5-11), and Future Science Leaders (11-14). According to Emily, the Museum tries to have a variety of items in programming spaces that support different sensory needs. She noted that one of the great things about working with children ages zero to five is that many of the sensory practices or elements of program design utilized for this age group are supportive for audiences with ASD as well. Educators think about the language they use during programs; by using repetitive language they can make activities more accessible for children with ASD. In addition, they communicate with teachers to share information about available sensory resources and to identify groups that may need accommodations. These are strategies staff have learned through their Neurodiversity Training; developed in 2018. Training has included listening sessions with community partners, resource development, and strategies to help staff work with children with ASD. Accessibility and inclusion for a neurodiverse audience is a part of their ongoing conversation with staff and departments. Additional resources for camps and programs include a Hug-i-bo, pop-up pod, weighted gel lap pad, sequin mermaid pillow, weighted snake, ocean wave night light projector, sensory body sack, squishy mesh balls, wobble cushion, and Find-it games. Some of these resources are also utilized during sensory hours.

According to Emily, the Museum has offered some form of Sensory Hours since May of 2015; the program has recently expanded. In 2017, the Sciencenter held four

events that attracted 142 attendees. By the end of 2018, the Museum will have held five or six designated programs. During these programs, the Sciencenter hangs additional signage to indicate particularly loud exhibits or intense lighting. She noted that the Museum has been moving towards using softer gallery lighting in general. There is usually a room devoted to a sensory activity like Flubber or Kinetic Sand. In addition, the Museum sets up a Calm Room with nature visuals/sounds and large sensory toys. The Sciencenter is less crowded and overwhelming during these designated Sensory Hours.

Emily considers the greatest barrier the Sciencenter faces concerning accessibility and inclusion to be limited space. She would love to have a dedicated Sensory Room; a quiet place for visitors to take a break. She reports that they are finding creative ways to work around this issue through sensory resources like pop-up pods. Emily sees the Museum's connections to other organizations and community partners as one of their greatest strengths. These relationships are extremely valuable, as ongoing conversations have influenced and inspired many of their current inclusion efforts.

Iowa Children's Museum

Iowa Children's Museum is a non-profit, hands-on educational organization located in Coralville, Iowa. The Museum's mission is "to inspire every child to imagine, create, discover, and explore through the Power of Play!" (Iowa Children's Museum 2018). The Museum has 28,000 sq. ft. of exhibits that focus on Arts & Culture, Financial Literacy, Healthy Kids, School Readiness, and STEM. Iowa Children's Museum has 42 staff, including 12 full-time and 30 part-time staff. They serve over 170,000 guests each

year. The representative interviewed for the Museum was Aimee Mussman, Assistant Director. In her role, Aimee oversees the Education, Exhibits, and Playology Departments.

Iowa Children's Museum collaborates with a variety of organizations in their effort to be more inclusive. For the past ten years, they have collaborated with a local Child*Serve* organization. Child*Serve* provides specialized clinical, home, and community-based programs and services for children with developmental delays, disabilities, acquired injuries, and other special healthcare needs (Child*Serve* 2018). This organization helps the Museum provide a monthly, drop-off program for children with disabilities and their siblings. The Museum and Child*Serve* provide staff and volunteers to supervise children so that caregivers can have free-time. Child*Serve* has also developed a social narrative that details what it is like to visit the Museum. Another community partner that Iowa Children's Museum has a relationship with is Kanics Inclusive Design Services, LLC, a local design firm that is committed to creating inclusive community spaces. The firm has consulted on exhibits and evaluated the Museum from an accessibility standpoint. Kanics has helped representatives from the Museum understand that ADA compliance alone is not inclusive; the firm helps organizations build experiences that mix the concepts of "universal design, sensory processing, and best practices on play (Kanics Inclusive Design 2018)." The Museum is working with KultureCity to further develop their accessibility training and resources. KultureCity is a non-profit organization that works with public spaces/businesses to help them create a sensory inclusive environment. They provide online training, sensory kits, signage, social narratives, and more. In addition, KultureCity has an app that people

can download to access information and resources for their Sensory Inclusive™ locations (e.g. businesses that have received their Sensory Inclusive™ accreditation).

The Museum offers a variety of programming including *Super Hero Nights*, which are designed especially for families with children who have special needs. These free events occur monthly on Sunday evenings. *Super Hero Nights* tend to have a lower attendance and therefore offer a quieter and more welcoming environment in the exhibits for children with ASD. The Museum has a commitment to ensuring all children, regardless of ability, have access to the Museum. They describe this commitment in the following way:

> Every child is unique. Each grows and learns in his or her own special way. And without exception, all children love to play. Kids with disabilities are no different. Whether a child's disability is mild or severe, obvious or not, that child is first and foremost a child—which means he or she will have the natural instinct to explore the world through play, just like any other child. (Iowa Children's Museum 2018)

Outside of *Super Hero Nights*, the Museum currently makes modifications to their programs on a case-by-case basis for children with ASD. For example, the Museum created a social narrative for their birthday party process when a child with ASD had their birthday at the Museum. Although the situation is rare, the Museum has provided accessibility resources (e.g. schedule cards and social narratives) for children during their camps and some individuals have attended with an aide.

Aimee noted that the Museum is very open minded and willing to work with families who have children with special needs. She said the greatest barrier for their institution regarding inclusion is helping families understand that they can make requests and ask questions before they visit. In addition, she noted that change can come slowly in a large organization. However, she emphasized that they want families

to feel comfortable and know that the Museum is there to support them and remain free from judgement.

The Peoria PlayHouse Children's Museum

The Peoria PlayHouse Children's Museum is a non-profit, hands-on children's museum located in Peoria, Illinois. The Museum is a Peoria Park District facility. Their mission is to "[provide] children with the tools and inspiration they need to be explorers and creators of the world. [They] do this in part through understanding, supporting, and promoting play in the fullest sense of the word, one that includes imagination and creativity (Peoria PlayHouse 2018)." During 2017, the Museum served 77,800 visitors. They have three full-time and sixteen part-time staff. The representatives interviewed for Peoria PlayHouse Children's Museum were Kristin Vannatta, Operations Manager and Courtney Baxter, Education Manager. As Operations Manager, Kristin manages the Museum's part-time staff, financial reporting, human resources, hiring/training, volunteers, customer service, etc. As Education Manager, Courtney develops and facilitates programs, coordinates the Museum's monthly cultural events, trains staff, and runs the Museum's homeschool programs. Kristin and Courtney worked together on an initiative to develop offerings for visitors with special needs.

Beginning in 2015, the Museum worked with Easter Seals to provide training for their staff and to develop resources for families with special needs. The training provided information on different things staff might experience when working with children with physical, cognitive, and social/emotional disabilities. At the end of 2017, the Museum applied for and secured a grant funded by Leaders Change Illinois. This grant helped the Museum fund accessibility resources and *Accessibility Nights*. The

Museum provides a variety of resources including a social narrative, virtual tour, noise cancelling headphones, schedule cards, sensory toys, sunglasses, and transition guide cards (i.e. visual cue cards that signal a transition from one activity to the next). The Museum has limited space but utilizes their program rooms for quiet spaces when needed. Currently the Museum hosts *Accessibility Nights* twice per year in collaboration with Easter Seals and Heart of Illinois Special Recreation Association (HISRA). These partners help market the event to families. As these events become more popular, the Museum would like to hold them more often. *Accessibility Nights* are free to Museum members and $15 per family for non-members (general admission is $8.50 per person age 1-64). These events are targeted towards families with special needs but are open to children of all abilities. These evenings tend to attract about ten families and feature dimmer lights and less noise. There is no special programming for these events as the children tend to focus on the exhibits.

Easter Seals and HISRA are important partners in Peoria PlayHouse Children's Museum's accessibility and inclusion efforts. Both organizations serve as resources for the Museum when planning for children with disabilities to participate in programs. They help the Museum provide a higher level of customer service by providing training opportunities. Kristin and Courtney believe that passion is one of their staff's greatest strengths regarding accessibility and inclusion. Their staff are open, engaged, and excited about being able to help people have a great experience no matter what outside forces may be at play. They are very caring and eager to provide resources to support a positive experience. Kristin and Courtney believe training upfront is a part of that success.

When asked about their greatest barrier regarding inclusion, Kristin and Courtney identified that the Museum would like to have a dedicated quiet space. In addition, staff time and funds to carry out many of their inclusion related objectives is a challenge. They have kept their resources and inclusion efforts in line with what other museums are already doing but are not sure they have the resources to analyze what they are currently doing to make sure it is effective. Finally, finding the right way to approach people and talk about inclusion can be difficult. They note that it can be difficult to talk about disabilities with families as it feels like a sensitive topic; it's a challenge to have meaningful conversations in the moment.

Portland Children's Museum

Portland Children's Museum is a non-profit children's museum focused on inquiry-based learning strategies. The Museum is located in Portland, Oregon. Portland Children's Museum has 34 employees, 18 of whom work 30 hours or more. Their mission is to "develop innovative problem-solvers through playful learning experiences that strengthen relationships between children and their world (Portland Children's Museum 2018)." The Museum is home to Opal Beginning School, a tuition-based early childhood program for children ages three to five, and Opal Charter School, a public elementary school serving children in grades K-5. In addition, the Portland Children's Museum Center for Learning documents the work of Opal School and provides professional development opportunities to educators from around the world. Over 290,000 people experienced the Museum in fiscal year 2016-2017. Portland Children's Museum has over 80,000 sq. ft. of indoor and outdoor exhibit space combined.

The representative interviewed from Portland Children's Museum was Stephanie Madrid, Community Engagement Manager. In her role, Stephanie is responsible for helping bridge any gaps that keep people in Portland from visiting the Museum (e.g. language, transportation, disability, financial aid, etc.). For example, she coordinates offsite programs with non-English speaking communities, refugees and immigrants, and children and adults with disabilities. She oversees the Museum's Access Program and Community Partners Program which offer reduced-price access to the Museum for families who receive state assistance and partner organizations who serve families or children who have significant barriers to accessing the Museum.

Portland Children's Museum notes their commitment to a neurodiverse audience within the following statement, "Portland Children's Museum meets the requirements of the Americans with Disabilities Act (ADA), but for us accessibility means more than compliance with the law of the land. We are committed to making the Museum a rich and rewarding experience for all, regardless of any specific needs they may have (Ibid)." Stephanie noted that the Museum has daily programming that is centered around a monthly theme and facilitated by their floor staff; these activities are usually sensory or STEM - based. Currently, she is working to find grant funding to support the purchase of adaptable technology and resources for these programs. The Museum works diligently to provide accommodations during field trips and camps. They currently offer a variety of accessibility resources including: headphones, weighted vests, feelings/actions charts, and timers. She is also working on a social narrative about visiting the Museum. Stephanie feels that if children are practicing and utilizing these tools and strategies in school, it is also helpful to have them at the Museum. In addition

to accessibility resources, the Museum provides monthly *Access Play* events for families with children experiencing disabilities and their friends.

Access Play events are featured as a low sensory playtime with less crowds and minimal stress. These events are offered for free in partnership with FACT (Family and Community Together), Autism Society of Oregon, Swindell's Resource Center, in addition to other partners. *Access Play* occurs on Tuesday evenings from 5:30-7:00 p.m. Special programming has included therapy dogs and sensory activities. Stephanie is working to find art therapists who are willing to donate their time at the event. *Access Play* has about 70 visitors per event. While they have a lot of repeat visitors for this event, it has gotten mixed reviews because of timing and location. Stephanie noted that evening traffic and the Museum's location outside of the city may present barriers for families to attend. In addition to *Access Play* events, Portland Children's Museum also partners with FACT for a special holiday program. FACT is a family leadership organization that strives to strengthen and connect individuals and families experiencing disabilities. They work collaboratively to "facilitate positive change in policies, systems, and attitudes through family support, advocacy, and partnerships (FACT 2018)." *FACT Santa* is a free, low-sensory event that invites families with children experiencing disabilities to meet Santa in a low-pressure environment. At the event, Santa is presented in a different way; casually walking around the Museum instead of the traditional sit on Santa's lap experience. Stephanie said that children often feel more comfortable during this event because they recognize representatives from the FACT organization and other families at the event. This event had 300 attendees in 2017, but attendance was still low enough to resemble a sensory event.

In Stephanie's opinion, everyone at the Museum is open to figuring out how the Museum can serve individuals with disabilities. For example, she has served on exhibit design committees to ensure voices from this community are heard. While she noted that it is difficult to be completely thoughtful in including every person at the Museum, listening to communities and individuals is the most important thing the Museum can do; sharing their personal stories is a way the Museum can create relationships with people and get their insight into how the Museum can serve them best.

Madison Children's Museum

Madison Children's Museum is a non-profit organization located in Madison, Wisconsin. The Museum's mission is to "[connect] children with their families, their communities, and the world beyond through discovery learning and creativity play (Madison Children's Museum 2018)." Each year, over 200,000 people experience the Museum through visitation and onsite/offsite programs. The Museum has over 65 staff, a majority of which are part-time positions. The Museum's 26,000 sq. ft. of public space is home to exhibits that foster discovery learning and creative play with a sustainability focus. The representative interviewed for Madison Children's Museum was Sandra Bonnici, Associate Director of Education, Diversity, and Inclusion.

According to Sandra, the Museum sees inclusion as both an organizational and individual journey. She noted that inclusion extends beyond disability and covers a broad spectrum of diversity. Staff receive ongoing training about Access, Diversity, Equity, and Inclusion. The Museum names inclusiveness as one of their core values. Madison Children's Museum identifies their five commitments to be an inclusive organization as:

- **Listen** to our communities' hopes, dreams, and needs so that we, working together, manifest our greatest strengths as a community.
- **Practice** diversity and equity in our organization through recruiting, retaining, and valuing diverse volunteers, staff, and board members, which ensures innovation and sustainability of the organization well into the future.
- **Create** inclusive communities through exhibits, programs, policies, facilities, and partnerships that reflect and celebrate our rich differences and common goals.
- **Strengthen** children's abilities to create and problem-solve together, through play, in order for them to succeed in an increasingly diverse and global society.
- **Foster** empathy for children and families where everyone is accepted for their unique interests and abilities. (Ibid)

Sandra's role is to ensure everyone is vetting their work through Universal Design. The Museum takes a team approach to inclusion. They have a dedicated board committee and diagonal staff committee (a representative of every department) that considers inclusion as an overarching initiative. These committees help set goals for the institution regarding access, diversity, equity, and inclusion. According to Sandra, the Museum has a lens of Universal Design, so thinking about children with disabilities during program planning and design is almost an automated process. She notes that thinking about young visitors and what they need, usually works well for accessibility too.

Over the past two years, Madison Children's Museum began a new initiative to further engage and include families experiencing ASD and other sensory challenges. They established a coalition of experts, partners, teachers, caregivers, and agencies to help guide the Museum's inclusion efforts for this audience. Sandra noted that the most crucial part of collaborating with this coalition was asking what their hopes and aspirations were in terms of their community. The Museum wanted insight into what this audience needed on a grander scale and was very careful not to microfocus. In turn, they received higher level feedback and strategic practices that would benefit all visitors. As a part of this initiative, the Museum collaborated with the Ausderau

Research Laboratory at the University of Wisconsin-Madison, to develop an evaluation toolkit that can support public institutions that wish to increase accessibility and inclusion for children with ASD and/or sensory processing challenges. Sandra identifies the evaluation toolkit and the evidence-based work with their community as one of the Museum's greatest accomplishments regarding accessibility and inclusion for children with ASD.

The Museum provides resources and programs that help make the Museum experience more inclusive for individuals with ASD. They offer various sensory tools (fidget toys, timers, and headphones), low-sensory alternatives (e.g. hand towels in their bathrooms as an alternative to noisy dryers), and a quiet room. There is signage located at the Museum's front desk to let visitors know that resources are available. Sandra noted that for this audience it is important to reduce the number of factors that create unpredictability. *Sensory-Friendly Museum Times* are a way for families to experience the Museum in a more predictable environment, while building comfort in the exhibit areas that will support future visits. *Sensory-Friendly Museum Times* occur monthly on Monday evenings from 5-7 p.m. The Museum makes modifications to the environment, in addition to their usual inclusion efforts, to make it more accessible and enjoyable for children with ASD and sensory issues. For example, signage is posted around the Museum to designate quiet zones and sensory-seeking areas. In addition, exhibits that produce light, sound, and video are turned off for this event. Support *for Sensory-Friendly Museum Time* is provided by Achieving Collaborative Treatment (ACT), a local autism therapy provider.

Madison Children's Museum does not have a specialized camp program for children with ASD. However, the Museum does provide a specialized resource camp instructor that is trained to work with audiences who have special needs. According to Sandra, it is helpful to have someone who can identify strategies to utilize during camps when needed. In addition, they have designed their camp registration forms to prompt caregivers to identify how their child might behave under certain conditions, "My child might do this if they are stressed…" This is helpful information for providing a comfortable environment for all children.

Sandra identified money as the greatest barrier to accessibility and inclusion for children with ASD; having the financial resources to implement and support the best practices in reducing barriers to this audience is a challenge for most museums. Currently, funding and support for these initiatives comes from fundraising, grants, and the partners that make up the ASD coalition. The Museum's ability to collaborate on a large scale and make inclusion a priority is essential to combating this barrier.

Conclusion

Peer museum interviews were conducted with staff from non-profit, children's museums from across the United States to identify shared obstacles in providing inclusive experiences for children with ASD. Another goal of the peer museum interviews was to develop some helpful insights and effective practices that museums can engage in to move further towards inclusion. The majority of interviewed staff from peer museums (and the study site) had a dedicated inclusion statement and/or identified inclusion as one of their core values. In addition, some of the museums had dedicated staff committees specifically organized to discuss inclusion, diversity, equity,

and accessibility at their organization (e.g. the study site, ¡Explora!, and Madison Children's Museum). While all of the institutions identified themselves as open-ended or hands-on learning institutions, two of them specifically referenced the use of Universal Design strategies (e.g. Madison Children's Museum and Kohl Children's Museum). These two institutions identified these specific design strategies as integral forces in the creation of exhibits and programming, noting that using a Universal Design lens helped ease the process of making their programs inclusive to a broad audience.

Many of the museums identified busier, more crowded times in the museum as a barrier to individuals with ASD. The remaining museums noted having or wanting a space that a visitor could access if they needed a break from sensory input. As a result of this common environmental barrier, all of the museums interviewed offer accessibility resources and dedicated sensory-friendly hours at their institution. Only one institution claimed to have a dedicated sensory-friendly exhibit (e.g. Wow! Children's Museum). In addition, only one of the institutions (e.g. ¡Explora!) identified as having a specially designed program (outside of accessibility events) for children with autism spectrum disorder. In addition, funding, time, and space were identified as common barriers across many of the organizations including the study site. Community partners were noted as utilized solutions or potential ways to rectify some of these issues.

All of the organizations identified ongoing relationships with community partners as being pertinent to their current inclusion efforts. This was the strongest correlation between the peer museum institutions. Community partners helped the organizations with a variety of tasks, including: developing accessibility resources, obtaining funding for inclusion efforts, training staff, providing additional support during programs,

planning and evaluating exhibit design, and serving on dedicated committees. The study site also has relationships with several community partners that are involved in efforts related to children with ASD. Continuing to nurture and invest in these relationships will be vital to the success of the study site's inclusion efforts in the near future.

The findings from peer museum interviews represented the experiences of museum professionals regarding their institution's challenges and efforts towards providing an inclusive experience for children with ASD. These findings indicated that these institutions are implementing strategies like accessibility resources, special hours, and disability awareness trainings. However, many of these institutions have yet to implement specific design practices to create inclusive experiences in their daily programs and/or during general operating hours. This is an important area for focus as children with ASD should be supported on a consistent basis; their learning opportunities should not be limited to special visitation times. Many of these institutions, including the site Museum, identified time, funding, and space as substantial challenges to providing inclusive experiences for children with ASD. Institutions may find it beneficial to follow the example of the peer museums in cultivating relationships with community partners to overcome these challenges. In addition, some of these peer institutions made accessibility and inclusion a main priority in grant opportunities and funding initiatives. This commitment is crucial as it may help obtain the resources necessary to implement environmental modifications, provide additional training for staff, integrate inclusive practices in program design, and develop/purchase accessibility resources.

Chapter 5: SURVEY

Introduction

An Accessibility & Inclusion Survey was conducted with three main constituent groups: caregivers, teachers, and therapists. All participants have visited the Museum with children on the autism spectrum. The main purposes of the survey were to identify the participants' motivations for visiting a children's museum with a child or children with ASD, to identify the current barriers that exist within the study site's environment and programs, and to identify what resources work best for creating a positive experience for the children before and during their visit.

Protocol

Potential survey participants were identified at Museum accessibility events and by communicating to autism resource centers in the community. Approximately 50 individuals agreed to participate in the Accessibility & Inclusion Survey. This included 30 representatives from museum accessibility programs and 20 staff members at a local resource center. Three autism resource centers in the surrounding community were asked to participate in the survey. One center replied to the survey request, and approximately 20 staff members were sent an invitation to participate in the Accessibility & Inclusion Survey via a staff member at the center. Of the 50 potential respondents, 13 completed and submitted the survey (26%).

Survey participants remained anonymous and were only asked to submit an email address using the Survey Participant Recruitment Flyer (Appendix C) and Survey Participant Sign-Up Form (Appendix D). Responses were kept secure on a password protected computer. In addition, responses were not connected to the respondents'

email address to ensure responses remained anonymous. Before taking part in the survey, participants were asked to read a consent form (Appendix E). Survey questions included multiple choice, short answer, and topics rated on Likert scales. These questions were developed by the researcher for this study. Questions covered the following topics:

- Basic information (child's age and identified gender, survey participant's relationship to the child, etc.)
- Motivations for visiting a children's museum
- Tools, resources, and environmental modifications
- Study Site Museum environment and programs

For a complete list of survey questions, see Appendix F.

After survey responses were collected, the data were examined to identify themes across participants' responses. Basic information questions were used to identify which subject group was answering questions (caregivers, teachers, or therapists) and to evaluate whether specific themes existed across a subject group. For Likert scale responses, statements that were rated a 4 or 5 (Important or very important; helpful or very helpful), by at least 50% of respondents are considered especially relevant because of their perceived importance by a majority of the survey participants. Multiple choice questions had the option to fill in a unique answer by choosing "other", in case the options provided did not adequately represent a participant's view. Multiple choice questions helped identify logistical themes, such as preferred visitation times, whether visitors prepared prior to a visit, use of a museum's web page for accessibility information, potential interest in classes/camps/programs, etc. Short answer questions were used to identify any motivations and tools/resources not mentioned in the survey that participants deemed significant. In addition, short answer questions allowed

participants a chance to identify motivations, tools/resources, and barriers that influenced their individual museum experience.

Results

Basic Information

Each survey respondent was asked to answer the questions about a child or children with ASD that they have a relationship to. Out of thirteen responses, seven children were identified as male, two children were identified as female, and four respondents identified themselves as working with both male and female children as therapists, teachers, or service providers. Interestingly, even though the Museum's target age is zero to ten years, only five children were identified as falling within that age range. The other eight responses identified children age twelve to eighteen. Most of these latter responses came from either teachers or therapists.

Of the survey respondents, five individuals identified as therapists, five were caregivers, two were teachers, and one identified as a specialized program provider. "Specialized program provider" was a written-in response. All respondents identified the child or children as having been diagnosed with ASD. One hundred percent of respondents said the child or children have visited a children's museum in the past, indicating a familiarity with this type of informal learning environment.

Motivations

Respondents were asked to rate a series of statements regarding motivations for visiting a children's museum with a child diagnosed with ASD, from (1) not important to (5) very important. Motivation statements that received a score of 4 (important) or 5 (very important) for at least 50% of the respondents will be evaluated below for insight

as to why these subject groups visit a children's museum with a child or children with ASD. Eight out of the eleven suggested statements fell within this criterion:

- To be entertained. 76.9%
- To spend quality time with classmates, family, and/or friends. 84.6%
- To interact in an unfamiliar and/or stimulating environment. 77%
- To learn or to be mentally stimulated. 69.3%
- To have a change in the child's daily routine. 53.9%
- To connect the child to an area of their interest. 61.6%
- To introduce the child to other children who do not have ASD or other disabilities. 53.9%
- To introduce the child to children who do have ASD or other disabilities. 53.9%

Results show that respondents mainly see a children's museum as an exciting or unfamiliar environment where the child can be entertained and spend time with classmates, family, and/or friends. Most respondents (69.3%) also felt motivated to visit a children's museum for the child to be mentally stimulated and to learn, and to connect the child to an area of their interest (61.6%). Another set of motivations that related to social interaction was introducing the child to other children with (53.9%) and without (53.9%) ASD and/or other disabilities.

Tools, Resources, and Environmental Modifications

100% of respondents indicated that they prepare with the child prior to visiting a children's museum. When asked how they prepare with the child, eight respondents mentioned the use of visual resources and tools such as: social narratives, videos, pictures, and/or picture schedules. Participants also mentioned that they prepare by having a conversation with the child about what to expect and/or what they are going to do during their visit, as shown in the following statements:

- *Tell him what to expect sensory wise.* (caregiver)
- *Explain where we are going, what some things will be like, talk over how to handle stressful situations.* (caregiver)

Most respondents (76.9%) indicated that they visit a museum's website for accessibility information to prepare for a visit to a children's museum. However, one caregiver responded that museum websites "are often not very helpful", therefore they only utilize them "sometimes".

As with their motivations, survey participants were asked to rate a variety of tools, resources, and environmental modifications on a scale from (1) not helpful to (5) very helpful. The objective was to learn which of these were rated helpful or very helpful by 50% or more participants. However, all fifteen suggestions of tools, resources, and environmental modifications fell within these criteria. Each of these various tools, resources, and environmental modifications will be discussed in two ways:

1. How and if they are currently offered by the Museum
2. If they are not currently offered, how they can be implemented at the Museum

Museum Environment & Programs

When asked what aspects of the site Museum environment support a positive experience for the child with ASD, answers focused on staff, a variety of interactive experiences, and accessibility events and resources. For example, staff were described as *very understanding, helpful, friendly,* and *positive*. These comments are celebratory of staff at the Museum. However, participants were not asked when these positive interactions with staff occurred. Therefore, they may have been reflecting on a visit to the Museum during a special accessibility event when the Museum is staffed with individuals who are especially informed about the needs of children with ASD. Or, they may have reflected on a group visit/field trip when staff was aware of a group's potential accessibility needs prior to their visit. Unfortunately, participants' views of Museum staff

may or may not represent how staff interact with this audience during a *typical* Museum visit.

Participants mentioned that the variety of interactive experiences available at the Museum supported a positive experience for children with ASD. The *bright colors, inviting exhibits, hands-on activities, variety of spaces, tactile exploration, exploratory areas,* and the *interactive quality of exhibits* at the site museum were all revealed as positive qualities for respondents.

Finally, participants mentioned various resources that the Museum offered which helped support a positive experience, including: *dimmer lights, accommodations, change in lighting/sound, sensory room, quiet rooms, sensory supports, headphones, slant boards, and sensory sensitive areas*. In addition to specific resources or environmental modifications, the benefits of accessibility events were also mentioned. One respondent who is a parent wrote, “The biggest help for us is having time set aside for special needs when the normal public is not there because crowds are overwhelming for my son and we are all able to relax and enjoy museums more without large crowds.”

When participants were asked what aspects create barriers in the Museum’s environment, most of their responses related to large crowds and loud noise levels. One respondent who was a therapist mentioned a need for more quiet spaces to take the child when the environment is overstimulating. Although, not mentioned directly, the optimal times for groups with ASD to visit the Museum, especially when considering families, do not correlate well with the Museum’s operating hours/busy periods. For example, 100% of parents/guardians identified weekend afternoons or evenings to be

the optimal time for a visit to the Museum. However, attendance numbers rise greatly on weekends, which can create large crowds and a loud environment not conducive to a positive experience for children with ASD. In addition, the Museum is only open until 5:00 PM on Saturdays and Sundays, which does not help families who may only be able to visit on weekend evenings; potentially interfering with a caregiver's work schedule. 100% of teachers and therapists identified weekdays as an optimal time to visit the Museum, especially during the morning or afternoon. These subject groups may have limitations on their visitation time due to the restraints of therapy or school hours, however weekdays tend to be less busy times at the Museum.

Participants varied in their response when asked what amount of time the child is comfortable participating in the museum environment. However, most respondents (77%) indicated that the child could spend approximately 30 minutes to 1.5 hours in an environment like the Museum.

When asked if the child has participated in any classes, camps, and/or programs at the Museum, most respondents (69.2%) said the child had not participated but would be interested. Three respondents (23.1%) representing each of the subject groups (caregiver, teacher, and therapist) said that the child has no interest in participating in a class, camp, or program at the Museum. Only one participant, who was a therapist, stated that the child had participated and would be interested in another program in the future. Some identified aspects that could be a barrier to participating in this setting included: *being with non ASD peers, the usual lack of supports that would accompany such a program, noise, change in routine, large environment, loud noises, the need for extra staff support,* and not being able to participate with the child due to other

commitments, like younger siblings. Most participants (41.7%) indicated that the child would be comfortable participating in a class, camp, or program for between 30 minutes to 1 hour. Many of the teachers and therapists felt that questions related to participating in a class, camp, or program did not apply to their relationship with the child. This may result from these individuals perceiving classes, camps, or programs as activities that would take place outside of a school field trip or therapy session (e.g. with a child's caregiver). Therefore, answers regarding some of the questions about participating in classes, camps, and programs were largely varied and no themes could be identified. Topics of interest that were identified in the form of short answer response included: *water and anything in motion; gross motor, movement, play, social interaction; sensory exploration, simple crafts; technology, engineering/design;* and *books, music.*

Conclusion

Survey results indicated that most respondents saw a children's museum as an exciting or unfamiliar environment where the child can be entertained and spend time with classmates, family, and/or friends. In addition, participants were motivated to visit a children's museum for the child to learn and connect to an area of their interest. A variety of tools, resources, and modifications were identified as helpful by participants. The benefit of having accessibility tools, environmental modifications, and designated sensory-friendly events were all highlighted by participants as helpful for creating a positive experience for the child. Participants felt that large crowds and noise level were a significant barrier to the child's positive Museum experience. Most respondents stated that the child had not participated in any classes, camps, and/or programs at the Museum--but would be interested. Perceived barriers to their participation included

unknown environmental factors and the need for additional support during such a program if their caregiver was not present. Free, daily programming opportunities such as *Storytime*, *Music Time*, and a visit to the Art Studio, with the proper planning and facilitation, are opportunities for children with ASD to engage in at the Museum. These programs occur in designated program spaces that could serve as an escape from crowded or noisy exhibits. In addition, they have the potential to be hands-on experiences with a designated timeframe and a supportive structure that serves this audience.

Chapter 6: OBSERVATION

Introduction

A series of unobtrusive observations took place over six weeks from December 2017 through January 2018, for a total of 21.5 hours. Observations focused on daily programming at the Museum during normal museum hours and museum accessibility events. The purpose of these observations was to identity aspects of these programs that could support a positive or negative experience for children with ASD. Visitors themselves were not the primary focus of these observations, rather the focus was to observe how aspects of the programs (including staff facilitation) and environment affected the experience of visitors.

Daily programs are open format programs that are offered at no additional cost to visitors. Programs include *Storytime*, *Music Time*, *Block Building*, and an Art Studio. These programs are facilitated by staff in order to actively engage the Museum's young visitors (birth-8+) and their caregivers during the program; creating opportunities for families to play and learn together. Visitors are welcome to listen, watch, and participate for as long as they like. The Public Programs Coordinator is responsible for the creation, implementation, revision, and evaluation of daily programming at the Museum. These daily programs are facilitated by Play Facilitators and Lead Learning Labs and Play Facilitators.

Storytime

Storytime is a daily program at the Museum that provides children and their families interactive experiences to explore literature. The program is provided seven days per week, two to three times per day. The goal of *Storytime* is to give children and their families the opportunity to explore literature in a variety of ways and introduce this

audience to a variety of children's books. In addition, *Storytime* builds literacy, vocabulary, picture recognition, and more. Each session lasts approximately 20-30 minutes and is facilitated by a Play Facilitator or Lead Learning Labs and Play Facilitator. The books read during *Storytime* change each session and cover a range of subjects.

Music Time

Music Time is a daily program at the Museum that provides children and their families interactive experiences to explore music concepts and engage in joyful movement. The goal of *Music Time* is to introduce children and their families to a wide range of music concepts and give them the opportunity to explore movement in a variety of ways. *Music Time* can build fine and gross motor skills, vocabulary, literacy, and more. The program is provided seven days per week, one to two times per day. Each session lasts approximately 20-30 minutes and is facilitated by a Play Facilitator or Lead Learning Labs and Play Facilitator. The content for each session changes daily and includes hands-on exploration of a variety of topics such as tempo, pitch, dance, rhythm, instruments, etc.

Block Building

Block Building was a daily program that encouraged children and their adults to play in the Museum's unit block area. This program was provided seven days per week, one to two times per day. Each session lasted approximately 20-30 minutes and was hosted by a member of the Museum's Play Facilitation team (as mentioned above, this program was discontinued shortly after the completion of these observations). By engaging in

Block Building, children developed skills in math, design, representation, balance, stability, shapes, vocabulary, sorting, and more.

Art Studio

The Art Studio is a free, drop-in workspace that engages children and their families in creative activities that incorporate elements of art, math, and science. The goal of the Art Studio is to provide children and their families a creative outlet where they can explore a variety of media in an open-ended environment. Participating in the Art Studio can help children build fine and gross motor skills, color/shape/pattern recognition, vocabulary, cooperation skills, and more. The Art Studio generally offers a unique theme or projects each week that are designed by the Art and Maker Specialist and facilitated by the Museum's Play Facilitation team. In addition, tables for drawing and sensory play are usually available. The Art Studio is open seven days per week; it opens 30 minutes after the Museum and closes 30 minutes prior to the Museum.

Sensory Story & Play Time

Sensory Story & Play Time is a specialized program offered during the Museum's two accessibility programs, *Third Thursdays* and *Family Night Out*. This program is facilitated by an area educator who has experience working with children with autism spectrum disorders in both formal and informal learning environments. The goal of *Sensory Story & Play Time* is to offer children with disabilities and their families a more flexible, judgement free story time environment with an environment and resources that support a positive experience. Each session lasts approximately 30-45 minutes and includes interactive stories, songs, movement, and more.

Protocol

Each daily program was observed during the Museum's normal operating hours. *Sensory Story & Play Time* was observed during the Museum's accessibility programs. Observations were made using an Observation Worksheet (see Appendix E). Observations focused on: basic information about the participants, staff facilitation, activities, motivations, and tools/resources/modifications. Basic information gathered about participants included the number of participants, observed gender, and approximate age range. In addition, the following was recorded during observation: how participants (including staff and visitors) interacted during the program, vocalized statements that reflected the program's activities or environment, and the tools that were observed during a program. Areas of need for specific tools, resources, and/or modifications that could be identified through observation were also noted. All program participants (including staff and visitors) remained anonymous during the observation; no identifying information was collected. An informational flyer (Appendix F) was provided prior to each observation, and participation was voluntary for both staff and visitors. Potential participants (including staff and visitors) were asked to inform the researcher if they did not want to be observed.

After observation data was collected, observations were organized by program type. Each observation was conducted with the following questions in mind:

- Did participants mention their motivation for participating in the program?
- What types of sensory stimuli were present during the program? Could the amount of sensory information observed be overwhelming for visitors with sensory processing difficulties?
- What potential barriers (logistical, environmental, social) were present in the environment or program? What accommodations or changes could be made to reduce or eliminate these barriers.

- What tools and resources are present in the program or environment that may be helpful for children with ASD? Which tools and resources, identified in survey responses and research, are absent but could be incorporated into the program or environment?

Findings

Storytime

Observed ages for participants of *Storytime* included children infant to twelve years old, and adults age 20 to 65 years old. The average number of participants during *Storytime* was six children and five adults. The lowest attendance observed was one child and one adult. The highest attendance observed was twelve children and ten adults.

The environment for *Storytime* remained consistent throughout multiple observations (see Figure 4.1). During each observation, the program took place in a multi-purpose room that also serves as a rotating gallery of artwork from area schools. The room is adjacent to a popular museum neighborhood that houses exhibits based on light, shadow, and color. These exhibits tended to be noisy and sound travelled easily through the open doors of the multi-purpose room during *Storytime*. During multiple observations, the reader was difficult to hear over the sounds in the adjacent exhibits. The room was bright with the use of both fluorescent and LED track lighting.

Figure 6.1: Gallery Space

The room setup was simple. Two long plastic benches provided minimal seating, appropriate for no more than six to eight individuals. A single chair was available for the reader, located in front of a large screen used to project pages from some of the books utilized during the program. Books were usually stacked on the floor or were occasionally spread out in front of the audience. During the program, children sat on the benches or on the floor in front of the reader's chair. Adults utilized the benches for seating when possible or stood around the perimeter of the room. During one of the observed sessions, the reader provided small pillows covered in various textures. Children used the pillows to make themselves more comfortable, by sitting or lying on them; some held the pillows in their hands or played with them during the stories.

There was an observed pattern to the program. First the staff member set up the room by selecting four to five books from a nearby storage room and placing a program sign outside the room. Then, they sat in the room and waited for participants to arrive or walked through the adjacent exhibit and told visitors about the upcoming program. At the start time of the program, the staff member welcomed the participants. Next, staff members chose a book or asked the children to select a book. Books for this program tended to be large picture books, written for preschool age readers. There was a projection screen located on the wall behind the staff member. Occasionally, the screen was used to project digital versions of the books. However, a few staff had difficulty using the technology and chose not to use it during the program. Many of the staff members used changes in their voice, sound effects, and questions to keep visitors attentive:

- *Do you want to roar with me?*
- *What does a wolf say?*
- *What is he going to do next?*

Some participants seemed to lose interest after one or two stories and played with the books on the ground, glanced around the room, or moved around in their seat. Once a book was finished, the reader moved on to another selection, until the 20 minutes were up, and the program was over. The staff member made an announcement to the participants to signify that the program was over, such as:

- *Thank you so much for joining us for Storytime. It is over now.*
- *That's all the books we have time for today. Thank You!*

Participants then left the room and continued their visit. The reader put the supplies away and continued their shift elsewhere in the Museum.

Music Time

The participants of *Music Time* appeared to be children age infant to seven years old, and adults age from 16 to 65 years old. The average number of participants during *Music Time* was ten children and nine adults. Not all participants stayed for the entire 20 minutes.

The environment for *Music Time* remained consistent throughout multiple observations (see Figure 6.1). This program took place in the same multi-purpose room as *Storytime* and had a similar setup. Two long plastic benches provided a small amount of seating, appropriate for no more than six to eight individuals, and a single chair was available for the staff person or volunteer. A plastic bin full of instruments was placed on the floor or bench. On one occasion, a staff person also provided music cards printed with simple rhythms and songs. A standing program sign was placed outside of the program room.

The observed *Music Times* were chaotic. As participants walked into the program, they were invited to pick an instrument from the bin. The doors to the multi-purpose room remained open during the program, which filled the room with competing sounds from the adjacent exhibits. Once participants picked their instruments (e.g. cymbals, gongs, boom whackers, shakers, maracas, etc.), the noise level in the room grew tremendously. Some visitors appeared to become overwhelmed by the noise and left prior to the end of the program. Many of the staff members observed appeared to find it difficult to maintain a structure during the program, and their attempts to guide the group of children in an activity (after they had begun playing their instrument) was almost impossible.

Adults encouraged the children to play instruments by demonstrating certain rhythms or motions. Instead of playing as one cohesive group, program participants tended to split into small groups that played amongst their family or friends. Children and adults walked around the room with instruments, sat in the center of the room, or spread out around the perimeter of the room. The program ended when the staff person collected the instruments from the group and thanked them for participating.

Block Building

Child participants for *Block Building* appeared to range in age from one to seven years old, and adults appeared to range in age from 20 to 65 years old. The average number of participants observed during *Block Building* was seven children and four adults. The lowest attendance observed was five children and one adult. The highest attendance observed was twelve children and seven adults. The observed *Block Building* programs usually had one facilitator, a Play Facilitator or Lead Learning Labs and Play Facilitators. Occasionally, a volunteer was also present during the program.

Block Building took place on the second level of the Museum in the unit block area (see Figure 6.2). The unit block area occupies a small recessed area in an exterior wall; approximately 8 ft. deep and 10 ft. wide. Two arc-shaped benches flank the entrance to the unit block area. The perimeter of the unit block area contains three walls

Figure 6.2 Unit Block Area

of shelving that hold unit blocks and large wooden rulers. The area is carpeted and lit by a unit of LED track lights; the lighting is dimmer on this level of the museum due to the use of more natural lighting (skylights) and LED track lighting. The noise level in this space was largely dependent on the number of visitors on the second level. This small area is adjacent to a space for temporary, rotating exhibitions. At the time the

observations described here were conducted, an interactive exhibit based on the combination of art and music was on display. This temporary exhibit had the potential to produce a lot of sound due to the presence of instruments and audio/visual components.

No repeated structure to this program was observed. The program differed during each observation depending on the participants and their actions. The unit block area is always available to visitors regardless of whether a specialized program is taking place, therefore there was no obvious beginning or end to the *Block Building* program. The program "began" when a facilitator entered the area and began interacting with visitors, and it "ended" when that facilitator exited the area and continued their shift elsewhere.

The small size of the unit block area influenced how visitors participated in this program. The blocks were available for children to work independently or together. Many children began to build independently in the area but ended up building with others because of the lack of available space. When several children worked independently in the space or built a large collaborative project, there was not much room left to move around the space easily. During one observation, a child was observed playing with blocks on top of the shelving because the space on the floor was covered with the projects of other children. During another observation, a child took blocks out of the unit block area into an adjacent exhibit area because of the lack of building space. After removing the blocks, the child continued to play independently outside of the block area. In addition, on a separate occasion, adult participants made comments that reflected the stress brought on by a small, crowded exhibit space:

- *If you are going to knock it down, do it towards the corner.* (to avoid hitting other children in the space)
- *There are a hundred blocks in here. I don't understand why they can't play with different blocks.* (comment made after a couple of children unknowingly took apart her child's structure)

The facilitator (and occasional volunteer) sat in the unit block area and played alongside children in the space, both those who were playing independently and together. The facilitator used questions and statements to motivate participants during their building experience:

- *Are you going to keep helping us over here?*
- *What are you going to build today?*
- *What did you make?*

The facilitation during this program was limited to these interactions. Facilitators did not bring additional materials or activities into the unit block area during the program.

Art Studio

The Art Studio is a creative workspace that incorporates elements of art, math, science, among other activities. The observed participants appeared to include children ranging in age from infant to ten years old. Adult participants appeared to be between 20 to 65 years old. An average of ten children and seven adults participated in the Art Studio during observations. The lowest number of participants was five children and two adults. The highest number of participants observed was fourteen children and thirteen adults.

During each observation, the Art Studio had a set of activities available for visitors to explore. These activities were usually correlated around a theme for the day or week. For example, during one observation, participants could take part in drawing, weaving, collage-making, or a chalkboard activity. Activities were spaced around the

room at different stations. The floor plan was open to allow for easy movement between stations (see Figure 6.3). Tables were child height and allowed participants to stand or sit while taking part in the activity. Child-sized plastic stools and chairs were the two seating options available. For some stations, an example of related artwork was provided for inspiration by the Art and Maker Specialist who designs and plans each activity. The following tools and resources, that may have benefits for children with ASD, were utilized during observed activities:

- Individual work trays that provide a structured space for the activity
- Materials with various textures that provide a stimulating tactile experience
    - Feather boas, ribbons, and yarn
    - Clay and Mad Mattr® - a “super-soft building compound that easily molds and shapes into endless creations, inspiring open-ended play” (Relevant Play 2018)
- Marker storage blocks and containers that help keep a creative space organized
- Accessible scissors for individuals with dexterity issues

Figure 6.3 Art Studio

There were no physical directions or guides provided for the activities. Verbal introductions about the theme or activity were given by staff when visitors entered the space. Staff and volunteers moved around the room and occasionally asked the visitors questions about their projects. However, staff and volunteers were also occupied with keeping the space tidy and materials replenished.

Sensory Story & Play Time

Sensory Story & Play Time occurred during the Museum's two accessibility programs, *Third Thursdays* and *Family Night Out*. This program is facilitated by an area educator that teaches in a blended classroom at a public special education preschool.

The facilitator has experience working with children with autism spectrum disorder and other disabilities in both formal and informal education environments. In a past role as a specialized program provider at a grant-based organization for children with autism, she recognized that many of her clients could benefit from more creative, flexible, informal learning environments. In turn, she wanted to create a story time that was engaging and non-traditional, but also sensitive to a neurodiverse audience including children with autism. She thought that some families may not feel comfortable attending quieter, more regulated story times; because of the fear of having to conform their child's behavior to this environment and the associated judgement that could arise from other participants. Therefore, she wanted to create a judgement-free story time with a flexible environment.

In September 2016, she discovered the Museum's accessibility programs online and thought they could be a great venue for her story time. She reached out to the Museum's Accessibility and Inclusion Specialist, and in December 2016 she ran her first *Sensory Story & Play Time* at the Museum. The Museum gives her an outlet for her creativity and a place to provide families a more inclusive story time. She uses these activities in her classroom and shares them with her school's librarians as well. When asked what she feels is the most vital aspect to this program, she stated that setting up a quality, supportive environment is crucial. She always uses a large rug, visual schedule, and interactive activities during *Sensory Story & Play Time*. She removes most of the standard seating in the room, so families can sit together on a communal rug. However, she notes that it is important to have some seating nearby for individuals that need it. In addition, she always has a backup plan or "bag of tricks" ready for when

things do not go as planned. For example, she keeps a small kit of wipes, single-use earbuds, and a tactile activity (e.g. small container of coins with a slotted lid) available during the program. Finally, she stated that it is important for facilitators to set a tone of non-judgement, by reminding parents that a program is flexible, their children do not have to remain seated, and that families can join or leave as they please.

Currently, *Sensory Story & Play Time* is the only drop-in program specifically designed for children on the autism spectrum at the Museum. This program lasted longer than typical daily programs. Each observation for this program was approximately 30-45 minutes in length. Children who participated in this program appeared to range in age from two to fourteen; adults appeared to be between 30 to 50 years old. An average of eight adults and eight children participated in the observed *Sensory Story & Play Time*s.

Sensory Story & Play Time took place in the same location as *Storytime* and *Music Time*; however, the room setup was different (see Figure 6.4). A rug was provided in the center of the room for participants to sit on. There were additional seating options available including bean bag chairs, cube chairs, and benches. The doors to the room were closed to lessen auditory and visual distractions from the adjacent exhibit.

Figure 6.4 *Sensory Story & Play Time*

There was an evident structure and format to *Sensory Story & Play Time*. After welcoming participants as they entered the room, the instructor told participants it was "okay to wiggle, wander, or leave" to identify to caregivers that the program was flexible and non-judgmental. The facilitator then introduced a visual schedule that was used to

guide participants through the various parts of the program; to identify what had been completed and what was still to come.

The visual schedule (see Figure 6.5) was simply constructed out of a rectangular piece of cardboard, approximately 3 feet tall, wrapped in fabric with a long, vertical strip of Velcro down the front. On top of the Velcro strip were laminated image cards that could be attached to the board with Velcro. A small baggy was attached to the back of the board to hold the image cards once they were removed after an activity.

Figure 6.5: Visual Schedule

The Facilitator used images from the Picture Exchange Communication System (PECS) to create the visual schedule. PECS® is a unique alternative/augmentative communication system developed in the USA in 1985 by Andy Bondy, PhD, and Lori Frost, MS, CCC-SLP (Pyramid Educational Consultants, 2018). Augmentative and

Alternative Communication is “an area of clinical practice that addresses the needs of individuals with significant and complex communication disorders characterized by impairments in speech-language production and/or comprehension, including spoken and written modes of communication (ASHA, 2018).” Children with autism spectrum disorder may use the PECS® or other forms of AAC as a tool to help them communicate and develop language and literacy skills. AAC systems may involve a variety of techniques and tools, including picture communication boards, line drawings, speech-generating devices (SGDs), tangible objects, manual signs, gestures, and finger spelling (ASHA, 2018).

The instructor facilitated the program utilizing the visual schedule. The first step on the schedule, an image of a person waving, was to conduct introductions between participants. The facilitator used a noisy pop tube to facilitate introductions. She began by demonstrating with her own introduction, and then asked each individual if they would like to participate before giving them the pop tube. Following the introduction activity, a participant was asked to remove that step from the visual schedule. For each activity that followed there was an image card, the facilitator gave clear instructions, and she provided expectations for appropriate use of materials (e.g. bean bags, blocks, activity supplies). Individuals participated in a variety of activities, including: reading a book, dancing, singing a song, playing with blocks, and playing with bubbles. Each activity involved participation from the group and incorporated movement and/or something tactile. For example, when a story was read it was accompanied by an activity. Even though the activities varied, the structure of the program and use of the visual schedule remained. The last image on the visual schedule, an image of a person

waving, indicated to the group that the program was over. The facilitator supported this verbally as she removed the last image from the visual schedule.

Conclusion

The Museum's current daily programs, especially *Storytime* and *Music Time*, lacked depth in the variety of activities/content explored and exhibited a poor-quality environment. It is important to note that this is likely the result of insufficient training of Play Facilitation staff, not the fault of the facilitators themselves. While some structure was observed because of actions and verbal cues from the facilitator, there was no visual representation of the structure of the program made visible to visitors. In addition, the gallery space lacked an adequate amount and variety of seating for participants during both *Storytime* and *Music Time*. Both *Storytime* and *Music Time* lacked variety in the activities presented during these programs. *Storytime* consisted of reading various books to participants without much interaction between facilitator and the audience. *Music Time* appeared to be the most challenging for staff to facilitate effectively and tended to result in a chaotic and harsh auditory environment. *Block Building* appeared to be the easiest for staff to facilitate; most likely attributed to the fact that staff facilitate this area/activity outside of daily programming. However, no structure was made apparent to visitors. In turn, there may have been a lack of value attributed by visitors to this program as it was indifferent to what already occurred throughout the day in that exhibit area. While there was no consistent structure or time frame to the Art Studio, it offered much more variety in terms of the activities available to participants, seating options, and hands-on experiences. However, additional training would be helpful in guiding staff to focus on facilitation in addition to upkeep of the space. Finally, *Sensory*

Story & Play Times were the most interactive of the daily programs—in terms of staff and participant interaction and hands-on experiences. The visual schedule utilized during this program provided a physical representation of the program's structure and helped participants know what to expect during the program. There were multiple options for seating and a flexible, welcoming environment was shared more fully to participants than during the daily programs delivered in that space.

Chapter 7: DISCUSSION

Introduction

Findings from this study identified various aspects of the delivery of these museum programs that influence each of the three contexts involved in creating a learning environment: personal, social, and physical (Falk and Dierking, 1992). In addition, the findings from this study will be used to craft recommendations for improvements to the site Museum's daily programming, making them more inclusive to a neurodiverse audience. It is crucial for the site Museum to dedicate time and funding to properly train their staff who design and facilitate daily programming. Providing training related to disability awareness, program facilitation, and Universal Design for Learning Guidelines, may help make their current daily program offerings more inclusive to children with ASD. Finally, the Museum should continue to develop and maintain relationships with community partners that represent these audiences since they are integral to the planning and implementation of the programs and provide expertise that the staff may lack. By doing this, the Museum may be able to dissolve many of the barriers that prevent successful program development and delivery for individuals with ASD.

Personal Context

The personal context is an individual's experiences and knowledge, and includes their interests, motivations, and concerns. This is the context the visitor brings into the museum and is the basis for which that individual experiences the Museum's exhibits and builds upon their existing knowledge. Findings from this study show that caregivers, teachers, and therapists are motivated to visit the children's museum environment mainly to spend time in an exciting or unfamiliar environment where a child with ASD

can be entertained, spend time with classmates, family, and/or friends, and potentially learn or be mentally stimulated. These motivations were represented in the following comments given by survey respondents when asked why they visit a children's museum:

- *A fun, family outing*
- *To put a smile on his face.*
- *Same reasons I visit with my neurotypical children…for a new, enjoyable experience where they might learn.*

These responses reinforce the idea that children's museums are regarded as informal learning institutions that are socially interactive, open-ended environments for play and learning. Another study, conducted in 2011 by the Smithsonian Institution and the Information Policy and Access Center at the University of Maryland, showed similar findings, when they examined why families with ASD visit museums, noting that the "museum experience emerged for families as a way to encourage the child's independence in exploring and experiencing, to foster her/his interests and to share enthusiasm for learning with their child (Langa et al. 2013)." One respondent, from the current Accessibility and Inclusion Survey, commented specifically on why interacting in an unfamiliar and/or stimulating environment was very important, stating that they are motivated to visit the children's museum to work on "building community skills, and how to appropriately behave in the community." This also relates to the museum as a social environment that, when under the right conditions, may provide children with ASD an opportunity to work on improving their difficulties with social interaction. It is important to note that findings from the Accessibility and Inclusion Survey reflect the opinions of caregivers, teachers, and therapists versus the actual opinions of children with ASD. These individuals were utilized as a proxies for the actual children because of the

challenges of performing the survey with minors and the potential communication challenges presented by the disorder.

Survey findings highlighted the importance of preparing children with ASD prior to their visit to a children's museum; this is consistent with the findings of other studies (Langa et al. 2013; Ganz and Flores 2010). Developing web-based resources for visitors with ASD and other disabilities is essential as society becomes increasingly interwoven with technology. Providing accessibility information and resources on a museum's website helps acclimate individuals who experience anxiety before visiting a museum, since new environments or changes in routine can cause stress among individuals with ASD. Museums should support visitors by devoting information on their website to accessibility and inclusion. This allows visitors to view the museum environment, create a plan for their visit, understand what accommodations are available, and set expectations for the child (Langa et al. 2013).

Social Context

The social context is whomever a visitor comes into contact within the museum (other visitors, family members, care providers, volunteers, staff members, etc.). The overall lack of structure observed in the daily programs, except for *Sensory Story & Play Time*, impacts the personal and social context for children with ASD. Children with ASD tend to benefit from programs that have some form of structure (Freed-Brown 2010). While individual components of a program can change, keeping the basic format of a program consistent is important for children with ASD.

Most children participated successfully in the *Sensory Story & Play Time* due to a few key aspects of this accessibility program including the presence of a trained

facilitator, the use of a visual schedule or structured format, and the incorporation of a variety of resources and movement-based activities. The facilitator of the *Sensory Story & Play Time* was a trained specialized program provider who has experience working with children with ASD and other disabilities. Staff experience and training greatly influences the success of a program (Tyler 2015; Golden and Walsh 2013). Museum staff are often not equipped with the training or knowledge necessary to provide a positive, stress-free experience for children with ASD (Kulik and Fletcher 2016). The trained facilitator practiced many of the recommended (Meyer et al. 2016; Potter and Whittaker 2001) methods and techniques during *Sensory Story & Play Time*, including:

- Using straightforward, uncomplicated language
- Giving one instruction at a time instead of a sequence
- Keeping facial expressions and gestures clear
- Giving individuals time to respond
- Using visual guides or cues
- Creating situations that encourage movement and communication

Most of these strategies for accommodating visitors with ASD were not a part of the other daily programs offered at the Museum. In addition, the use of a visual schedule during the program was beneficial for participants. Eight of the survey participants directly mentioned the use of visual aids before or during their visit to a children's museum, and 92.3% of respondents rated these tools helpful or very helpful for the child. Not only did the visual schedule keep participants on task and motivated, but it also presented opportunities for each participant to interact one-on-one with the facilitator.

Finally, the incorporation of a variety of movement-based activities was crucial to the success of *Sensory Story & Play Time*. Instead of participating in one activity for the entire program (e.g. listening to a book, playing an instrument, building with blocks, etc.

as was the case for the other daily programs) *Sensory Story & Play Time* involved the participants in a variety of activities. In addition, these activities supported the interaction between the participant and the instructor/facilitator or the other members of the group. For example, during one observation, a book about building a snowman was read to the group while they used pieces of felt to build a snowman together on the floor. During another observation, participants danced around the room and sang a silly song about bean bags that gave them specific actions to perform with actual bean bags that they each got to hold. These socially-interactive activities provide opportunities for children with ASD to work on their interpersonal communication skills. In addition, this type of interpersonal environment reflects the tenets of constructivism in relation to the adult-child learning partnership and the expanded learning that can take place when children learn alongside someone with an advanced level of knowledge (termed "scaffolding" as mentioned in Chapter 2).

Setting up a supportive environment is another way that facilitators affect the quality of a learning environment. Facilitation staff should be trained on how to create a welcoming and comfortable learning environment for a neurodiverse audience. In addition, efficient organization of program content and supplies and suggestions for program lesson plans would be advantageous; helping to ensure staff feel supported when preparing for a program in a short period of time.

Physical Context

The physical context is the museum itself—the building, objects, environment—what is to be explored and experienced by the visitor. When asked which aspects of the Museum created a negative experience for a child with ASD, many survey responses

described a common barrier across participants related to the physical context of the Museum:

- *The loud noises when crowded*
- *Noise*
- *The large spaces and loud noises could be overwhelming*
- *No quiet space; need more spaces to take child to get out of stimulating environment*
- *Crowded, noisy*
- *Large environment, loud noises*

Several environmental barriers were also identified during observations including the bright lighting used in program spaces, excess noise present inside and outside of the program space, and a lack of resources to help individuals regulate their sensory input and processing issues (e.g. flexible seating, tactile resources, etc.).

Providing a welcoming environment means anticipating the needs of visitors with ASD prior to their visit. The Museum should continue to expand their Accessibility & Inclusion webpage as new resources are identified and implemented. In addition, survey respondents indicated that a crowded, noisy museum can act as a barrier for a child with ASD. Museums may want to include a graphic on their website that details the expected attendance levels for the upcoming week due to group visits, holidays, etc. This would allow visitors with ASD to gauge how busy certain days would be and plan their visits during less busy hours. It may also be helpful for a museum's front-line team to decide on a policy regarding refunds for guests who cannot carry out their visit or attend a program due to environmental barriers (e.g. crowds, noise, bright lights, etc.). Finally, museums should continue to develop programs and events that are designed to support visitors with ASD. Many museums utilize special events, classes, and camps to generate revenue. High attendance at these events can lead to great profits for a

museum, but poor experiences for visitors with ASD. Designing events that include special accessibility hours or private, affordable accessibility events can offer visitors with ASD the chance for a more positive experience. Creating flexible classes and camps that include resources and environmental considerations for children with ASD is also important. Museums should ensure that caregivers or therapists, that may have to attend with a child, receive free admission to the program.

When asked to rate a list of suggested tools, resources, and environmental modifications from not helpful to very helpful, 100% of the 15 suggestions were identified as helpful or very helpful for children with ASD. Therefore, each of these ideas should be treated as significant in its potential to increase the inclusivity of the children's museum visit. Suggested tools, resources, and environmental modifications included:

- If available resources are listed online via museum website
- Description of exhibits available online via museum website
- Semi-private museum time (museum is closed to public, but open for children with disabilities and their families)
- Inclusive educational programs (classes & camps designed specifically for children with disabilities)
- Quiet rooms and/or spaces
- Noise-reducing headphones
- Timers, personal schedules, etc.
- Stories, picture guides, etc.
- Sensory maps that indicate areas with bright lights, loud noises, etc.
- Recommendations for therapeutic uses of exhibit areas
- Tactile, sensory, or fidget toys
- Pressure vests, neck wraps, weighted blankets, or lap pads
- Filtered lighting
- Flexible seating (bean bag chairs, wobble seats, rocking chairs, etc.)
- Service or comfort animals

Fortunately, many of the above are already offered by the site Museum. However, some of the suggested tools, resources, and environmental modifications have yet to be implemented at the Museum but were recognized as necessary accommodations during

observations and by survey participants. Therefore, it is important to understand why and how these identified tools, resources, and environmental modifications could be implemented at the Museum to support visitors with ASD and their caregivers.

Filtered lighting was identified as a helpful environmental modification for some individuals with ASD. The observed programming spaces, Art Studio, unit block area, and gallery space, utilized a combination of LED and fluorescent lighting. The unit block area (*Block Building*) generally exhibited lower light levels due to the use of LED track lights and natural lighting from a sky light. The Art Studio utilized LED lighting. The gallery space (*Storytime* and *Music Time*), used a combination of fluorescent and LED track lighting. Fluorescent lighting is commonly found in public spaces due to its reasonable price and efficient illumination. However, fluorescent lighting sources can emit a high level of illumination, humming sound, and flickering that some individuals with ASD may find discomforting (Long 2010). “In classrooms for students with ASD, brightness was a significant concern and one of the most frustrating conditions for the students (Long 2010).” Studies focused on creating ASD friendly classrooms have recommended the use of incandescent lighting, flexible LED lighting systems, fluorescent light filters, and natural lighting to create inclusive environments for individuals with ASD (Long 2010; McAllister, K. 2010; Woodcock, A. et al., n.d.). However, further research on the effects of different types of lighting and their cost/efficiency for institutions would be advantageous.

Excess noise from surrounding exhibits and during *Music Time* was identified as a barrier during observations. Survey participants also mentioned a noisy atmosphere in their survey responses. Entrances to program rooms can be closed during programming

to prevent excess noise from surrounding exhibits. Utilizing signage to indicate that visitors are welcome to enter the space throughout the program can help to identify an open format. In addition, placing carpeting and rugs in program spaces may help dampen noise. Resources like noise-reducing headphones should also be available during programs that produce auditory stimulus. Finally, adding more structure to programming (e.g. *Music Time*) would be helpful in preventing excess noise.

A lack of flexible seating options was observed in each of the daily programs. Most programs offered only two types of seating including stationary benches or floor space; child-sized backless stools and plastic chairs were offered in the Art Studio. Implementing flexible seating options within daily programs and throughout exhibits may help children with ASD regulate sensory input and combat sensory processing difficulties. Implementing sensory processing strategies, like alternative seating and tactile toys, can provide some children with the sensory input necessary to participate more positively in challenging environments (Bagatell et al. 2010). Possible flexible seating options include: therapy balls, peanut balls (i.e. peanut-shaped exercise balls), therapy cushions, t-stools, rocking chairs, accordion-style seating, textured rugs, etc. (Umeda and Dietz 2011; Matin Sadr et al. 2017; Bagatell et al. 2010). The Museum uses accordion-style seating within some exhibit areas, however these were absent during daily programs. Incorporating tools and resources like flexible seating and tactile objects that allow participants to move during a program may help them to focus and stimulate learning. Participants were observed occasionally using textured pillows during *Storytime*. Incorporating hand-held tactile objects within a program may increase a child's focus by helping them direct sensory input. Other examples of tactile objects

include: massage balls, bean bags, tangles, stress balls, buckle toys, sensory rings, etc. Another tool that is easy to implement in a program (e.g. *Storytime*) are weighted lap pads. Weighted lap pads can provide sensory stimulation for children with ASD who seek sensory input or provide a calming sensation when a child feels overwhelmed.

Some important considerations to make when selecting objects are: how easily can they be cleaned, are they distracting to other participants (e.g. how much noise do they produce), how will you distribute and collect objects from audience, and how will your museum allocate, find, and justify funding for these resources? It is important to note that the recommendations above can be utilized by all visitors, not just those diagnosed with ASD. If implemented in programs and exhibits, these resources may create more effective and inclusive learning environments and greater learning outcomes for visitors.

Recommendations for Daily Programming

The barriers to inclusion identified within this study can be prevented through proper investment in staff training and resources, designing programming through the lens of the Universal Design for Learning Guidelines, and collaborating with community partners during the planning and implementation of programs. The following are recommendations for improvements to the Museum's daily programming that will make the programs more inclusive to a neurodiverse audience.

Invest in Staff Training and Resources

The Museum needs to dedicate the time and funding to properly train their staff (and volunteers) how to serve diverse audiences and how to create and facilitate inclusive programs. Training related to disability awareness is important for the

Museum's entire staff, encompassing executive leadership through part-time facilitation staff. Currently, accessibility and inclusion are a focus for staff training on a quarterly basis. However, disability awareness training should be an integral part of onboarding for all staff at the Museum, so they can provide quality experiences to all visitors from the beginning.

Museum facilitation staff are responsible for facilitating in exhibits and leading daily programming shortly after their hire date. Providing staff with regular opportunities to understand daily program content and practice facilitation among an audience of their peers is a way to help them build confidence and comfort in delivering programs to visitors. Without proper training or previous experience working with a neurodiverse audience, staff are not (without prior training) equipped with the skills necessary to present programmatic content in an inclusive way. In addition, as noted during peer interviews, some experiences are not easily replicable during training. Reflecting on real life situations and sharing experiences among team members can be beneficial during training. Training should be provided that relates to staff's specific roles at the institution (i.e. providing examples that reflect experiences they are likely to have in their role at the Museum). Disability awareness and Universal Design for Learning Guidelines should be introduced during the onboarding or initial training period for new facilitation or programs staff and should be an ongoing element of future trainings. For example, facilitation staff should understand the potential barriers that could arise during *Music Time* for children with ASD, and how they may be able to overcome these barriers through the use of resources like noise-cancelling headphones or the selective use of instruments that produce excessive noise. The Museum may find it helpful to reach out

to partner organizations like occupational therapists and therapeutic service providers to provide training and facilitation tips for staff working with a neurodiverse audience. In addition, supervisors need to commit time to observing facilitation staff during daily programming. Communicating areas for improvement and implementing appropriate additional training should help the museum improve the quality of program facilitation.

From this study, it is evident that many resources are seen as beneficial for individuals with ASD. Most of the institutions interviewed make these resources available at their front desk, during sensory events, and for pre-registered programs. However, accessibility resources should be included as an integral part of regular daily programming for the whole audience regardless of ability. In addition, the systematic integration of accessibility resources during regular programming may help to reduce the stigma that individuals can face when utilizing these resources. The Museum should make a kit of accessibility resources available during daily programming. This kit should include but not be limited to: noise-reducing headphones, fidget or tactile objects, and pressure devices (e.g. weighted lap pads). It may also be helpful to include a laminated reference sheet within these kits to help staff understand what tools may be helpful in particular situations. Making these resources more readily available can help reduce the time it takes to remediate a stressful situation. In addition, the Museum should highlight available accessibility resources with signage at their front desk and in locations throughout the museum that may be challenging for a sensory-sensitive audience. The Museum should also incorporate the flexible seating options available during *Sensory Story & Play Time*. Finally, visual schedules should be implemented as a facilitation device during daily programming. They provide structure to a program and can help

increase confidence, decrease anxiety, and boost self-esteem by allowing participants to anticipate what is coming next. Visual schedules are also an effective tool when communicating to visual learners or with individuals who have difficulty communicating verbally (Grassi 2018). In addition, visual schedules can assist staff by providing a tool to guide them through facilitation. Proper staff training and the implementation and normalization of resources are vital contributions to providing a more inclusive experience for children with ASD.

Design Programs with Universal Design for Learning Guidelines

Universal Design for Learning (UDL) (see Figure 2.1) can be applied to various content areas and contexts including daily programming at the Museum. These guidelines are meant to reduce barriers and maximize learning opportunities for a neurodiverse audience. According to Rappolt-Schlichtmann and Daley,

> Under UDL, disability is understood as an artifact of limitations of the designed environment. Disability is not situated within the person, but rather in the interaction between the person and the environment. Difficulty is experienced as a result of design that did not anticipate the full range of variability in the population. (2013: 307-308)

This perspective reflects the social model of disability; the view that disability is not an individualized problem but a form of discrimination and oppression (Matthews 2009).

The guidelines are organized both vertically and horizontally. Vertically, the guidelines are organized into three principles: engagement, representation, and action and expression. These principles move from the outside in. The top row represents strategies from the outside or facilitation, while the bottom row represents strategies implemented by the individual. In addition, each principle is broken down into guidelines

with corresponding checkpoints (CAST 2018). Horizontally, the guidelines are organized in three rows: access, build, and internalize:

- **Access** - guidelines that suggest ways to increase access to the learning goal by recruiting interest and by offering options for perception and physical action
- **Build** – guidelines that suggest ways to develop effort and persistence, language and symbols, and expression and communication.
- **Internalize** – guidelines that suggest ways to empower learners through self-regulation, comprehension, and executive function (CAST 2018)

The ultimate goal of UDL is to "develop 'expert learners' who are, each in their own way, resourceful and knowledgeable, strategic and goal-directed, purposeful and motivated (CAST 2018)." While the bottom row of the guideline table represents the goal of UDL, the strategies in the top two rows are essential to an individual's ability to reach the 'expert learner' stage.

To begin utilizing the guidelines during program design, it is vital to understand what you want the audience to know or learn. As a constructivist institution, each of the daily programs has a different purpose or goal, however those goals remain broad and open to interpretation by the learner:

- The goal of *Storytime* is to give children and their families the opportunity to explore literature in a variety of ways and introduce this audience to a variety of children's books.
- The goal of *Music Time* is to introduce children and their families to a wide range of music concepts and give them the opportunity to explore movement in a variety of ways.
- The goal of the Art Studio is to provide children and their families a creative outlet where they can explore a variety of media in an open-ended environment.

To overcome barriers in the learning environment, programs are designed with the following:

- Multiple means of **engagement** – offer options that engage the audience and keep their interest
- Multiple means of **representation** – show the information to the audience in different ways
- Multiple means of **action and expression** – allow the audience to approach learning tasks and demonstrate what they know in different ways (CAST 2018)

Program content should be flexible and provide genuine learning opportunities for each individual. The following are recommendations for the design and facilitation of *Storytime*, *Music Time*, and the Art Studio that reflect checkpoints within UDL:

Engagement

- Close the doors to a program to lessen distractions from outside environment, present multiple seating options, and utilize a visual schedule during the program. (7.3)
- Allow participants to choose their spot in the program room and any resources they would like to use. (7.1)
- Use media or activities that are representative of diversity (race, culture, ethnicity, gender, ability, etc.). (7.2)
- Facilitators need to provide opportunities for the audience to actively participate in the program. (7.2)
- Present activities that challenge participants to work alongside their caregivers; that support the adult/child learning partnership. (8.2)
- Encourage participants to work cooperatively to complete an activity. (8.3)
- Refrain from using feedback that compares participants to one another or implies a judgement on the quality of work. (8.4)
- Provide ongoing feedback throughout the program that engages participants to reflect on their work. (9.1)
- Prompt participants to reflect on how to overcome frustrating situations. (9.2)

Representation

- Utilize materials that contain larger text and graphics when possible. (1.1)
- Use a combination of graphics and text in media and visual schedules. (1.2)
- Use both visual and auditory examples when explaining a concept. (1.2)
- Provide physical examples of concepts when possible (1.3)
- Connect new vocabulary to learners' experience and prior knowledge (2.1)
- Provide alternatives to the dominant language (e.g. English) when possible (2.4)
- Utilize visuals as non-linguistic supports for facilitation (2.4)
- Highlight connections between program content and the supporting activity. (2.5)
- Make connections to other parts of S.T.E.A.M. when possible. (3.1)
- Utilize multiple examples to explain a singular concept. (3.2)
- Give explicit prompts and instruction for activities and throughout the program. (3.3)

- Remove unnecessary distractions from the learning environment. (3.3)
- Review program content throughout session (3.4)

Action and Expression
- Incorporate physical movement whenever possible (4.1)
- Provide alternative forms of physical movement (4.2)
- Utilize media and physical manipulatives to support program content (5.1)
- Have multiple staff who use different approaches during facilitation lead programs (5.3)
- Use visual schedule or timers to set goals during program (6.1)
- Ask participants to explain a concept and/or reflect on their work (6.2)

Planning programs with these guidelines can help alleviate barriers to a learning environment for all children (including those with ASD). Two daily programming samples (see Appendix I and J) have been designed using the aforementioned UDL criteria. Each sample includes the materials needed, guidance on how to set up the environment, a lesson plan, the skills being focused on during the lesson, ways the facilitator can engage the visitors, and additional notes. These lessons use materials already present at the Museum or ones that are available online for free. In addition to implementing UDL within daily programming, the Museum should collaborate with community partners to support inclusion efforts.

Cultivate and Maintain Community Partnerships

All of the museums interviewed during this study identified community partners that have supported their journey towards inclusion. Currently, the site Museum engages both the AIDE committee and Autism Round Table in devising new initiatives to make the Museum more inclusive to children with ASD and beyond. The Museum should continue to cultivate and maintain relationships with a variety of interested parties including: caregivers, teachers, therapists, organizations, etc. It is important to note that individuals with ASD should be a part of discussions regarding inclusion efforts

at the Museum. Currently, the Autism Round Table consists of adults who actively work with children with ASD. However, institutions should strive to include children or adults with ASD in these discussions. Collaborating with individuals who have professional and/or first-hand experience with ASD is a valuable, low-cost strategy when the two parties use the partnership for mutual growth. For example, families or organizations may wish to participate voluntarily in advisory groups if the outcome will benefit their audience. Community partners may be able to provide additional support or funding for events, programs, and research initiatives. In addition, therapists or local day schools may be willing to provide training for facilitation staff to increase their disability awareness and provide recommendations for activities or facilitation strategies that are effective for a neurodiverse audience (including those with ASD).

Measuring the Effectiveness of Recommendations and Inclusion Strategies

As mentioned previously, currently there are no specific metrics to understand what constitutes successful inclusion and a systemic response to this pressing issue will remain unrealized without the recommendation of measurable strategies to implement within the museum environment. Therefore, this study recommends the following practices to measure the effectiveness of daily programming and inclusion strategies at the site Museum. It is important to note that the recommendations from this study are experimental, however other museums may find these practices applicable at their own institutions.

Facilitation Staff Survey

The study site should create a Facilitation Staff Survey for Play Facilitators and Lead Learning Labs and Play Facilitators to complete that gives them a platform to

express their feelings regarding daily programming. This survey should be devised and implemented by the Public Programs Coordinator, Museum Experience Manager, and Art and Maker Specialist, who have direct responsibility for daily programming and facilitation staff training. The Facilitation Staff Survey should be anonymous, as some staff may feel uncomfortable expressing their concerns or challenges regarding daily programming and facilitation. Examples of prompts to incorporate in the survey include:

- What aspects of the Gallery Space or Art Studio present challenges during facilitation?
- What specific topics would you like to explore or review during facilitation training?
- What tools would make it easier to facilitate (*Storytime, Music Time,* Art Studio)?
- What kinds of activities would you like to incorporate into (*Storytime, Music Time,* Art Studio)?
- What technology or devices used during daily programming present a challenge?

After the study site incorporates accessibility resources and strategies (e.g. UDL, visual schedules, kit of accessibility resources, flexible seating options, etc.) into daily programs, the survey should be updated to include prompts that ask staff to express their feelings regarding these initiatives. Implementing the Facilitation Staff Survey on an ongoing basis may be an effective way to track the progress of staff training and their comfort level facilitating the revised programs. Supervisors can use findings from this survey to modify trainings and daily programs.

Supervisor Observation and Evaluation

In addition to surveying facilitation staff, supervisors (Museum Experience Manager, Art and Maker Specialist, and Public Programs Coordinator) may implement ongoing observations to evaluate daily programs according to UDL Guidelines and the quality of facilitation. These observations could focus on the aforementioned UDL

guidelines that were recommended for implementation into program design at the Museum (i.e. which guidelines are present or absent during daily programming). In addition, focusing on the quality of facilitation may reveal which staff members may benefit from additional training and those who represent prime examples of facilitation. A summary of the findings from these observations may be incorporated into yearly staff performance reviews. However, it is important that these findings be communicated to facilitation staff throughout the year, so strengths can be celebrated and areas for improvement can be responded to in a timely fashion.

Daily Program Visitor Survey

The Museum may find it beneficial to incorporate a Daily Program Visitor Survey into the evaluation strategies for daily programs. Similar to the Accessibility and Inclusion Survey, results from surveys may provide insight into how visitors view daily programs at the Museum including visitor expectations regarding program content, facilitation, and environment. Example prompts for the Daily Program Visitor Survey could include:

- Which of the following daily programs did you experience today? (*Storytime, Music Time,* Art Studio)
- What aspects of the program did you or your child enjoy?
- What aspects of the program did you or your child find challenging?
- How did the facilitator interact with you or your child during the program?
- How did the program content meet or fail to meet your expectations for this program?

This survey could be introduced to visitors after each session by the facilitation staff. It is pertinent that the survey be brief but include open-ended questions that are easy to reflect on but provide helpful insight. The Public Programs Coordinator could be

responsible for organizing and evaluating the results from the survey and reporting these results to the Education and Programs Department as appropriate.

Community Observation and Evaluation

In addition to surveying visitors about daily programs, the Museum may find it beneficial to work with the Accessibility and Inclusion Specialist and Autism Round Table to perform observations and evaluations on daily programs. These parties could evaluate facilitation and programs to determine whether they are inclusive to individuals with ASD. The Accessibility and Inclusion Specialist could coordinate with members of the Autism Round Table (e.g. therapists, teachers, caregivers, and adults with ASD) to visit the Museum's daily programs and provide feedback related to program content, facilitation strategies, accessibility resources, and the environment. The Accessibility and Inclusion Specialist could then communicate findings from these observations and evaluations to the Public Programs Coordinator. This ongoing practice could provide insight into whether current inclusion strategies are being implemented effectively and what aspects of the programs or facilitation need improvement.

Chapter 8: CONCLUSION

The purpose of this study was to identify, through peer museum interviews, survey, and observation the current barriers at and in relation to the study site and ways to overcome them so they can support an inclusive experience for children with ASD. Research and methods focused on three main questions:

- What are the current barriers to children with ASD when visiting a children's museum?
- How should a museum invest their time and resources (including human resources) to improve inclusion efforts?
- How can programming within a children's museum be designed and implemented to provide an inclusive experience for children with ASD?

As institutions of informal learning, children's museums, like the study site, provide creative, sensory-rich learning experiences to their visitors. Peer interviews identified common barriers to inclusive learning environments for children with ASD. In addition, these interviews championed the use of a variety of inclusion efforts including utilizing inclusive design strategies in exhibit and program development. Survey results showed that visitors utilize these environments for leisure and supplementary educational opportunities. However, due to various barriers related to the Museum environment and characteristics of ASD, children with the disorder are not always able to have a positive experience. Finally, observations revealed that while the Museum offers many accessibility resources to visitors, its current daily programming is unsupportive of a neurodiverse audience.

Outcomes from this study resulted in the following recommendations to improve the experiences of children with ASD at the study site, and other children's museums, in relation to daily programming and resources:

- Invest in Staff Training and Resources
- Design Programs with Universal Design for Learning Guidelines
- Cultivate and Maintain Community Partnerships

Educating and empowering staff through training is essential to the success of a museum as an inclusive environment. A museum's representatives, including its staff, volunteers, and board should understand and be representative of their diverse audience. Disability awareness training and Universal Design for Learning concepts should both be an ongoing focus within staff development. Multiple peer institutions identified other visitors as potential barriers to an inclusive experience for children with ASD. An educated and empowered staff can support understanding among visitors by representing positive behaviors and interactions with families experiencing ASD.

Designing programs with Universal Design for Learning Guidelines, helps support a neurodiverse audience from the beginning. In a truly inclusive environment, a visitor should not have to request an accommodation to an exhibit or program; as it should be designed with their needs in mind. While some components such as lighting or flexible seating can be implemented more easily, some barriers may be more difficult to design around. Accessibility resources may be helpful to individuals, regardless of whether they have a disability. Incorporating these tools within the design of a program or exhibit can help facilitate a full experience for each member of a museum's audience. Resources should not only be stored at the front desk waiting to be checked out, they should be ready and accessible in the spaces a visitor may need them. Daily programming should follow checkpoints of the Universal Design for Learning Guidelines to support an effective learning environment for all visitors. For example, this may include utilizing a visible schedule that helps direct staff and visitors through a program,

engaging participants in reflection, and incorporating socially and physically engaging activities into a program. It is important to note that the use of UDL strategies in a children's museum environment is experimental at this stage. Evaluation whether these strategies are effective for informal learning environments, like children's museums, is an important area for future research.

Finally, museums should engage community partners that are invested in providing inclusive experiences for children with ASD by cultivating and maintaining mutually beneficial relationships with individuals, caregivers, teachers, therapists, and organizations. For example, there may be community partners who can assist in the training and education of staff in regard to serving individuals with disabilities. In addition, it is vital for museums to engage members of their community that are diagnosed with ASD. Children and adults with ASD can potentially provide unique insight into their experience in a children's museum. Inclusion merits that their voices be heard in these discussions. Finally, it is important for institutions to share accessibility and inclusion ideas and practices with other museums. As leaders in informal education that have the capacity to become foundations in the field for inclusion, children's museums have a responsibility to share this knowledge with others.

In order to measure whether the aforementioned recommendations are effective, it is recommended that the Museum implement the following practices: surveying facilitation staff about daily programming, having supervisors observe and evaluate daily programs, conducting daily program surveys with visitors, and having community partners observe and evaluate daily programs specifically in regard to children with ASD.

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APPENDIX A – Overview of Education and Programs Staff

Director of Education and Programs (FT)

The Director of Education and Programs is a member of the Museum's Executive Leadership team. As a member of this team, they participate in strategic planning and annual goal setting for the organization. They oversee the creation of educational content for new exhibits, public programs, school programs, and professional development programs. The Director of Education and Programs is responsible for the development and management of the Education and Programs Department's budgets. They are tasked with coordinating, implementing, monitoring, and reporting on grants for the Education and Programs Department. The Director of Education and Programs is responsible for overseeing the development, presentation, and marketing of an 18-month, mission-focused schedule of free and fee-based programming. In addition, they represent the Museum's mission and maintain awareness of current early education trends through participation in presentations, serving on professional panels, and maintaining relationships with community partners. The Director of Education and Programs reports to the President & CEO.

Accessibility and Inclusion Specialist (FT)

The Museum has a dedicated staff person that focuses on the institution's accessibility, inclusion, diversity, and equity efforts. Individuals with ASD are just one audience that this position focuses on. Other underserved groups that the Accessibility and Inclusion Specialist focuses on are low-income families, families experiencing other disabilities, LGBTQ+ families, and families of other races and cultures. The current Accessibility and Inclusion Specialist has an MS in Counseling Psychology and an MPA in Emergency & Disaster Management. Originally, the Accessibility and Inclusion

Specialist position was known as the Community Access Coordinator and was part-time. Their duties focused on selling reduced-priced memberships, coordinating a monthly, public accessibility program, and participating in community outreach and early childhood events. Changes in the Museum's strategic plan led to further investment in this position, resulting in the development of a full-time position in July 2017. This is one of four specialist positions within the Museum's Education & Programs Department. Currently, the main responsibilities of this position include the ones previously mentioned, in addition to increasing outreach to special needs populations and creating an environment in the Museum that is accessible and inclusive for all. These new responsibilities include working with the Museum's Human Resources department on training initiatives, consulting with the Exhibits team on Universal Design strategies, and training front-line and administration staff on accessibility, inclusion, diversity, and equity. According to the Museum's Accessibility and Inclusion Specialist, their goals for this position are to:

1. Support community outreach for families that would not otherwise be able to attend the Museum.
2. Bring the Museum, via portable exhibits and presentations, to all parts of the community to foster partnerships and relationships with agencies, schools, and organizations that serve at-risk families.
3. Market the Museum's reduced-price membership program to families and support their continuing visitation and membership renewal.
4. Assist with creating an atmosphere for visitors, members, and employees to promote accessibility, inclusion, diversity, and equity.

During the current fiscal year (2017-2018), their top priorities are to increase the frequency of attendance of families who receive reduced-priced memberships, continue to expand resources and supports in occupational therapy through the use of the Museum as a learning site, establish the necessary support to continue offering monthly

accessibility events, redesign and make improvements to the quiet room, and to start brainstorming ideas about a dedicated sensory room at the Museum. The Accessibility and Inclusion Specialist is not the only member of the Museum's team that is responsible for creating and maintaining accessibility resources and/or programs. According to the Museum's Accessibility and Inclusion Specialist, the Exhibits team and Public Programs Coordinator also share responsibility for supporting access efforts at the Museum.

Art and Maker Specialist (FT)

The Art and Maker Specialist is responsible for creating and maintaining all arts-based programmatic initiatives of the Museum. They lead the development of Art and Maker content and associated facilitation training and/or professional development content for staff and volunteers. They are responsible for designing programming and overseeing planning and logistics for all Art and Maker-based programs that are based in the Museum's Learning Framework and highlight the intersection of art, math, and science. In addition, the Art and Maker Specialist builds and maintains relationships with community partners to expand the impact of Arts and Maker programming. The position is a member of the Academic Specialist Team at the Museum and reports directly to the Director of Education and Programs.

Public Programs Coordinator (FT)

The Public Programs Coordinator is responsible for the administration, development, coordination, implementation, and evaluation of all visitor program offerings created by the Museum's Education and Programs Department. They collaborate with the Museum Experience Manager, Museum management, and

Specialist staff on programmatic efforts. The Public Programs Coordinator assists the Museum Experience Manager in the supervision of Play Facilitation staff performance and the development and presentation of training materials. They are tasked with proactively developing, implementing, evaluating, and modifying policies and procedures for museum programming to support the Museum mission and strategic goals. The Public Programs Coordinator collaborates with the Manager of Volunteer Resources to train, schedule, and supervise volunteer facilitators and assistants. This position reports directly to the Director of Education and Programs.

Museum Experience Manager (FT)

The Museum Experience Manager hires, supervises, and schedules facilitation staff appropriately for the Museum. They oversee facilitation staff performance and mentor staff through frequent on-floor interactions. They identify training needs (including professional development opportunities) and collaborate with the Education and Exhibits staff in the development and presentation of training materials. They ensure that appropriate program, educational, exhibit, customer service, and safety knowledge have been acquired by staff before they are assigned independent responsibilities in the Museum. They proactively develop, implement, evaluate, and modify policies and procedures for museum facilitation operations to support the Museum mission and strategic goals. The Museum Experience Manager collaborates with the Manager of Volunteer Resources to supervise and train volunteer facilitators and assistants, and schedule volunteer shifts. They oversee exhibit cleaning, maintenance, and experience in collaboration with Exhibit personnel. This position reports directly to the Director of Education and Programs.

Lead Play Facilitator (FT)

The Lead Play Facilitator position is responsible for assisting the Museum Experience Manager with overseeing the Museum floor and daily/special event programming. They are tasked with facilitating the child/adult visitor interaction with exhibits and on/offsite programs by encouraging and modeling the importance of open-ended and multiple outcome experiences. They maintain a safe, educational, hospitable, and aesthetically pleasing museum/outreach environment. This position assists in the training, mentoring, observation, and evaluation of facilitation staff as needed/assigned. The Lead Play Facilitator position reports directly to the Museum Experience Manager.

Lead Learning Labs and Play Facilitators (FT)

The Lead Learning Labs and Play Facilitator position is a combination of two key visitor experience positions at the Museum: Learning Labs Facilitator and the Play Facilitator positions. They are responsible for assisting both the Museum Experience Manager and STEM Specialist and School Programs Manager with overseeing the Museum floor, school programs, field trips, and daily/special event programming. They are tasked with facilitating the child/adult visitor interaction with exhibits and on/offsite programs by encouraging and modeling the importance of open-ended and multiple outcome experiences. They maintain a safe, educational, hospitable, and aesthetically pleasing museum/outreach environment. The Lead Learning Labs and Play Facilitators assist in the training, mentoring, observation, and evaluation of facilitation staff as needed/assigned. This position is supervised by the Museum Experience Manager, School Programs Manager, and Assistant School Programs Manager.

Play Facilitators (PT)

The Play Facilitators report directly to the Museum Experience Manager and are responsible for facilitating the child/adult visitor interaction with exhibits and daily/special programming by encouraging and modeling the importance of open-ended and multiple outcome experiences. They are tasked with maintaining a safe, educationally sound, hospitable, and aesthetically pleasing environment at the Museum. Play Facilitators are responsible for floor operations, visitor safety, and exhibit/program readiness. They maintain the cleanliness of exhibits and program materials. In addition, they assist in mentoring volunteers.

APPENDIX B – Peer Museum Interview Questions

General Questions

- Name & Title
- Museum Size (staffing & exhibits)
- What is your annual attendance?
- How many staff members does your institution have?
- What does ‘accessibility’ mean to your institution?
- What does ‘inclusion’ mean to your institution?
- Does your institution have an inclusion statement?
    - If so, how do you share this statement with staff and visitors?

Staff and Training

- What individuals from your institution are responsible for creating and maintaining accessibility resources and/or programs?
- Are these efforts delegated to a certain department or shared by multiple?
- Do you have a member of your staff that is directly related to accessibility or inclusion?
- Has your institution implemented accessibility related training for staff?
    - If so, how regularly is this a focus in your training?
    - If not, is this something your institution would like to implement?

Programs and Resources

- Does your institution have daily programming?
- How does accessibility and inclusion impact the planning process for programs and events?
    - Does your institution provide modifications or resources for programs to make them more inclusive for individuals with autism spectrum disorder?
    - Do you feel that your staff has the tools necessary to introduce inclusive strategies during programs?
- What types of accessibility resources does your institution have available? How do visitors access these resources?
- Does your institution have programs or events specifically designed for individuals with disabilities?
- What efforts outside of “sensory friendly” events are your institution making to create a more inclusive experience for their visitors with autism spectrum disorder?
    - Does your institution have any camps, classes, or accommodations specifically designed for children on the autism spectrum?

Funding and Support

- How does your institution fund accessibility or sensory friendly events or programs?
- How does your institution fund accessibility resources?
- Does your institution consult with other individuals or organizations in the community regarding accessibility and inclusion?
- How did these relationships begin? How do you maintain them?

- What do you think is the greatest barrier your institution faces regarding accessibility and inclusion?
- What do you think is your institutions greatest strength regarding accessibility and inclusion?

Basic

- Are you comfortable sharing your responses, cited appropriately, within this research project?
- Would you prefer for your institution and yourself to remain anonymous?
- Would you like me to send a copy of the finished thesis to you?

APPENDIX C - Survey Participant Recruitment Flyer

Project Title: Creating Inclusive Experiences in Children's Museums: Programming and Resources for Children with Autism Spectrum Disorder

Researcher: Cassandra Coffey, University of Wisconsin-Milwaukee

Study Location: [study site]

This study is being conducted in part to fulfill requirements for a Master of Science in Anthropology degree in the Anthropology program at the graduate school of University of Wisconsin-Milwaukee in Milwaukee, Wisconsin.

The purpose of the Accessibility & Inclusion survey is to identify the motivations and needs of children with autism spectrum disorder (ASD) and their adult counterparts when visiting a children's museum. No risks are anticipated and participating gives you an opportunity to help the researcher understand how children's museums may become more inclusive to children with autism spectrum disorder.

Participating involves completing an online survey that will take approximately 15 minutes. Your responses will be confidential and no identifying information will be collected. All data is stored in a password protected electronic format, and responses are anonymous. The results of this survey, not including information that may personally identify you, will be used for scholarly purposes and may be shared with [study site] representatives.

Your participation in this survey is voluntary, and you may withdraw at any time.

Please inform the researcher if you would like to provide an email address to participate in the Accessibility & Inclusion survey.

If you have questions or concerns about this research, please contact: Cassandra Coffey; 608-214-7020; cscoffeyuwm@gmail.com.

APPENDIX D– Survey Participant Sign-Up Form

Accessibility & Inclusion Survey Participants

The purpose of the Accessibility & Inclusion survey is to identify the motivations and needs of children with autism spectrum disorder (ASD) and their adult counterparts when visiting a children's museum.

Your participation is this survey is voluntary. You may choose not to participate. If you decide to participate in this survey, you may withdraw from participating at any time, you will not be penalized. Participating involves completing an online survey that will take approximately 15 minutes. Your responses will be confidential and no identifying information will be collected. All data is stored in a password protected electronic format. The results of this survey, **not** including information that will personally identify you, will be used for scholarly purposes and may be shared with [study site] representatives.

You will receive the survey within two weeks of submitting your email address. Please write your email address below:

APPENDIX E – Accessibility & Inclusion Survey Consent Form

Thank you for your interest in taking part in this research. Before you agree to take part, please read the consent form below.

Project Title: Creating Inclusive Experiences in Children's Museums: Programming and Resources for Children with Autism Spectrum Disorder

Student Principal Investigator: Cassandra Coffey, University of Wisconsin-Milwaukee

Principal Investigator: Dr. William Wood, University of Wisconsin-Milwaukee

This study is being conducted in part to fulfill requirements for a Master of Science in Anthropology degree in the Anthropology program at the graduate school of University of Wisconsin-Milwaukee in Milwaukee, Wisconsin.

The purpose of the Accessibility & Inclusion survey is to identify the motivations and needs of children with autism spectrum disorder (ASD) and their adult counterparts when visiting a children's museum. No risks are anticipated and participating gives you an opportunity to help the researcher understand how children's museums may become more inclusive to children with autism spectrum disorder.

Participating involves completing an online survey that will take approximately 15 minutes. Your responses will be confidential and no identifying information will be collected. All data is stored in a password protected electronic format, and responses are anonymous. The results of this survey will be used for scholarly purposes and may be shared with [study site] representatives.

Your participation in this survey is voluntary. You may choose not to participate. If you decide to participate in this survey, you may withdraw at any time. If you decide not to participate in this survey or if you withdraw from participating at any time, you will not be penalized.

If you have questions or concerns about this research, please contact: Cassandra Coffey; (608) 214-7020; cscoffeyuwm@gmail.com or Dr. William Wood; (414) 229-6323; woodw@uwm.edu

If you have questions about your rights or complaints towards your treatment as a research subject, please contact: UWM IRB at 414-229-3173 or irbinfo@uwm.edu

Research Subject's Consent to Participate in Research:

By completing this survey, you are indicating that you have read the consent form, you are age 18 or older and that you voluntarily agree to participate in this research study.

APPENDIX F – Accessibility & Inclusion Survey Questions

Basic Information

This survey includes questions and responses that use the wording "the child". This wording is used to generalize the survey for use with parents, guardians, teachers, therapists, etc. Please answer the following questions about the child or children with autism spectrum disorder that you have a relationship to.

Child's Age and Identified Gender: (short answer)

Relationship to Child: (parent / guardian; teacher; therapist; other)

Has the child been diagnosed with Autism Spectrum Disorder? (yes; no; other)

Has the child visited a children's museum before? (yes; no; other)

Motivations

Please rate the following motivations for visiting a children's museum from (1) *not important* to (5) *very important.*

- To be entertained
- To spend quality time with classmates, family, and/or friends
- To interact in an unfamiliar and/or stimulating environment
- To relax and/or recover from stress
- To connect to what the child is learning in school
- To learn or to be mentally stimulated
- For social and/or physical therapy
- To have a change in the child's daily routine
- To connect the child to an area of their interest
- To introduce the child to other children who **do not** have ASD or other disabilities
- To introduce the child to children who **do** have ASD or other disabilities

Are there other motivations for you and the child to visit a children's museum? (short answer)

Tools, Resources, and Environmental Modifications

Do you prepare with the child prior to visiting a children's museum? (yes; no; other)

How do you prepare with the child prior to visiting a children's museum? (no preparation prior to visit; other)

Do you visit a museum's webpage for accessibility information prior to visiting? (yes; no; other)

Please rate the following tools, resources, and environmental modifications from (1) *not helpful* to (5) *very helpful.*

- If available resources are listed online via museum website
- Description of exhibits available online via museum website
- Semi-private museum time (museum is closed to public, but open for children with disabilities and their families)
- Inclusive educational programs (classes & camps designed specifically for children with disabilities)
- Quiet rooms and/or spaces
- Noise-reducing headphones
- Timers, personal schedules, etc.
- Stories, picture guides, etc.
- Sensory maps that indicate areas with bright lights, loud noises, etc.
- Recommendations for therapeutic uses of exhibit areas
- Tactile, sensory, or fidget toys
- Pressure vests, neck wraps, weighted blankets, or lap pads
- Filtered lighting
- Flexible seating (bean bag chairs, wobble seats, rocking chairs, etc.)
- Service or comfort animals

Are there any additional tools, resources, and/or environmental modifications that are helpful when visiting a children's museum? (short answer)

[Study Site] Environment & Programs

What aspects of the Museum environment at [the study site] support a positive experience for the child? (short answer)

What aspects of the Museum environment at [the study site] create barriers for the child? (short answer)

When considering the child's needs and your family's schedule, what times during the week work best for a visit to the Museum? (Select all that apply)

What is the approximate amount of time the child is comfortable participating in an environment like [the study site]? (multiple choice)

Has the child participated in any classes, camps, and/or programs at [the study site]? (Yes / No / Interested / Not Interested)

What aspects of classes, camps, and/or programs create barriers for the child? (short answer)

Do you have any interest in participating WITH the child in class, camp, or program? (yes; no; other)

Would you or the child be interested in a class, camp, or program that involves the entire family? (yes; no; does not apply; other)

What is the approximate amount of time the child is comfortable participating in a class, camp, or program environment? (multiple choice)

What topics or themes would the child find most interesting for a class, camp, or program? (short answer)

If a [study site] instructor is present, would the child be comfortable participating in a class, camp, or program without their parent or guardian present? (multiple choice)

APPENDIX G – Observation Worksheet

Observation Type / Number:

Observation Date:

Event / Program:

Exhibit Area / Museum Location:

Start Time:	End Time:	Duration:
Participants (# of, age range)		
Activities:		
Motivations:		
Tools / Resources / Modifications:		

APPENDIX H – Observation Informational Flyer

Project Title: Creating Inclusive Experiences in Children's Museums: Programming and Resources for Children with Autism Spectrum Disorder

Researcher: Cassandra Coffey, University of Wisconsin-Milwaukee

Study Location: [Study Site}

This study is being conducted in part to fulfill requirements for a Master of Science in Anthropology degree in the Anthropology program at the graduate school of University of Wisconsin-Milwaukee in Milwaukee, Wisconsin.

The purpose of these observations is to identify how the environment of daily drop-in programs and/or museum accessibility events may positively or negatively affect children with autism spectrum disorder. No risks are anticipated and participating gives you an opportunity to help the researcher understand how children's museums may become more inclusive to children with autism spectrum disorder.

Adults and children will be observed. No identifying information will be collected during observations. The total number of participants and their perceived age range will be noted. Focus of the observation is on the program and/or event environment; the facial expressions, body language, and statements of participants; and program tools, resources, and activities.

Your participation in this observation is voluntary, and you may withdraw at any time. **Please inform the researcher if you do not want yourself or your children observed.**

If you have questions or concerns about this research, please contact: Cassandra Coffey; 608-214-7020; cscoffeyuwm@gmail.com or Dr. William Wood; 414-229-6323; woodw@uwm.edu.

If you have questions about your rights or complaints towards your treatment as a research subject, please contact: UWM IRB; 414-229-3173; irbinfo@uwm.edu.

APPENDIX I – Daily Programming Sample 1

Daily Program Type: *Storytime* Developed By: Cassandra Coffey
Duration: 20 minutes Location: Gallery

Materials

• Visual Schedule (Hello, Story, Song, Story, Goodbye)
• Large Rug
• Cube chairs, bean bags, and benches
• Books
  ○ *Shake the Tree!* (Vignocchi, Chiarinotti, and Borando 2018)
  ○ *The Very Hungry Caterpillar* (Carle 1969)
• CDs: *Vote for Jim Gill* (Gill 2016)
• CD Player
• Egg Shakers
• Felt Board
• *The Very Hungry Caterpillar* Felt Story
• Accessibility Toolkit

Environment
• Position rug and chairs in the center of the room • Doors should remain closed during program • Position "*Storytime* / Okay to Enter" sign outside of the room • Position accessibility toolkit on the counter or table near entrance to the room

Lesson Plan
• [introduce "hello" card] Welcome visitors to *Storytime*; Remind them that it is okay to "wiggle, wander, or leave" [remove "hello" card] • [Introduce "story" card] *Shake the Tree!* w/ Egg Shakers [remove "story" card] • [Introduce "song" card] "One from the Left (A Finger Play)" [remove "song" card] • [Introduce "story" card] *The Very Hungry Caterpillar* w/ felt board [remove "story" card] • [introduce "goodbye" card] "Tickle the Clouds" [remove "goodbye" card]

Skills
• Fine motor (e.g. grasping, shaking, finger play, and tickling) • Gross motor (e.g. reaching, waving, crossing the midline, and clapping) • Other: learning left vs. right, counting, language development, picture recognition, body awareness, etc.

Engagement

• *Shake the Tree!*
  ○ "What animals do you see?"
  ○ Ask adults to help children pass egg shakers from one hand to the other

- "One from the Left (A Finger Play)
    - Ask adults to participate along with the children during the song and demonstrate the finger movements
    - "What other dance moves can your fingers do?"
- *The Very Hungry Caterpillar*
    - "What do you like to eat when you are hungry?"
    - Ask children to help identify and move felt pieces onto the board

Notes

- "Tickle the Clouds"
    - *Tickle the clouds, tickle your toes, turn around, and tickle your nose. Reach down low, reach up high, Storytime is over, so wave goodbye!"*

APPENDIX I – Daily Programming Sample 2

Daily Program Type: *Music Time* Developed By: Cassandra Coffey
Duration: 20 minutes Location: Gallery

Materials
• Visual Schedule (Hello, Instrument, Song, Activity, Goodbye) • Claves • Animal pictures (bear, crab, bunny, turtle, penguin)

Environment
• Position large rug in the center of the room • Position benches away from the center of the room • Doors should remain closed during program • Position "*Music Time* / Okay to Enter" sign outside of the room • Position accessibility toolkit on the counter or table near entrance to the room

Lesson Plan
• [introduce "hello" card] Welcome visitors to *Music Time*; Remind them that it is okay to "wiggle, wander, or leave" [remove "hello" card] • [Introduce "instrument" card] Tapping Syllables in Names w/ Claves [remove "instrument" card] • [Introduce "song" card] "Head, Shoulders, Knees, and Toes" [remove "song" card] • [Introduce "activity" card] Animal Walking [remove "activity" card] • [introduce "goodbye" card] "Tickle the Clouds" [remove "goodbye" card]

Skills
• Fine Motor (e.g. grasping and tickling) • Gross Motor (e.g. tapping, reaching, waving, bending, walking, hopping, crawling, and waddling) • Other: syllables, tempo, body awareness, name recognition, rhythm, counting, etc.

Engagement

• Tapping Syllables in Names w/ Claves
  ○ Words have different parts when they are pronounced. These are called syllables. Give examples (1) egg, (2) wa-ter, (3) el-e-phant
  ○ After tapping your name, repeat and count the number of taps
• "Head, Shoulders, Knees, and Toes"
  ○ Tempo is the rate or speed of something. Music can be played or sung at different speeds. We will change tempos while singing and dancing to "Head, Shoulders, Knees, and Toes"
  ○ "What are some other things you can do fast/slow?"
• Animal Walking

- Ask adults to help demonstrate each animal walk with the children
- "What are some other animals we can walk like?"
- Ask children to change the tempo of their animal walk

Notes

- "Tickle the Clouds"
  - *Tickle the clouds, tickle your toes, turn around, and tickle your nose. Reach down low, reach up high, Music Time is over, so wave goodbye!"*