

**creating an adaptable museum
experience for families living with autism**



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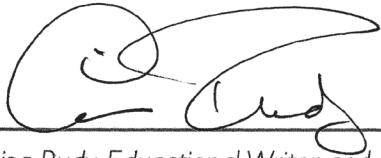
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introduction

introduction:

disclaimer

This thesis was written and researched with the understanding of Autism Spectrum Disorders as defined in DSM-IV (Diagnostic and Statistical Manual of Mental Disorders). Throughout this journey, there were articles that talked of the potential definition change of Autism Spectrum Disorders. The definition may have changed, but the difficulties and challenges that this community face are still the same.

For purposes of this thesis, and ease of reading, families from this point on are defined as families where at least one child is diagnosed with an Autism Spectrum Disorder.

introduction:

nomenclature

Nomenclature (alphabetized) Autism Spectrum Disorder, Autism, ASD

As defined by DSM-IV (Diagnostic and Statistical Manual of Mental Disorders) which includes; Autistic Disorder, Pervasive Developmental Disorder, Not Otherwise Specified (PDD-NOS), Asperger's Disorder, Rett's Disorder, and Childhood Disintegrative Disorder. Symptoms include, but are not limited to, qualitative impairments in social interaction, qualitative impairments in communication, restricted, repetitive, and stereotyped patterns of behavior, interests, and activities, and sensory modulation disorder.

DIR Model - The Developmental, Individual Difference, Relationship-Based (DIR) Model

A model of intervention for those with Autism Spectrum Disorders relying on developmental stages, relationships between the 'patient' and facilitator and the, "...individual differences in the way the kids process the world...(Tippy 123)."

The DIR model encourages parents to use their imagination to facilitate play with their children, and does not focus on behavior as do other models such as ABA (Applied Behavior Analysis). ABA focuses on 'surface behaviors,' immediate changes necessary for the child to interact in our world 'properly.' "ABA therapists

believe that you can change a person's behavior by reinforcing (rewarding) behavior that you want to increase and withholding reinforcement (not rewarding) behavior that you want to decrease (Husseini 6)." While both models help make significant improvements in the life of someone with autism, because of this model's focus on relationships, problem solving, and critical, meaningful thinking, the DIR model is much better suited to a museum environment.

introduction:

nomenclature

Disabilities

(As defined by the World Health Organization) “Disabilities is an umbrella term, covering impairments, activity limitations, and participation restrictions. An impairment is a problem in body function or structure; an activity limitation is a difficulty encountered by an individual in executing a task or action; while a participation restriction is a problem experienced by an individual in involvement in life situations. Thus disability is a complex phenomenon, reflecting an interaction between features of a person’s body and features of the society in which he or she lives (WHO 1).”

Through this definition one realizes that it is the environment that disables this audience from thriving and learning. Creating an enabling environment within a museum may help this audience engage, thrive, and learn.

Exhibition

An entire handling, using dimensional media, of a defined subject (such as the work of a painter, a period in history, a collection).

Exhibit

A unit within an exhibition. Also sometimes used to refer to an individual artifact or specimen in an exhibition.

Families experiencing autism

For the purposes of this thesis, families are described as family units of both children with autism and children who are neurotypical. “In [the] USA, it is estimated that ... another 15 million (parents, health care professionals, [siblings,] loved ones etc) gets directly impacted by autism (Khare 67).”

Inclusion

The action or state of including or of being included within a group or structure. By creating exhibition designs that consider as many of visitors’ needs as possible, museums can work toward being inclusive to all groups.

introduction:

nomenclature

Neurotypical

Neurotypical is often used to define those not diagnosed with a neurological or developmental disorder such as ASD.

Proprioceptive Sense

This is also sometimes called the kinesthetic sense.

“The word proprioception refers to the sensory information caused by the contraction and stretching of muscles and by the bending, straightening, pulling, and compression of the joints between bones (Ayres 41).”

This sense is especially pertinent to museums as spaces, this sense helps us understand where we are in a space and how we interact and move about that space. “This information

enables the brain to know where each part of the body is and how it is moving (Ayres 201).” Children who have difficulty interpreting this sense can be clumsy, uncoordinated, and can have difficulty performing different tasks. Though museums cannot fix this misinterpretation in the body, exhibitions should strive to consider this sense in developing and executing spaces that are comfortable and easy to use.

Respite

For this thesis, the meaning of respite is interpreted as a relief for parents and families experiencing autism and as a time of relaxation, enjoyment, and enrichment within a museum setting. Respite can be incredibly important to a family dynamic and a families’ ability to cope with difficult situations. When the parents are less stressed, they are more capable of handling difficult situations.

introduction:

nomenclature

Sensory Processing

We all process information from our senses. Our perception is characterized by three processes; selection/attention, organization, and interpretation. Our perception is interpreting everything, at all times. It is how the brain interprets and reacts to perceptions that becomes a difficulty for some with an Autism Spectrum Disorder. Lucy Jane Miller, PhD., OTR, is one of the best-know SPD (sensory processing/modulation disorders) researchers in the world, her work focuses on the complexities and inner-workings of sensory processing disorders and giving this disorder a voice. “Sensory processing is a term that refers to the way the nervous system receives

sensory messages and turns them into responses (Miller 4).” For example, author Chantal Sicile-Kira writes in her book Adolescents on the Autism Spectrum: A Parent’s guide to the Cognitive, Social, Physical, and Transition Needs of Teenagers with Autism that her son Jeremy, who has autism, is unable to control his bowel movements when under bright fluorescent lights. Some diagnosed with autism can only process one sense at a time and therefore have difficulties learning in standard classrooms because of the sensory overload (lights, colors, multiple sounds).

Sensory Modulation Disorder

This disorder is used to describe those who have, “...a chronic and severe problem turning sensory information into behaviors that match the nature and intensity of the message (Miller 21).” There are a subsets of this disorder which include sensory over-responsivity, sensory under-responsivity, sensory seeking, sensory-based motor disorder and several others. The range of senses expands beyond the five that we often hear about. The Proprioceptive, Vestibular, and Visceral senses should also be considered when creating exhibitions that cater and consider the senses.

introduction:

nomenclature

Sensory Over-Responsivity

“Children with sensory over-responsivity (sometimes called “sensory defensiveness”) respond to sensory messages more intensely, more quickly, and/or for a longer time than children with normal sensory responsivity (Miller 22).”

Sensory Under-Responsivity

“Children with sensory under-responsivity exhibit less of a response to sensory information than the situation demands, taking longer to react and/or requiring relatively intense or long-lasting sensory messages before they are moved to action (Miller 25).”

Sensory Seeking

“Children ... have a nearly insatiable craving for sensory experiences and actively seek sensation, often in ways that are socially unacceptable (Miller 28).” Children who exhibit sensory seeking behaviors may become fixated on certain senses as well. One child may love the feeling of fans and wind on his face and stand in front of an air conditioner for hours.

Sensory-Based Motor Disorder

“Sensory-Based Motor Disorder, the second classic pattern of SPD [Sensory Processing Disorder], describes the dysfunction that occurs when the “hidden” proprioceptive and vestibular senses that allow our bodies to move and sense our position

are impaired. ... Children with SBMD have trouble with stabilizing, moving, or performing movement sequences, such as opening the car door and getting into the car seat (Miller 30-31).” Dr. Gil Tippy at the Mac Consortium Lecture, explained that one of his students had difficulty ‘feeling gravity’ and understanding that feeling of gravity and would lie on the floor to satisfy and understand his feelings.

introduction:

nomenclature

Universal Design

“...increases usability, safety and health through design and services that respond to the diversity of people and abilities (Kanics 1).” There are seven principles of universal design; equitable use, flexibility in use, simple and intuitive use, perceptible information, tolerance for error, low physical effort, and size and space for approach and use. “Universal Design has most commonly been applied in connection with physical or sensory impairments and thus, at least in practice, does not specifically address the needs of individuals with significant cognitive impairments. Yet there is an increasing number of people who suffer from cognitive impairment who could also benefit

from environments that are more usable (Preiser 22.1).” With autism, universal design can also be interpreted to refer to differences in learning styles and communication styles.

Vestibular Sense

This sense helps our body understand gravity, head movement, and balance. “The combination of input from the gravity receptors and the semicircular canals [in the ear canal] is very precise and tells us exactly where we are in relation to gravity, whether we are moving or still, and how fast we are going and in what direction (Ayres 42).”

Visceral Input

This sense tells us what is going on inside our body. “Visceral input helps to regulate blood pressure, digestion, breathing, and other functions of the autonomic nervous system. Visceral input also tells the brain how much food and water is needed in the body (Ayres 42).”

introduction:

introduction to the thesis

With the diagnosis of Autism Spectrum Disorders on the rise, (it is now estimated that autism affects 1 in 88 children and 1 in 54 boys according to the United States Center for Disease Control) more museums are receiving requests from families with autism, looking to plan family activities that are appropriate and comfortable for their children. This is an audience that can truly benefit from the informal learning setting that a museum offers. Multiple points of entry into the topic of an exhibition help those who learn differently still enjoy and learn during their visit. Museums are already set up to help visitors learn in many ways, but how can they better physically accommodate this group? Physical

accommodations can add to, and enhance, programming within museums and add another layer to the experience that families have. By looking at both sensory and developmental needs, museums can address the needs of this audience in a thoughtful, effective manner by providing opportunities for adaptable experiences and .

Difficulties visiting a museum for those with autism

Individuals and families experiencing autism can be overwhelmed, or overstimulated, when visiting a museum. This sensory and emotional overload, that is particular to certain types of museums, is just one barrier that can make it difficult to learn

or engage in activities. Crowds of people at science museums on busy Saturdays create feelings of claustrophobia, bright colors in some children's museums make it difficult to focus, museums can be an unconscious attack on the senses for everyone and stares from the public for atypical behaviors are stressful. Exhibitions should strive to develop copy that is free of difficult language, but the 'voice' can be confusing. By avoiding idioms and creating clear language, information can be easily translated by parents who are reading to their younger children. There are also physical limitations, which limit access, thereby excluding people from an experience. The feeling of uncertainty and confusion can

introduction:

introduction to the thesis

be unbearable and makes going to museums feel like a chore, rather than an enjoyable leisure activity.

“For these parents, they don’t get the typical experience of the son or daughter gaining the same level of independence, there’s still a high demand for day-to-day responsibilities’... (Ghose 1).” An engaging experience in a museum is an effective means of respite for these families. Parents don’t want time away from their child, they want time where their child isn’t seen as ‘odd’ or ‘inappropriate.’ Museums can create experiences where parents can see their child for their personalities and not for their autism.

So what can be done?

Creating experiences, incorporating the DIR Model (see nomenclature section), that support individuals with ASDs and their families within museums will be a positive experience for both groups. Parents and children interacting together can help the children develop.

With the range of unforeseeable and unexpected behaviors and challenges with Autism Spectrum Disorders, many museums may find the inclusion of this audience a daunting task.

This thesis aims to create a prototype exhibition intended to help museums on their path to inclusion and offer suggestions of other ways to incorporate this audience. The goal

for this prototype exhibition is for families to have a typical museum experience of fun activities, learning, and engagement in a ‘typical’ museum setting.

introduction: *mission*

Parents and their children both diagnosed with an ASD and neurotypical, need memories and experiences to share together as a foundation for their relationship. This thesis will create a prototype for a much needed restorative, educational, exhibition experience within a museum for a family experiencing autism. Creating a space by considering the many facets of Autism Spectrum Disorder will help break down some of the barriers these families face when visiting museums. By providing families with opportunities to explore an exhibition that will feel like any other museum space (but be more in tune to their needs) will allow for opportunities for both parents and children to learn

as a family. Though creating a space specifically for this audience may seem like segregating this population, a space unto their own is the best way to ensure that their experience is a positive one.

introduction:

goals

- To analyze the range of different sensory, cognitive, and social needs of individuals with Autism Spectrum Disorders to find ways in which museums and exhibition spaces can best accommodate these needs for individuals and families.
- To provide interpretation for all levels of learning and provide suggestions for play and interaction, as well as provide interpretation about the physical exhibition (how and why these choices were made, how it affects the exhibition as a whole).
- To design an exhibition environment where families experiencing autism feel comfortable exploring the exhibition as a group or individually. When parents and children are comfortable, the barriers (stress, cognitive, social, and verbal) are removed and access to information is more fluid.
- The project (application) of this thesis will create a prototype exhibition experience, considering the sensory, cognitive, and social needs of families, and provide appropriate content.

the audience

the audience

parents, siblings, and family concerns


Going out in public can be a scary, stressful, or intimidating experience for parents (and siblings) of children with an autism spectrum diagnosis.

also carry this burden, as well as the feeling of being shunned when their child acts against societal norms.

In these uncomfortable situations, the younger or older siblings can sometimes go on the defensive when they are around their sibling(s) with ASD and other children. These neurotypical siblings want to protect their brothers and sisters from bullying, name calling, confused looks and more. By creating a space that caters towards their siblings, these children can relax and enjoy playing and being kids. It is important that any visitor to a museum does not feel judged or ostracized for their behaviors that are atypical. Parents


the audience

survey responses: Garden State Discovery Museum

 What do you look for in an experience for you and your family?

A: Something that will keep them [the kids] occupied, something that they enjoy, stuff they can get into, things they can touch, [for me] a chance to socialize with other parents

A: Exposure [to] things he doesn't do or doesn't like to do.

 What difficulties does your child have when visiting a public place?

A: "Getting used to different kids, running and being close. He takes a bit of time to warm up to people."

A: "Keeping him contained, not too many escape routes."

A: "Tantrums over something he doesn't understand, or can't buy, big crowds."

Other Comments:

One mother surveyed was watching her two neurotypical daughters play hockey "my son is somewhere in the building," she said. She mentioned that it was refreshing for her to be able to spend time with her daughters, and for her son to have some time to himself. He had found a school friend and they were playing together. She knew that there were staff around and that there weren't many exits to the building, he was safe.

"He has an iPad, its been amazing, he likes to read the animated books, he hasn't fully learned how to read yet but these are really helping him develop his skills."

the audience

respite care

“Raising a child with disability or chronic illness poses many challenges. As families meet these challenges, time off can become a necessity for the caretakers (Ambler 1).”

“Social and community support can reduce stress experienced by families (Ambler 1).”

Museums have the unique opportunity to provide respite for visiting parents. Though museums are not typical respite settings, a fun experience between family members can become a great part of their day. Benefits of respite care include; relaxation, enjoyment, stability, preservation, involvement, time off, and enrichment.

If the parents feel that their children are safe, they may be able to open up and chat with other parents.

Not only does this happen between parents everywhere, at soccer games, school plays, and play dates, but it also allows for parents to share information, problem solve, and communicate with others who know exactly what they are going through.

Parents experiencing autism in their child or children have an extra set of stressors put on them that parents of neurotypical children do not experience. Finding therapy, working with the school district, doctors visits, and general day to day tasks can overstretch parents, and though a museum experience may seem like

a stressful task, the result can be beneficial to both the parents and children.

Though a museum visit may take up only a small amount of the day, the relaxation it can afford and the enjoyment of playing with one’s children can be a great way to keep the family bond strong and stable.

the audience

the Developmental Individual-Difference Relationship-Based model

The DIR Model, which was developed by Dr. Stanley Greenspan, encourages parents to use their imagination to facilitate play with their children. This model does not focus on behavior as do other models such as ABA (Applied Behavior Analysis). In the ABA model, surface behaviors (not making eye contact, not using the sink properly) are addressed, and rewards are used when the proper behavior is shown. Though both models were developed to help those with autism transition and live in a neurotypical world.

The DIR Model relies on the emotional connection and relationships that parents, caregivers, and practitioners can form with the children, which is believed to be critical to the development of children.

The Development (the D in DIR) part of the model is defined by nine milestones, (some practitioners only use the first six) these are partnered with a general age range. These six milestones are characterized as, “the developmental milestones that every child must master for healthy emotional and intellectual growth ... These developmental capacities are essential for spontaneous and empathic relationships as well

as the mastery of academic skills (DIR ICDL 1).” Note that it is desirable for all children to reach the sixth milestone before they enter kindergarten, but that isn’t always the case. Though there are ages given to each stage, not all children progress at the same time.

the audience

the Developmental Individual-Difference Relationship-Based model

DIR practitioners who work with children with autism believe that the difficulty and challenges of autism exist between milestones four and five. At level 5, children should be able to respond to a 'why' question with an answer that has depth and reasoning. Ask some children with an autism spectrum disorder why they like a certain movie, and they will be unable to answer. They may say 'its cool' or 'its funny,' but not be able to give you an answer that has meaning.

The I of DIR stands for Individual Difference, this model recognizes that every person who has autism, or who has developmental differences, is different and requires different attention and has varying needs.

Parents are encouraged to use their imagination and intuition about their child to interact with them prompting learning, problem solving, and more meaningful thinking.

The R stands for Relationships, this model encourages parents to form lasting relationships with their children, those relationships then in turn help the child develop and grow.

The DIR Model is an exciting way for parents to both interact with their children and help them develop. But often coming up with imaginative ways to interact is difficult.

Museums can help stimulate both parents and children's imagination to help them play in new and educational ways. Museums already provide prompts for visitors, asking them to think about objects or ideas in new ways. These prompts can simply be adjusted to suggest to parents and visitors different games, ways to play, or ways to think and interact with their children.

Practitioners of the DIR Model, and museum professionals, believe that nothing happens developmentally if it is not meaningful.

the audience

the Developmental Individual-Difference Relationship-Based model

1 - (0-3 months) - Ability for regulation and shared attention.

2 - (2-6 months) - Ability to form relationships, attachment, and engagement.

3 - (4-9 months) - Ability to conduct two-way, purposeful communication.

4 - (9-18 months) - Ability to problem solve; use gestures in a continuous flow, and support a complex sense of self.

5 - (18-30 months) - Ability to use idea representationally and functionally." Creative and meaningful thinking, abstract thinking.

6 - (30-48 months) - Ability to build logical bridges between ideas and emotional thinking.

7 - Ability to engage in multi-cause, comparative, and triangular thinking

8 - Ability to differentiate emotional grey-area thinking.

9 - Ability to support intermittent reflective thinking, a stable sense of self, and an internal standard.

in the field

museums including, and creating
programs for, those with autism

in the field

introduction

The criteria for which the following examples from the museum field were examined and evaluated are based on concepts taken from the DIR (Developmental, Individual-Difference, Relationship Based) Model and elements of a diagnosis of an Autism Spectrum Disorder.

The **first category** comes from the DIR Model. This category assesses the developmental level, and the ease with which it can be changed or adapted for different audiences. Do the programs and museums below target their information to the appropriate developmental level? Are the exhibitions and programs helping kids with an ASD problem solve, interact with others, create

a continuous flow of dialogue and interaction, or think abstractly? In other words, do the case studies help mitigate the 'plateau' between levels 4 and 5 (see p. 24) on the DIR Functional Emotional Developmental Milestones?

The **second category** is the ability of the program or exhibition to promote and encourage the building of relationships. Social interaction is an important skill that those with an ASD often have difficulty mastering, and can be vital to the museum experience. Social interaction in museums creates a new level of learning and can create a richer experience; talking and sharing ideas that other visitors

see can lead to new discoveries. Social interaction is also key in the DIR Model. Social interaction between parents and children help foster relationships and help the child develop. The development of relationships is something that this thesis strives to do within the family unit, and developmentally appropriate exhibits are key to allowing 'access' to information and sharing and enjoying that information. By sharing, learning, and playing together relationships and memories can continue to form and grow.

in the field

introduction

The **third criteria** is an aspect of autism that is addressed by the DIR model and important to the comfort and enjoyment of a museum's exhibition. The sensory modulation and processing differences that some with autism face should be considered when developing a program or exhibition for those with autism. These differences in processing relate to the design of museums and the experiences that those designs offer. Sensory differences, both sensory seeking and sensory modulation, need to be considered in design and programming in order to create effective spaces and access to learning and play. Effective spaces that consider sensory needs can be ones that consider lighting, loud

noises, textures, and how space 'feels.' These spaces can also provide sensory stimuli for those who crave sensory input; fans, ball pits, textured surfaces, and bean bags all can be satisfying.

These examples are divided into sections through the ways that they accommodate their audiences with an ASD. Each section is an interpretation of their relevance, divided into three categories; developmental level, fostering relationships, and sensory affordances.

in the field

museums that provide extra tools for visitors

Title of Program: ‘Adventure Packs’

Location/Host Institution:

Children’s Museum of LaCrosse,
LaCrosse, WI

Objectives: “The Children’s Museum of La Crosse can be a fun place, but it can also be a bit overwhelming for autistic children. ... Chileda [Institute] has provided the museum with five adventure packs filled with ways to help autistic children enjoy the Children’s Museum (Knutson 1).” “The backpack includes tools individualized for different exhibits, allowing autistic children to plan their museum visit. Earmuffs are included to combat

sound sensitivity. The backpacks are one element Chileda is embracing, as they have plans to train employees on interacting with autistic people (Adventure 1).”

Staffing: Parents, Museum Staff

Duration: Whenever the ‘packs’ are available

Curriculum: Family interaction, informal learning

in the field

museums that provide extra tools for visitors

Title of Program: 'Exploring Our Way'

Staffing: Museum Staff, trained volunteers

Location/Host Institution:

Children's Museum of New Hampshire, Dover, NH

Duration: 2 hours, 7 dates throughout the 2010-2011 year

Objectives: "The Exploring Our Way program takes place when the museum is closed to the public and offers families a chance to explore the museum together, with support as needed from museum staff, trained volunteers, and special materials that include mapping tools and social stories. ...families are welcome to stay and play after the museum opens to the public at noon (Bricker 1)."

Curriculum: Family interaction, informal learning

in the field

museums that provide extra tools for visitors

Developmental Level:

The adventure packs help those with autism by creating another level of interpretation, having more information allows parents to help their children learn in the best way possible. These extra tools help parents and staff adapt the child's learning to an appropriate level, providing for levels 4 (problem solving) and 5 (meaningful thinking) on the Functional Emotional Developmental Milestones Chart. The extra materials provide parents with more means of communication, knowledge, and interaction with their child. The more materials and information available, the more resources parents will have and the greater the opportunity they have to

become the facilitators (and learners) in their children's experiences.

Museum exhibitions can also provide multiple ways of 'entering' a topic. By providing for different learning styles and abilities (creating wall text for those who learn best by reading, audio and video for those who learn best by listening, physical activities for those who learn best through movement), museum exhibitions of this nature can aim to accommodate a broad audience of abilities.

Relationships:

With trained volunteers and autism-only hours, parents can relax and enjoy their visit knowing everyone else (other visitors and staff) at the

museum understands their situation and the needs of their children. This is an effective way to help include audiences with autism because adding volunteers allows for parents to learn new ways to facilitate learning with their children, and gives children the opportunity to interact with people outside their family. As discussed in the DIR section, forming, developing, and fostering relationships is key to a child's developmental growth.

in the field

museums that provide extra tools for visitors

By creating physical design elements that foster communication and interaction, parents and children can play together and learn.

Interactives that require teamwork or conversation (verbal and non verbal) is one way an exhibition can help provide shared experiences for parents and their children to enjoy together. Shared experiences and shared memories are key to our personhood and how we relate to each other.

Sensory:

Plausibly, these packs could also contain tinted glasses, squeeze balls, and other means of mitigating sensory issues to add to the earmuffs. By helping children stay regulated during

their museum experience, they will be able to stay longer and enjoy the museum. Chantal Sicile-Kira has recommended to her readers that children who are easily affected by smells to carry a swatch of scented fabric with them.

These aides could also be provided in a physical design setting, both as objects for the children to wear, and designed into the exhibition so that the child wouldn't have to wear an extra object in order to enjoy his/her time. By selecting materials that buffer sound, extraneous sound and loud noises can be mitigated. By using lighting on dimmers, that can be individually controlled in each exhibition 'module,' families can

select the light setting that is most comfortable for them. Choosing the right lamps with appropriate brightness and fixtures with a wide range of angles can also help create bright, accessible spaces.

in the field

museums providing multiple session programs

Title of Program: Supplemental Autism Program: An after-school program for children with Autism Spectrum Disorders.

Location: Kern County Museum, Bakersfield, CA

Objectives: “The Supplemental Autism Program was created to provide a structured after-school learning environment for students with diagnoses of Autism Spectrum Disorders/Asperger Syndrome. Thematic teaching is used to develop skills throughout the year with creative arts and crafts, community-based instruction, and social skills development (Supplemental 1).”

Staffing: The Supplemental Autism Program offers individualized instruction in both individual and small groups.

Duration: 2 hour sessions

Curriculum: Skill development, social skills

in the field

museums providing multiple session programs

Title of Program: Beautiful Oops!
Making Accidental Art

Location/Host Institution:
Queens Museum of Art, New York
City, NY

Objectives: “ In this 6-week series, students will make art inspired by the book by Barney Saltzberg, Beautiful Oops! A book that shows how art can be made accidentally from torn paper or a coffee stain! Educators will demonstrate how there are no mistakes in art! Parent & Child will be paired to participate and explore sensory-based activities together. Artwork will be displayed during a culminating event. Teaching artist will guide students through a

multi-sensory art making experience while an instructor knowledgeable in facilitating the engagements of children with an autism spectrum disorder support students’ individual social, language and learning goals. This is a family program, limited to only 6 families. All family members are encouraged to participate including siblings, grandparents and friends (Explorers 1).”

Staffing: Museum staff

Duration: 6 weeks - on Mondays

Curriculum: Family, art, hands-on

in the field

museums providing multiple session programs

Title of Program: Subway Sleuths

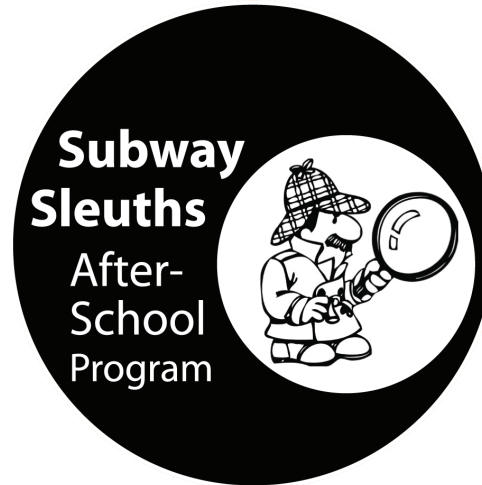
Location/Host Institution: New York Transit Museum, New York City, NY

Objectives: “Subway Sleuths - an after-school program for autistic children ‘...that focuses on the history of New York City trains but seeks to make the children more at ease socially (Haughney 2).”

Staffing: Museum staff

Duration: 10 week Program - 200 suggestions fee

Curriculum: Social skills, learn about the subway system and travel



in the field

museums providing multiple session programs

Developmental Level:

These programs help children with autism slowly build on previous knowledge. By building on previous knowledge, problem solving skills can develop, as well as creative, meaningful, and abstract thinking, following the 4th and 5th levels of the DIR Model.

Relationships:

By adding family members to a consecutive program, the family can build memories in a new environment and learn something new as well. By having a continuous program, kids can build relationships with other participants as well as grow more comfortable with their environment.

Sensory:

These cumulative programs can help children learn new skills, as they continue through the program they become more familiar with their surroundings and thus become less distracted by new surroundings as they would for a first time visitor. Though environmentally, the museum stays the same for these programs, museums do and can design their programs and content around this audience. By considering all the variables, museums can create effective programs that help acclimate children into a new environment, learn new skills, and possibly have a meaningful experience with their family.

Museum exhibitions can also benefit from these repeat programs, providing exhibitions that are comfortable and allow for easier access to information. Comfort is key when trying to teach new skills to a group that can have difficulty focusing and transitioning to new activities.

in the field

museums providing altered hours and autism-only hours

Title of Program: Open Arms:
Family Evenings

Location/Host Institution:
Garden State Discovery Center,
Cherry Hill, NJ

Objectives: “One night every season, the hands-on children’s museum opens its doors for free to autistic kids and their parents, and it lets them explore the center for two hours in an accepting environment without large crowds (Grzybowski 1).” This program has been running for five years. Four times a year, once each season, the museum opens its doors after-hours and has free admission for families with a child who has an ASD.

The museum also creates ASD-friendly programs. Their most popular activity is a program room filled with colored shaving cream, an incredibly simple but fun tactile experience for kids. The museum also creates a “cool down room” that is dimly lit and has plush pillows to sit on with soft music. In case of an outburst or over-stimulation, the parents can let their child cool down and relax without having to go home.

Duration: One Sunday night, every season (Spring, Summer, Fall, Winter)

Curriculum: Play, social skills, parent networking

There are many other museums who also have altered hours for their audience with autism and their families; Autism Family Night at the Boston Children’s Museum, Autism Family Night at the Delaware Children’s Museum, Autism Awareness Family Celebrations at the Dallas Museum of Art, Sensory Sensitive Hours at the Children’s Museum in Seattle, Washington and Connor’s Friends at the Children’s Museum in Grand Rapids, MI, just to name a few!

in the field

museums providing altered hours and autism-only hours

Title of Program: Sensory

Sensitive Hours

Duration: 8:30 - 10AM, the first

Saturday of each month

Location/Host Institution:

Children's Museum, Seattle

Curriculum: Family interaction,

social skills

Objectives: "The Children's Museum, Seattle is proud to open our doors early to provide a sensory sensitive environment for children affected by disabilities or autism. The Museum opens early with minimal sounds and dimmed lights, providing a quieter environment for children who may be over stimulated by the normal Museum activity (Autism, Seattle 1)."

Staffing: Museum staff

in the field

museums providing altered hours and autism-only hours

Developmental Level:

These opportunities also allow neurotypical children to play with their siblings who have an ASD. The parents can relax knowing that no one is judging their child's behavior and the children can play without the common museum restrictions (be quiet, don't touch things).

Relationships:

While observing during one of the GSDC's Open Arms Nights, a family with two neurotypical children and their 4 year old brother, who had autism. The two older siblings were at least elbow deep in the colored shaving cream while their dad watched and talked with them about how silly it felt. When their mom came in with their younger

brother, his two siblings immediately asked if he wanted to join in. Their dad mentioned that these sensory activities were NOT something that this four year old enjoyed, and his parents knew not to push. But his siblings kept offering and playing, and all of a sudden, the four year old dipped one finger in the shaving cream. His parents were ecstatic and started taking pictures of this seemingly insignificant task. As a family, they were able to bond and play on a whole new level, because of this simple program room.

Providing autism only hours is integral to parents' comfort in a museum. Providing an exhibition specifically for those with autism and

their families only improves upon that comfort. When parents can relax, realizing that their environment is right for their children, they are able to interact with their children on a deeper, more meaningful level.

in the field

museums providing altered hours and autism-only hours

Sensory:

In addition to opening their doors early, or staying open late for families experiencing autism, these museums often provide programs during these hours. One example is the Garden State Discovery Center (GSDC), which has an ‘activity room,’ often filled with colored shaving cream. These museums also often create a “cool down room.” In case of an outburst or over-stimulation, the parents can let their child cool down and relax without having to go home.

These museums have considered their existing designs, and worked to mitigate some of the challenges they cause. For instance, loud dinosaur roars are muted, music and sound effects are turned off, and lights are dimmed. These simple fixes allow the children to more easily acclimate into a new environment, allowing them to be open to play.

in the field

sensory rooms

Originally developed in Holland by Jan Hulsegge and Ad Verhul for children on a case by case basis, Snoezelen rooms create sensory environments. These environments bring together lights, sounds, bubbles, tactile objects, music, and more to create a therapeutic, enjoyable environment. Many of these sensory rooms are programmable and can create many different environments from the same room. Bubble tubes that can change color, LED lighting that creates different moods, and many other changeable elements combine to create unique experiences aimed to help children learn, improve communication and functioning, and engage. “A SNOEZELEN MSE incorporates a specialized selection of

sensory equipment and materials that may help clients adapt their responses to sensory stimulation and to advance education and therapy goals (What is Snoezelen 1).”

Several museums have realized the potential for these sensory rooms and have installed them within their museum. Both the Brooklyn Children’s Museum and the Long Island Children’s Museum have created sensory rooms for their visitors.

Developmental Level:

Sensory rooms aren’t as much about learning as they are about physically experiencing different things. Though activities within the sensory rooms

could promote problem solving, and abstract thinking.

Relationships:

Sensory rooms provide both parents and children opportunities to experience new things together. There are also sensory pools where children and parents can swim together!

Sensory:

Sensory rooms provide many ways of adapting for individual experience. Sensory rooms go to the minute detail of color choice and music and sound level.

in the field

conclusion

Forming relationships, considering developmental level, and sensory accommodations are the three aspects that will help define and shape this museum exhibition as a place for families with autism to enjoy and learn. By looking at these case studies, museums can infer best practices and create an exhibition that houses the best and most successful aspects of each program.

Creating a different environment than school and home that feels safe and is exciting and that provides stimulation is huge.

A museum experience should be novel and exciting for every visitor. On the next page, “action steps” are laid out, combining the best ideas from the case studies and research from various experience and interior designers.

Ways to Include Autism in Your Institution

in the field *action steps for designers and museums*

Create a social story:

These allow parents to prepare their child(ren) for a visit to your institution.

Advertise your institution's quieter hours:

Let parents know the best times to visit. Days where there aren't field trips, lots of families, or large programs and activities. Your website is a parent's first impression on how well their children will be accommodated

Turn off or turn down the sound effects:

Loud, surprising noises are distracting and can be scary.

Turn down the lights:

Bright lighting can effect how much information visitors can take in.

Create a cool down room:

Provide soft pillows, fun night lights, calm music, and seating, because breakdowns happen. A cool down room with an exit is always a plus, providing an easy exit for families who just can't stay any longer.

Create programs and activities that cater to different needs:

Provide sensory activities, art projects, and musical instruments, remember Gardner's multiple intelligences; we all learn in different ways!

in the field

action steps for designers and museums

Provide areas for seating:

Kids like to run, sometimes parents need to sit, and sometimes kids need a break too.

Create areas where kids can't run off:

Some kids like to bolt, strategically placed exhibits, furniture and staff can help block runners from escape or injury.

Use Low-VOC (volatile organic compounds) Materials:

Some children are distracted or put-off by the smell of paint or the smell of plastic carpet.

Use hardwood floors/smooth non fabric floors:

Less dirt gets caught, less germs are trapped, and the floors are then easier to clean. Use natural material area carpets to mitigate the sound. Use natural cleaning products as well.

Provide opportunities for sensory stimulation:

Sensory rooms, sensory walls, and activities are all ways to help satisfy sensory needs.

application & design

This section introduces various design ideas and theories that could be implemented in an exhibition for this audience.

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application & design *transitions*

Children with autism, and even those of us who like to be scheduled and organized, like to know what is coming next. Transitions, and timing those transitions correctly, is a large part of creating a successful, smooth visit to a museum. Creating ways to alert visitors to transition times, be it the time to leave, or the time to go on to a new activity, will help families easily navigate their experience.

One means for a smooth transition from home to a new location is a social story. These story-book like devices explain to children what to expect when they visit the museum. For instance, a museum with lots of steps up to their front door may say in their social story, “We will see lots

of steps leading up to the museum. If we want, we can climb them and count them. If we are tired, there’s always the ramp!” This caption may come with a picture of a museum with lots of steps, and a child using the ramp instead to go into the museum. These pictures provide the reader with means to compare and recognize that they’ve already seen things. They prepare them to experience their day. Social stories were originally developed by Carol Gray, director of the Gray Center for Social Learning and Understanding in Grand Rapids, Michigan.

application & design

transitions

“A Social Story™ describes a situation, skill, or concept in terms of relevant social cues, perspectives, and common responses in a specifically defined style and format. The goal of a Social Story™ is to share accurate social information in a patient and reassuring manner that is easily understood by its audience. Half of all Social Stories™ developed should affirm something that an individual does well. Although the goal of a Story™ should never be to change the individual’s behavior, that individual’s improved understanding of events and expectations may lead to more effective responses (Gray 1).”

Social stories are a quick and easy way to prepare audiences with autism and other developmental differences. Many museums have begun to offer social stories on their websites so that parents can download them and use them at home.

Big Yellow Building



I am going to a big, yellow building called the Delaware Children's Museum. The Museum is a place where I can play, explore, and learn. There will be a lot of fun things to do with my family and friends while I am there. When I enter, it may be busy and noisy.



A PAGE OUT OF THE
DELAWARE CHILDREN'S
MUSEUM SOCIAL STORY

application & design

transitions

Another way that museums can help parents transition between activities is a visual clock. With the aid of the clock, children, and those who have difficulty telling time, can visually see time shrinking. When parents say, “Ten minutes, and then we’re going to go on to the next area,” the parents or children can set the clock, and a red area will diminish, visually showing the decreasing amount of time left for that activity. The picture shown (time timer) is a downloadable iPad application, but these visual clocks are an inexpensive way to help audiences transition with ease. This is not to say that activities within this prototype exhibition will be timed. Families should be allowed to spend as much time as desired. These visual

clocks could be made available within the exhibition to allow parents to help their child transition to another activity, or to ease the inevitable task of going home at the end of the visit.

Providing iPads for visitors to this exhibition could also be a way to help customize the visitors’ experience. A train schedule-themed application could create a means for families to ‘schedule’ their museum visit. iPads are an inexpensive means for providing a custom experience, and children with autism truly relate to this technology. There are many applications that have been developed for children and those with autism. While surveying parents at

the Garden State Discovery Center, several noted that their iPad was a great way for their children to interact and learn.

Physical train ‘ticket books’ could also be developed for this exhibition. Each activity area could be a new ‘ticket’ that the children could hand to a staff member (train attendant) or put the ticket into an interactive. Being able to know what is coming next is helpful to some with autism.



THE IPAD APPLICATION ‘TIME TIMER’

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prospect/refuge

“Prospect-refuge theory was first introduced as an explanation of human environmental preferences. It was believed that environments that afforded a certain amount of prospect (open view) and refuge (concealment, protection) offered an evolutionary advantage to humans (Appleton 1975) (Petherick 93).” These evolutionary advantages are still used today, porches on houses are an excellent example. While sitting on a porch you are relatively protected, not only from the elements but from potential ‘attack,’ and you also have the advantage of being able to see an impending ‘attack’ as well as see far ahead of you. As human beings, we tend to migrate towards these areas that are borders. By

incorporating areas of prospect and refuge, children who may be nervous will have opportunities to feel safe and protected, but still interact and enjoy the exhibit. Areas of prospect will allow them to look out on the activities, and safely engage by watching or doing small activities, these areas afford children with the opportunity to decide whether or not they feel safe enough to venture out into other exhibits. These refuge spaces could also be used as cool down rooms, similar to the one provided at the Garden State Discovery Center. Cool down rooms allow children to de-escalate safely, without having to leave the museum. By providing a cool-down room, families can stay longer.

Another means of looking at our interior environment is discussed in Julie Moir Messervy’s book, *The Inward Garden*, Messervy discusses the different archetypes of landscape, and how they relate to our perception of safety and comfort, which also have elements of the prospect/refuge theory. There are 3 of her archetypes that could relate to interior spaces and be used in a museum setting:

application & design

prospect/refuge

The Cave: Inside to Outside

Similar to the theory of prospect and refuge, this space is believed to be comfortable because of the security it provides. Our first experiences interacting with our environment come in cave-like form, from cribs and cradles to strollers.

Another support for the cave-like space comes from Clare Vogel's "Classroom Design for Living and Learning with Autism." "Just as a porch separates the house from the street, a transition space in the form of an alcove or differentiated hallway separates the classroom from the main corridor, providing important environment information from a safe, defensive position. Many adults with

ASD reported that having a tight, contained space nearby (such as a closet...) gave them a sense of control and release (Vogel 5)."

The Harbor - Enclosure with a View

This space is believed to feel safe because of the feeling it derives from sitting on our parents' laps. Complete with a 180 degree view of our world and a higher vantage point. With the protection of our parents behind us we feel able to visually explore our world.

The Promontory - At the Very Edge

"Most of us felt exhilarated by this daring vantage from which we could scan the world [crawling, walking], yet secure in the knowledge that we were connected still to the mainland represented by our parents and caretakers (Messervy 28)." Piers, the bow of a boat, and peninsulas all provide this promontory sense. In a museum setting, climbing structures and lobbies overlooking exhibitions can provide a similar feeling.

Providing opportunities like these three archetypes and the prospect/refuge theory can help satisfy our environmental needs, and help create spaces that feel safe.

application & design

prospect/refuge

Physical Presence of Prospect/ Refuge

One means of incorporating the ideas of prospect and refuge within an exhibition is by creating higher walkways and smaller alcoves. A higher walkway provides kinesthetic activity, while also allowing kids to see the entire train below and the exhibition in front of them. Creating clear walkways allow for parents to watch their kids explore, without having to fit through tighter spaces, and shorter tunnels and walkways allow kids to experience spaces without getting claustrophobic or scared. By installing both ramps and stairs, the museum can ensure that this experience is accessible to all. Creating points of refuge is incredibly

important for this exhibition.

Children with ASD may want to retreat and find spaces that aren't daunting to them. By creating smaller alcoves, children have the opportunity to feel safe, and build up confidence to venture out into the larger spaces. Smaller spaces with room for parents also allow for families to play together without distractions.

Pocket doors allow these alcoves to quickly and easily become enclosed spaces. By allowing visitors access to these doors, the museum can ensure that these alcoves become as private as needed. These intimate settings can provide learning and museum engagement on a single-family level. Semi-translucent doors

will provide the privacy desired while still allowing visitors to not feel completely secluded from the exhibition, and to allow other visitors to know that the alcove is occupied.

application & design

sensory modulation

As discussed in the nomenclature session (p. 11), a sensory modulation disorder can be among the challenges that a child with autism faces when visiting a museum. Dr. Miller devised charts that help parents and caregivers create comfortable environments.

These charts provide an excellent starting point to developing and designing spaces that accommodate children, and though not all children with autism experience sensory modulation disorders, it is important to consider them. Ultimately, creating comfortable environments is helpful to all visitors.

Dr. Miller provides charts for each disorder that she outlines in her book. These charts give readers helpful hints, tips, and best practice for each disorder. Many of the tips could be interpreted in a museum setting. Below are a few points that Dr. Miller suggests:

Sensory-Over Responsivity

Proprioceptive: provide exercise bands, trampolines, other self-calming devices

Spaces: Provide spaces that are not near other children (less distracting)

Visual: Use soft lighting, uncluttered decor

Auditory: Provide background white noise

Sensory Under Responsivity

Vestibular: provide things that create rotary movement, self-spinning devices, swings

Tactile: provide variety, noticeable differences

Proprioceptive: Provide things that require heavy work - jungle gyms, etc

Visual: Busy patterns, use lots of colors

Auditory: Constantly changing noise and sound

application & design

sensory over-responsivity

A SECRET for Environment		
Modify the ENVIRONMENT to produce calm, safe, and predictable surroundings with minimal sensory stimulation.		
Ask questions such as . . .		
<ul style="list-style-type: none"> • What sensory messages in my child's environment are distracting, alarming, or uncomfortable? • How can I modify the environment to make those surroundings more calm, safe, and predictable? 		
Devise strategies for home such as . . .	Devise strategies for school such as . . .	Devise strategies for community such as . . .
<ul style="list-style-type: none"> • Tactile: select textures for bedding, towels, upholstery, and carpet that are not uncomfortable to your child. • Proprioceptive: provide tools for heavy work, e.g., jungle gym, trampoline; provide self-calming devices, e.g., a weighted vest, exercise bands. • Vestibular: provide equipment for slow and rhythmic stimulation (preferably linear) e.g., rocking chair, glider. 	<ul style="list-style-type: none"> • Personal space: arrange for work space that is not close to other children. • Classroom space: request assignment to classrooms that are not "open" or unstructured. • Visual space: request assignment to classrooms that are visually uncluttered, organized, and calm. 	<ul style="list-style-type: none"> • Special events: avoid or prepare your child for settings that feature intense sensory stimulation, e.g., Chuck E. Cheese-type restaurants, malls, Fourth of July fireworks displays, birthday parties, sports stadiums, theme parks. • Service locations: choose shops and professional offices that are small, quiet, and predictable for visits with your child.

Devise strategies for home such as . . .	Devise strategies for school such as . . .	Devise strategies for community such as . . .
<ul style="list-style-type: none"> • Visual: use soft lighting, muted room colors, simple and uncluttered decor. • Auditory: provide a background of "white noise," especially during bed-time hours; play TV and radio at low volumes; avoid auditory "surprises," e.g., turning on a blender, garbage disposal, or vacuum cleaner without preparing the child. • Olfactory: use scent-free household products; use strong fans to disperse cooking odors. • General: create a refuge at home where your child can retreat when overwhelmed, e.g., a tent with pillows, weights, calming activities such as coloring books or puzzles. 	<ul style="list-style-type: none"> • Noise: request assignment to classrooms where relative quiet is enforced, e.g., children are required to raise their hands before speaking; seek seating assignments in the least noisy location in each classroom; make arrangements for your child to wear noise-muffling earphones in the classroom, especially during individual work times. • Self-calming: encourage creation of a separate area in the classroom for times of overstimulation; equip the retreat with toys to stretch, pull, chew, or push against to provide heavy work; provide a rocking chair or another source of slow vestibular input. 	<ul style="list-style-type: none"> • Travel and transportation: minimize; if you must travel, choose hours when public transit is least used, e.g., if you must fly, fly overnight when your child can sleep.

A SECRET for Environment

Modify the ENVIRONMENT to create interesting, stimulating, complex, unpredictable surroundings that generate maximum stimulation.

Ask questions such as . . .

- What is present in my child's environment that stimulates his active interest?
- How can I modify the environment to make my child's surroundings more fun, engaging, and enticing?

Devise strategies for home such as . . .

- **Vestibular:** provide equipment that permits fast and/or rotary movement, e.g., self-spinning devices, swings, mini-trampoline.
- **Tactile:** integrate the use of direct tactile stimulation into daily routines, e.g., dry your child vigorously after bath with towels of different textures, provide a variety in seating textures, choose clothing with noticeable textures.

Devise strategies for school such as . . .

- **Visual space:** request a classroom that is colorful, filled with objects, and visually interesting; attach an individual light to your child's desk if general lighting is not bright.
- **Classroom space:** seek "open" classrooms or classes that move between classrooms or within the room.

Devise strategies for community such as . . .

- **Special events and outings:** plan outings to settings that feature intense sensory stimulation and vary them, e.g., Chuck E. Cheese-type restaurants, malls, parks, spectator sports arenas, theme parks.

Devise strategies for home such as . . .

- **Proprioceptive:** provide equipment for heavy work, such as a jungle gym, jumping device, or exercise bands; provide a weighted vest to wear during physical activities.
- **Visual:** use bright room colors, many and bright lights, colorful and "busy" wallpaper patterns, interesting mobiles.
- **Auditory:** provide constantly changing background sounds, e.g., CDs with a mix of fast and slow music; avoid monotonous background sounds, e.g., quiet radio, TV, fans.
- **Olfactory:** expose your child to sharp smells, e.g., have him join you in the kitchen when handling pungent foods or in the bathroom when cleaning.

Devise strategies for school such as . . .

- **Noise:** request a classroom assignment that is more spontaneous and chaotic; seek seating assignments near extremely social children and other sources of sound.
- **Self-alerting:** arrange for gum chewing, eating sour candy, constant access to a water bottle with straw, a therapy ball instead of a chair, and other forms of sensory input.

Devise strategies for community such as . . .

- **Extracurricular activities:** seek activities that take place in highly stimulating settings, e.g., a hip-hop movement class, drumming lessons, skateboarding.

application & design

sensory under-responsivity

application & design

staffing in the prototype exhibition

Staffing is an incredibly important part of this exhibition. Shown in the case studies, staffing helps alleviate the pressure and stress of a museum experience and can help parents interact with their children, the exhibit and facilitate play. This is not to say that staff will become ‘babysitters,’ but it was expressed by several practitioners of the DIR Model that parents sometimes have difficulty using their imagination to facilitate play. This facilitation is something that staff could help with.

Staffing can also help the visiting public become more aware of other visitors. If there is a behavioral problem or a meltdown, staff can help mitigate the disturbance and

help visitors understand what is happening.

If the staff is the same and interacts well with their children, parents may feel comfortable coming back and creating friendships. Familiar faces in the staff could also help with transitions from one activity to another, or at the end of the day saying, “I might be here next time you visit!” Letting the kids know that even though they’re leaving for the day, the museum will be there next time they want to visit.

Staffing can also help change the institution’s attitude towards inclusion of different audiences through their personnel policy and the execution of

that policy. “A written policy manual ensures uniformity in response and enhances the employees’ faith in that uniformity. Personnel policies guide all levels of staff, establishing consistency in operations and enhancing the integrity and credibility of important operational decisions (Genoways 162) ”

Creating a uniform response to autistic behaviors and a uniform knowledge of how to deal with them will help create a consistent institutional attitude towards inclusion of this audience. This also can help staff become more comfortable around visitors with different abilities.

application & design

staffing in the prototype exhibition

By adding a clause to the host museum's policy manual, the museum can ensure that everyone has the understanding that the museum wishes to include all visitors. Museums can then afford their staff with opportunities for professional development, such as training to understand and recognize the symptoms of an ASD diagnosis and how to help that visitor have an enjoyable visit. The Museum Access Consortium (MAC) in New York City has created an ongoing lecture series about autism and its relevance to museums. This free series has provided museum professionals and volunteers with information about autism and ways that they can include this audience in their museum.

The series has been hosted at the MET, and many MET employees have taken the time to attend these lectures. Providing opportunities like the MAC lecture series can help educate a museum's staff and create a uniform knowledge.

Example 'Inclusion' Clause:

"To ensure that all of the museum's guests enjoy their time, it is necessary that all personnel be equipped to help our visitors with developmental, behavioral, and physical differences. It is in the best interest of this museum to provide our community with equal access to all of our exhibitions and programs."

This next section introduces the idea of a 'transition' exhibition for families and their children. This space would help children see what they would expect to see in the rest of museum, a form of prospect and refuge. Children, when they feel prepared, can venture out into the rest of the museum, or retreat when overwhelmed back to the exhibition specifically designed for them

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application & design

a 'prototype' exhibition

An Adjustable Exhibition

While many exhibit developers and designers do strive to incorporate the five traditional senses into their exhibitions, this exhibit will strive to do so in ways that are easily adjustable and in ways that are not an attack on the senses. Volume adjustment for sound effects switches, light dimmers, and moveable walls are all ways in which designs can be better customized by each visitor to enhance their experience and the ease with which they access information.

Museums as institutions need to embrace this audience, and its eccentricities, the culture of the host museum must shift to accept this exhibition as a permanent, and vital,

part of their repertoire. With the rate of autism on the rise, museums need to prepare for the inevitable influx of visitors who have autism coming through their doors. Museums have so much to offer, and can offer these experiences to those with autism, by mitigating the challenges and barriers (physical, sensory, emotional) that these families face.

A 'Prototype' Exhibition

This thesis project will be a prototype that would allow museums to experiment and adjust with ways in which to incorporate families with autism. By experimenting with different techniques, museums can begin to understand the best ways to accommodate this audience

in terms of interactive exhibits and environments, as well as programming. Through observations by staff, the museum can gauge how popular individual exhibits are and adjust accordingly.

application & design

a 'prototype' exhibition

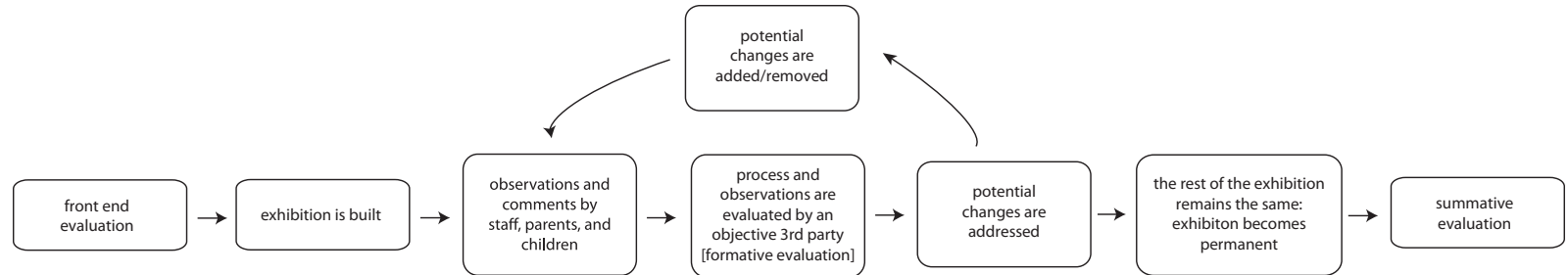
The museum must also commit to keeping this exhibition in place long-term and create a constant in these families' lives. This exhibition will be built as a prototype exhibition, through observations and problem solving this "prototype" will become a permanent space. Though parts of the prototype may change, it is important to not make all of these changes at once or make too many large changes. Permanence and stability are vital to this audience's comfort, enjoyment of a space, and experience.

While this new exhibition space is called a prototype, it will not be a space that is rough around the edges. This space should be flexible, both in its use, and design. This

space should be similar to that of a prototype exhibition. Where elements aren't set in stone, and there are opportunities for improvement and change. During the course of this period, observations should be noted and changes addressed. For instance, if an area or activity is not popular, the museum could investigate switching the activity out for a new idea, or renovate the area to make it more comfortable for visitors. Although some things may be edited and changes, there should also be consistent elements that stay the same, because this audience does need consistency.

application & design

a 'prototype' exhibition



↑ In this stage, the museum should reach out to their parent visitors and ask them what they need out of a space. What do their children like best? What is most comfortable for their family? What should the museum do to improve their visit? What would make the parents want to come to the museum?

↑ In this stage, the museum should again use their parent visitors. Perhaps through an online survey or informal surveys during their visit. The museum should ask the parents opinions of the space's effectiveness. Are their children comfortable? What are they as a family getting 'out' of this experience? What could help improve their experience?

↑ While changes are important, some exhibition elements should remain consistent. Consistent elements give visitors something to look forward to every visit, much like the heart at the Franklin Institute, or the Hope Diamond at the Smithsonian.

application & design

How does this ‘prototype’ space exist within the rest of the museum?

This experience will be separated from the rest of the museum so that the museum will have an opportunity to have more control over the evaluation and observation. A separate experience will also afford parents the opportunity to relax, knowing that they aren’t being judged for their children’s behavior. This worry came up frequently when surveying parents at the Garden State Discovery Center, they wanted to be able to enjoy their time, without the fear that their child may upset someone else’s visit. By separating the experience, families have the opportunity to ease into the rest of the

museum, but also know that there is a safe place where they can enjoy their time together.

What does the museum learn about its audiences?

As the transition exhibition evolves during the ‘prototype’ phase the institution will have the opportunity to gain valuable information about this audience and the best practices for this community. These best practices and ideas could help the museum field as a whole and dissemination of this information could help other museums interested in including visitors with autism begin the often daunting process.

application & design

A perfect means for dissemination of this valuable information is a website and forum. Museums could post programs, exhibits, or activities that they were planning, have evaluated, or are currently in process. Similar to the website ‘www.informalscience.org,’ a website that posts audience evaluation projects that are free to read and download, this website could provide resources for museums to download and benefit from.

Research projects, exhibitions, and programs could all be posted, forums could be developed for people to voice their questions, ask for tips, and troubleshoot problems. The museum community-contributed content can allow museums to quickly and

easily find new ways to include their audiences with autism.

Museums may discover that a certain color on exhibition walls is the most inviting for their audience with autism, or that the children with autism who come through the transition exhibition’s doors really enjoy playing with a certain interactive, both of these examples and more can be shared on the website, allowing other museums to borrow, possibly refine, and implement their own form of these ideas. This website could also house information from the ‘in the field’ section, and provide information about museums doing other programs and activities for those with autism.

What do the visitors (both to the transition exhibition and the normal exhibitions) learn?

This transition experience will live within the visibility of regular visitors to the museum. This presents an opportunity to talk with visitors about autism and how autism can affect the visitor experience. Creating a design that is also ‘transparent’ can help the museum expose the community to this new experience for a different audience.

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There are different ways that a space can be transparent to unsuspecting visitors. Glass panels embedded with graphics (IMAGE/drawing) can create the sense of a closed space, while still allowing visitors to see both in and out. This two-way viewing allows visitors to the transition experience to not feel completely segregated from the museum, and allows visitors to the rest of the museum to see what is going on.

Graphic panels and signage can also help the museum be transparent about the transition exhibition.

Visitors can read about what is going on, the museums intentions, and what the visitors should expect.

While this conceived exhibition exists in the lower level of the Please Touch Museum a transition experience could exist wherever the museum has space or wherever it is convenient for the visitors. It should be stressed that these ideas are but one means of incorporating a transition space into a museum and research and testing should be done to find the appropriate placement within each institution.

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a transition space for families

This space is conceived as a **transition space**, a way for families to learn about the rest of the museum, what to expect, and how to engage in the exhibitions that the museum offers. This space will also have its own activities that can help reinforce the transition space's goals (see page 67-68). The intended audience for this transition space is families who have children on the autism spectrum, but could also be used by families who are just simply nervous about how their child will react to a museum environment.

Families visiting the space will be able to develop a comfort level and skills to access the museum as a whole. This space can also provide a sense

of refuge for children and parents, by knowing that there is a comfortable space, children can retreat into this refuge area, and still enjoy their museum experience.

The Please Touch Museum (PTM) is an excellent location for a 'prototype' of this type of exhibition. PTM in the past has had Autism Awareness nights, and inclusion is a large part of their mission of play for all. PTM already has an established and organized network of 'experience hosts' (visitor experience helpers, docents) that participate in regular training. Staffing gives parents the opportunity to relax, and enjoy their experience with their children, knowing that the staff and other

visitors understand their situation. The museum also offers a range of programs and activities for many different ages, some that could be adjusted for an audience with autism. Staffing has been used to facilitate play at several institutions mentioned in the case studies section as well.

The Please Touch Museum also has a second entrance in the back of the museum. Often this entrance is used for larger school groups, it is lit with rainbow colored lights and is equally as enticing as going in the front door. Parents who worry that their children may be overwhelmed in a large space such as the atrium at the front of the building can use the back entrance to ease into their museum experience.

application & design

a transition space for families

The program rooms are also located right near the back entrance. By beginning here, in the transition space, parents and families can then access the rest of the museum. The Please Touch Museum's exhibitions are broken up into different areas, but can be explored in any order, having the transition space on the ground floor of the museum will not effect the families' experience of the museum as a whole.

Content

The content of this prototype exhibition will coincide with the train themed area in the lower level of the Please Touch Museum (PTM). A train station greets visitors and an adjacent exhibition allows them

to explore a scale model of the Centennial Fairgrounds, and an interactive train and ticket booth. This area also holds several of their program rooms, one of which could be easily retrofitted to house this prototype exhibition.

Trains were chosen as the content of this prototype because of their universal intrigue. Trains as an overarching subject provide for many facets of discovery, from motion and history, to design, maps, and more. The developmental level of this exhibition will look to the DIR (Developmental, Individual-Difference, Relationship) Model. The fourth and fifth levels of the DIR Model will be the focus of the

developmental level of this exhibition; problem solving and meaningful thinking are a large part of these two developmental milestones and can be easily incorporated in an exhibition setting.

Some parents may worry that trains could become a catalyst for obsessive behavior in their children. When children see Thomas the Tank Engine or Dinosaur Train characters, the characters can sometimes overshadow the experience and children can become focused solely on the characters. By creating a transition exhibition about where trains go, the museum can use railroads as a 'Social Story' and help children travel around the space.

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Please Touch Museum: lower level

REAR ENTRANCE

EACH BALLOON
REPRESENTS AN
ACTIVITY ROOM
THAT COULD BE
RENOVATED AS
THE PROTOTYPE
EXHIBITION



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'transition exhibition' development

Mission: For Families

The mission of this exhibition is for families to enjoy their time in a museum setting that is adjustable to their needs, while learning how to prepare and transition into the museum's other exhibitions. Incorporating the theme of trains, and trains stations, visitors will plan, schedule, and 'travel' throughout the exhibition and learn how to visit other exhibitions.

Mission: For Museums

To create a transition exhibition about the museum and train transportation while creating a comfortable, adjustable atmosphere, for families and their children with autism.

Goals

- To create a space for families, to help them start to explore the rest of the museum.
- To create opportunities for creative play in a museum setting, and provide transition tools so that visitors can then feel prepared to visit the rest of the museum.

- To provide areas of prospect so that children can anticipate what would happen if they were to visit the rest of the museum.

Objective: Provide closed circuit television so children can observe what is happening on the 'floor' of other museum exhibitions.

Objective: Provide photographs of other families playing in the museum's exhibitions.

application & design

'transition exhibition' development

- To provide information to the visitors about the space, what it is, and why it is here.

Objective: Provide information in the form of pamphlets and pages on the museum's website to explain to parents the purpose of the exhibition, how to use it, and how they can incorporate some of the ideas of the exhibition into their daily life.

- To provide and/or facilitate opportunities for 'play while learning' within this exhibition.

Objective: To provide activities for parents to interact with their children, using the DIR model as a base (appropriate developmental level, relationships between child and parent, individualizing the activity to meet the child's needs and interests).

Audience

Families and their children with ASD, specifically those near the 4th level within the DIR Model. The 4th level of the DIR Model looks at how children on the spectrum represent their ideas, and whether or not they can see meaningful or abstract thinking. This level also looks at whether or not children can problem solve.

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'transition exhibition' development

Visitor Take-Aways: Parents

"I never know my child liked to play with____"

"I had no idea that museums could provide opportunities like these"

"This museum exhibit helped my family learn how to visit the rest of the museum"

"Because of this exhibit, my child was able to enjoy another exhibition."

Visitor Take-Aways: Children

"Visiting this room made it easier to go see the other parts of the museum"

A Successful Visit for Museums

Parents can see that this museum now provides tools for their kids, and how to employ those tools not only in this space but throughout the museum as a whole. Parents begin to trust the museum as a permanent place where their family can enjoy themselves in a safe environment.

A Successful Visit for Families

Parents learn new ways to help their child integrate into the museum (tools, suggestions). Families are able to visit some (or even one) of the museum's other exhibitions. Children have the opportunity to play with new exhibitions that they might not have been able to experience had they not gone through the transition exhibition first.

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'transition exhibition' development

Host Institution

The Please Touch Museum (see p. 66)

Voice

Informed Friend

'Expert' Advice for Parents

Providing parents insight into the exhibition is crucial to the success of this visit for parents and families.

When parents understand what the museum is providing for them, and how they are providing it, they can more easily access and engage. Providing parents insight could also help them employ different suggestions at home to help replicate parts of the exhibition that they felt worked well for their children.

Role of Visitors

Explorer, Traveler

Gestalt

The design and gestalt of this transition exhibition should be clean and simple. The colors should be muted but inviting. "Researchers have found that autistic children's rods and cones (components of the eye) have changed due to chemical imbalances or neural deficiencies. Of the autistic children tested, 85% saw colors with greater intensity than neurotypical children. For these children, red appears nearly fluorescent, vibrating with intensity. A small proportion of children (10%) saw the color as neurotypical children do and 5% saw muted colors (Paron-Wildes 2)."

The exhibition's flexibility should be intuitive, and visitors should have easy access to volume adjustment of exhibits and dimmer switches for exhibit lighting

"Lighting can have a dramatic effect on people with neurological disorders, and special attention should be paid to glare, noise control, and flicker as these may be negative visual and audio stimuli (Paron-Wildes 3)."

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'transition exhibition' development

Fluorescent lighting should be replaced with incandescent or LED light bulbs. Several companies manufacture LED tubes that fit in existing fluorescent tube housing. Not only is the flickering fluorescent light distracting for children with autism, but the noise of the buzzing noise from the ballasts can also be intrusive.

Affective Aim

This experience should make the visitor feel comfortable, safe, and open to exploration and engagement.

Customization

This is in terms of adaptable spaces and comfort - not content

Volume adjustment for sound effects switches, light dimmers, and moveable walls are all ways in which designs can be better customized by each visitor to enhance their experience and the ease with which they access information.

application & design

‘transition exhibition’ development

Narrative, Story line

The narrative of this transition exhibition could be conceived in several ways. Visitors could follow characters throughout the exhibition and learn about the museum. The characters could ‘ride’ a train, and the characters could warn children about what to expect if they go into the rest of the museum “Sometimes the water room is loud, if you need to leave, thats ok!” These characters could then be found in the museum’s regular exhibtions, giving nervous kids a friendly face to find, recognize, and relate to.

Another narrative could come in the form of a map, visitors could follow the map around the exhibition, check off various places, and learn about the museum. The map could be in paper form, or a downloadable iPad application.

Another narrative could develop with a ticket booklet. Visitors could be given ticket booklets, each ticket could be printed with information or a bar code. Visitors would then have to scan the barcode at an exhibit in order to learn more, make something move, or ‘discover’ the next location on their journey.

Each of the previous narratives could take on the form of a Social Story when the language is clear and speaks to the visitor’s expected behavior, anticipates the activities that the visitor may participate in, and what they may see. A Social Story provides the child with context, expectations, information, and comfort. Recognizing images from a Social story can help a child prepare for a visit to another exhibition.

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'transition exhibition' development

Thematic Areas

The exhibition will be divided into different areas based on the areas within the Please Touch Museum as a whole (water play, city life, Alice in Wonderland). Each area will feature information and exhibits about what to expect, how to play, and perhaps an element that highlights the theme such as an interactive water feature to represent the water play.

Visitor Path

Depending on the chosen narrative of the exhibition the visitor path may change, but the path should be open ended to allow for the highest degree of customization. Open ended paths also provide easier access to sight-lines for parents wanting to find their children who may have run off to another area.

Evaluation

Evaluation measures should look at elements of the exhibition's goals such as engagement, return visits, etc. How popular is this exhibition? Is this exhibition helpful for families? Are families returning to use this resource that the museum provides?

application & design *'transition exhibition' development*

Role of Museum's Website

The museum's website plays an important role in visitor's expectations and visit planning. Parents visiting a museum's website will be able to gauge how accessible the museum is, both from pictures and descriptions. The museum's website can also provide information about the building and development of the transition exhibition, and ways to implement some of the successful ideas into their own home and life.

Museum websites are also great resources for parents searching for more information about other accessible places to visit in the area (if you liked our transition exhibition, you should go visit the zoo!) and

Social Stories that they can download for their children in preparation for their visit to the museum.

The museum's website can also provide links to iPad or smartphone applications that the museum may have developed to help visitors experience during the transition exhibition, or applications that could help parents in their daily life.

The website can also provide visitors with information about school trip times and busy periods, quieter times are easier to digest for nervous visiting families.

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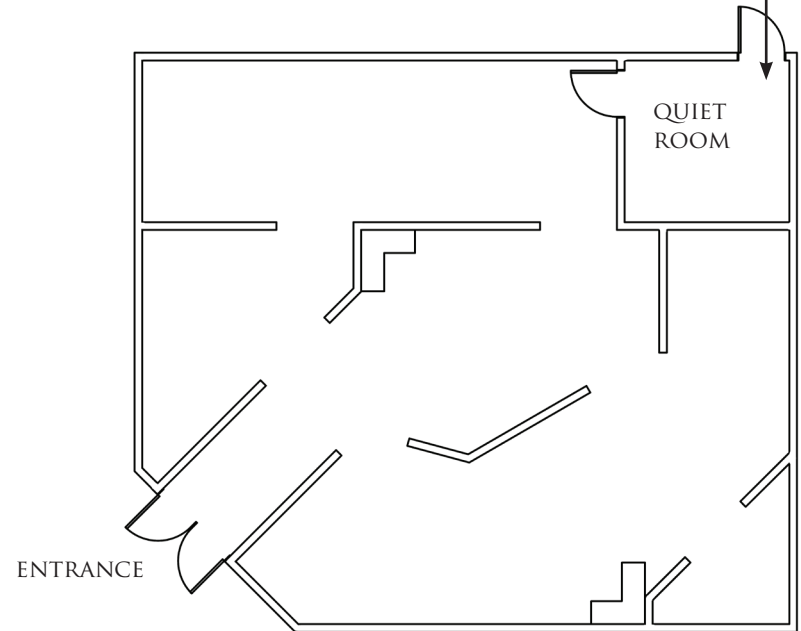
example floorplan

If a visitor stands in the center when the arched wall is tucked away, they will be able to see into each alcove.

Pocket doors (dashed lines) in each alcove allow for mitigation of distractions, making it easier to focus and enjoy the museum experience.

The longer hallway allows for acclimation into the space without feeling overwhelmed. A small quiet room at the end of the hallway lets visitors know that there is a safe quiet place to retreat if necessary.

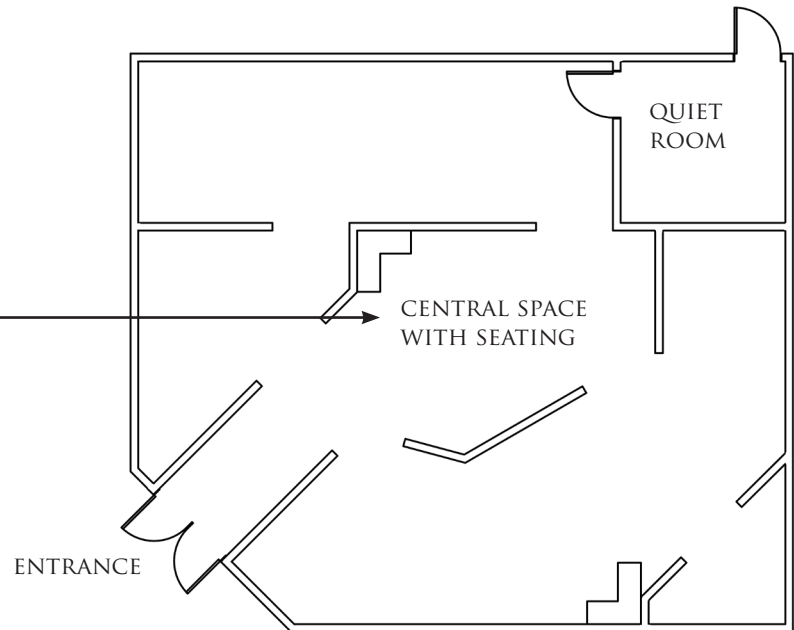
The quiet room (approximately 11'0" by 11'0"), with a separate exit, allows parents to swiftly exit the cool down space if the museum visit becomes just too overwhelming. Using soundproofing material can also help keep this room quiet, calm, and a sanctuary from some of the busier museum spaces.



application & design

example floorplan

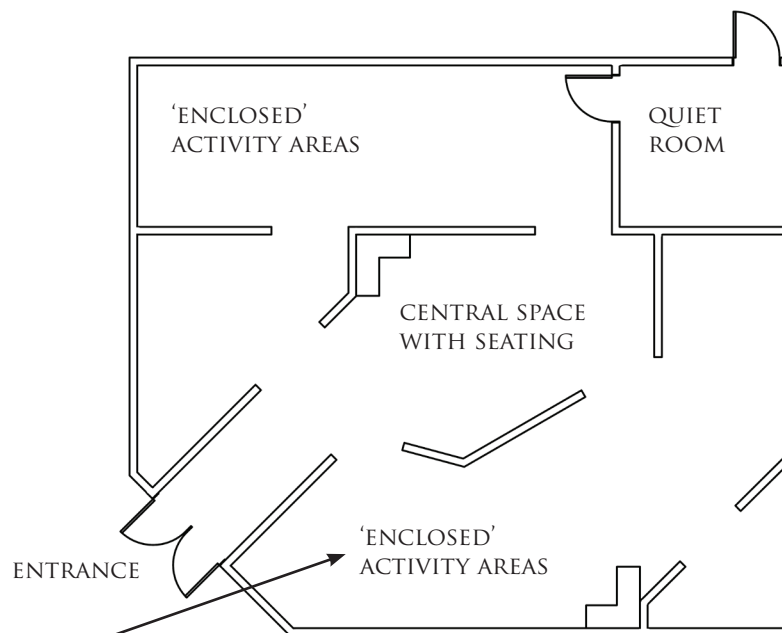
This central area allows both parents and children to be able to see the entire exhibition. Instead of thick opaque walls, semi-translucent walls embedded with graphics allow parents to easily see the entire exhibition, while giving children a sense of enclosed spaces.



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example floorplan

Sectioned activity areas for this exhibition will be broken down by exhibition area in the Please Touch Museum (city, water play, Alice in Wonderland, car garage). Each area will have interactive exhibits that help explain and prepare children for the rest of the museum visit, as well as allow children to play in an exhibition that is comfortable and specifically designed to their needs. Each of these areas should have it's own light switches and sound dimmers, making them easily adaptable to different needs. Smaller entrances between exhibits create the sense of enclosed spaces, while allowing parents the vital sight lines needs for safety and



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design considerations

Similar to the 'Action Steps' in the 'in the field' section (p. 42-43) here are a list of design considerations to make when developing and designing an transition exhibition for families with autism.

Location

This exhibition is located in the lower level of the Please Touch Museum, making entering the museum easier than going through a large (often noisy) atrium. Location of bathrooms and distance to popular exhibitions should be considered as well. The transition exhibition location should make it easy to venture out and try a new exhibition, but walking a long distance may be distracting. If children can look out a 'window' and see another exhibition, it may spark their interest and boost their confidence to try new things.

Materials

As mentioned earlier, volatile compounds (formaldehyde in MDF/ Medium Density Fiberboard is one example) are dangerous for all visitors. Using low-VOC MDF decreases visitor's exposure and creates more healthy experience.

Other material considerations should be made for wall types. Sandwiched graphics, an image between two pieces of acrylic or plexiglass. This creates a semi-opaque divider and gives parents sight-lines between exhibits.

application & design

design considerations

Exhibits

Exhibits should be developed that are easy to interact with, and easy to understand the directions. Directions should have step by step instructions and provide images accompanying each step so that children can visually learn as well.

Activities should be developed that are appropriate to each themed area, that can be implemented by just one visitor or by several visitors. The developmental level of each activity/ exhibit should be considered as well.

Collections

Not all museums are collecting institutions, but a transition exhibition is an opportunity to talk about what the museum has and what it does. At the Please Touch Museum, the collection is integrated into each exhibit experience.

Collections cases dispersed through the transition exhibition can help visitors learn how to be careful around cases that may have sharp corners or plexiglass that is hard to see.

Adding objects to this transition space will help visitors learn about the museum, its exhibitions, and create an exhibition that feels similar to their rest of the institution.

conclusion

Museums have an amazing opportunity to reach out to this underserved audience and create comfortable and helpful exhibitions for them. When museums strive to incorporate a larger audience, everyone benefits. Families experiencing autism can reap the benefits of a day at the museum, spending time together, learning and playing.

By combining knowledge of design principles, education theory, and developmental models, museums can create exhibitions that are accessible to a larger population. Not only could this combination work for an audience with autism, but it could also be applied to other developmental and physical differences as well.

Creating shared experiences and memories may not be in the mission of an institution, but it is an important part of the visitor experience, and one that is not easily forgotten.

appendix



Garden State Discovery Museum - Thesis Front-End Survey

Hi, My name is Megan MacNeill, I a Museum Studies student working towards a thesis on designing museum experiences for autistic individuals with their families.

With your permission I would like to include quotes from this interview in my thesis proposal and final document, with anonymity.

Permission Granted ☐ Permission Denied ☐

- 1) Is this your first time going to an event specifically catered towards children with autism?

- 2) Have you been to other events at museums for individuals with autism and their families?
If so, where and what were your experiences?

- 3) What do you look for in an experience (of any kind OR in a museum) for you and your family?

- 4) What do you think a (any) museum could do to enhance your entire families' experience?

- 5) Would you go to an exhibition / experience / event that was specifically designated as a space for children with autism and their families, or do you prefer less obvious means of inclusion?

- 6) What difficulties does your child have when visiting a public place?

appendix *survey instruments* *survey results*

	Question 1	Question 2	Question 3	Question 4	Question 6	
Survey #	Is this your first time going to an event specifically catered towards those with autism?	Have you been to other events at museums for individuals with autism and their families? If so, where?	What do you look for in an experience for you and your family?	What do you think a museum could do to enhance your entire families' experience	What difficulties does your child have when visiting a public place?	Other comments
1	No, Usually we only go to local groups organizing events	Not in museums, though I've heard of the Please Touch Museum's event	Something that will keep them [the kids] occupied, something that they enjoy, stuff they can get into, things they can touch, [for me] a chance to socialize with other parents	More nights like this! It is nice that this is free, therapy is expensive, Its nice that this is after hours	Keeping him contained, not too many escape routes,	He has an iPad, its been amazing, he likes to read the animated books, he hasn't fully learned how to read yet but these are really helping him develop his skills
2	We've been to other museums	no	hands-on activities, friendly environment, no crowds	this night is so nice, more nights like this! Its nice when they have a teacher (storytime) crafts, activities for parents and kids to do something together	Crowds, noise, dark closed in areas, open areas a better	
3	Yes	no	hands-on play, enclosed areas, touchable things	We're pretty satisfied, we'd love more nights like this	Roaming arounds, trying to stay in one spot	
4	Yes - we heard about it through a friend	no	have experiences they wouldn't have anywhere else	nothing really	getting used to different kids, running and being close. He takes a bit of time to warm up to people	
5	This is our second time	no - he doesn't like being outside or with lots of people	exposure for things he doesn't do or doesn't like to do	this is a perfect the way it is, he has become more open	noise, other people he doesn't know, sensory overload, new environments	While I was taking this survey, the kid (who was about 4) put his finger in the shaving cream while his two older siblings were almost swimming in it. His parents nearly cried because they were so excited that he tried something new - normally he wouldn't even go near such a weird sensory thing!
6	We've been here before	I don't think so	Not huge crowds, other people in the same situation	the size of the institution,	tantrums over something he doesn't understand, or can't buy, big crowds	the mother I surveyed was watching her two daughters (who don't have autism) play hockey "my son is somewhere in the building" she was so nonchalant and so relaxed, it was refreshing for her to be able to spend time with her daughters, and for her son to have some time to himself. He had found a school friend and they were playing together. She knew that there were staff around and that there weren't many exits to the building, he was safe
7	no, Usually we only go to local groups organizing events	seasame place	safe, non breakable, enclosed, contained, less escape routes	please touch was too big for us	escape routes, our son has no safety awareness, he doesn't listen, he just takes off. loves videos and wind, and bouncing	

further research

Incorporating art therapy into the museum experience

Using the museum experience to help adults with autism as well

Using the experience to teach neurotypical visitors about autism as well

How to teach appropriate behaviors museum behaviors (or is this necessary?)

How can our material choices affect the design in a positive way?

bibliography

“Adventure Packs” The Autistic Journalist. 22 Apr. 2011. Web. 28 Mar. 2012.

Ambler, Lana. NICHCY Briefing Paper: Respite Care. Ed. Lisa Küpper. Washington, D.C.: NICHCY, 1996. Print.

“Autism Programs.” The Children’s Museum, Seattle: The Kenneth and Marleen Alhadeff Exhibit Center. Web. 21 Jan 2012.

Ayres, A. Jean., Jeff Robbins, and Shay McAtee. Sensory Integration and the Child: Understanding Hidden Sensory Challenges. Los Angeles: Western Psychological Services, 2010. Print.

Bricker, Lara. “Autism Program This Weekend @ Children’s Museum. SeacoastOnline blogs. 10 November 2010. Web. 21 Jan 2012.

Cavanagh-Husseini, M.S.Ed.,SBL,SDL, Irene. Welcoming Individuals with Autism Spectrum Disorders. New York City: Museum Access Consortium, 2011. Print.

Day, Tama Duffy. “Designing for Health: Light and Its Role in Patient Safety.” 21 June 2010. Web. 17 Jan 2012.

“DIR Floortime.” ICDL. Web. 20 Feb. 2012.

Ghose, Tia. “Parents of Autistic Kids Have Higher Divorce Rate: Risk Lasts Longer, but Is Lower than Feared, Study Says.” Journal Interactive (2010). JS Online. Journal Sentinel, 9 Aug. 2010. Web. 2 Apr. 2012.

Gray, Carol. “What Are Social Stories™?” The Gray Center. Web. 20 Feb. 2012.

Greenspan, M.D., Stanley I., and Gil Tippy, PsyD. Respecting Autism: The Rebecca School DIR Casebook for Parents and Professionals. New York: Vantage, 2011. Print.

bibliography

Grzybowski, Lisa. "Program reaches out to autistic children, families." Courier Post Online. 7 Feb 2007. Web. 30 Aug 2011.

Haughney, Christine. "Children With Autism, Connecting via Transit." The New York Times. 13 Aug 2011. Web.

Hugh, Genoways H., and Lynne M. Ireland. Museum Administration: An Introduction. Landham, MD: AltaMira: Rowman & Littlefield, 2003. Print.

Johnston, Courtney. Smith, Brenda. "Designing for Health: Workspaces for Well-being." 16 August 2010. Web. 17 Jan 2012.

Kanics, Ingrid. Handout. Kanics Inclusive Design Services, LLC. 13 April 2011.

Khare, Rachna. Mullick, Abir. "Educational Spaces for Children with Autism; Design Development Process." 16 May 2008. Web. 17 Jan 2012.

Knutson, Kari. "Children's Museum becoming more accessible for autistic." The LaCrosse Tribune. 1 Apr 2011. Web.

Messervy, Julie Moir, and Sam Abell. The Inward Garden: Creating a Place of Beauty and Meaning. Piermont, NH: Bunker Hill, 2007. Print.

Miller, PhD., OTR, Lucy Jane. Sensational Kids: Hope and Help for Children with Sensory Processing Disorder (SPD). New York: G.P. Putnam's Sons, 2006. Print.

"Museum Explorers Club for families affected by autism." Queens Museum of Art. Web 21 Jan 2012.

bibliography

Parson-Wildes, A.J. "Sensory Stimulation and Autistic Children." Implications. Vol 06 Issue 04. Web. 17 Jan 2012.

Petherick, Nathan. "Environmental Design and Fear: The Prospect-Refuge Model and the University College of Cariboo Campus." Western Geography 10.11 (2001): 89-112. Print.

Preiser, Wolfgang F.E. Universal Design Handbook. McGraw-Hill. 2001. Print.

"Supplemental Autism Program." Kern County Museum. Web. 21 Jan 2012.

Tippy, PsyD, Gil. "The Developmental Individual Difference, Relationship-Based (DIR) Model." Cutting-Edge Therapies for Autism. Delaware: Skyhorse, 2010. 121-28. Print.

Vogel, Clare L. "Classroom Design for Living and Learning with Autism." May 2008. Web. 11 Jan. 2012.

"What Is Snoezelen MSE?" Snoezelen Multi-Sensory Environment Therapy. FlagHouse. Web. 06 Apr. 2012.

"WHO | Disabilities." Who.int. World Health Organization, 2012. Web. 11 Feb. 2012

