Using the contextual model of learning in a museum program to prepare for student visitors with autism spectrum disorder

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Using the Contextual Model of Learning

in a Museum Program to Prepare for Student Visitors with Autism Spectrum Disorder

By

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Bank Street College of Education

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Abstract

John Falk and Lynn Dierking’s Contextual Model of Learning\(^1\) was used as a theoretical construct for investigating learning within a free-choice setting\(^2\) for ASD children. A review of previous research identified key variables fundamental to free-choice learning for audience who present ASD. The study sought to answer two questions: (1) Does the Contextual Model of Learning provide a useful framework for understanding learning within museums for ASD children? (2) What specific variables individually contribute to the following specific outcomes: social skills (children eye contact; initiating and ending interaction; using gestures to supplement verbal communication; conversational style; using and following social rules; flexibility in transition; emotional understanding; perspective taking; maintaining interactions), behavior changes (self-stimulatory activities; distress with the assessment; excessive movement; tantrum or protest; flapping hands) and 21\(^{st}\) century skills (project based-learning activities; problem solving through story’s characters; using technology such as iPad devices; public presentation) and learning experience for ASD

\(^1\) Contextual Model of Learning is a theoretical framework of learning based on personal context, socio-cultural context and physical context that influences visitors learning in museums settings.

\(^2\) Free choice setting encourages self-directed learning and offers learning experiences that are differ than the ones offer in formal education setting, where learning and teaching are sequentially sustained.
children within museum setting?

The study was based on a repeated measure design including parent questionnaires, observational and behavioral measures with a sample of six children, participating in iPad Stories and the Spinnerz Teen Photo Club, educational programs designed for ASD children and youth at the Queens Museum of Art. The data supported the contention that variables such as prior knowledge, interest, motivation, choice and control, within and between group social interaction, orientation, advance organizers, architecture, and exhibition design affect ASD’s visitors learning and specific outcomes. All of these factors were shown to individually influence learning outcomes, but no single factor was capable of adequately explaining participants learning outcomes across all.

The framework provided by the Contextual Model of Learning proved useful for understanding how complex combinations of factors influenced learning for visitors that exposed Autism Spectrum Disorder.
Acknowledgments

This study was made possible by the Queens Museum of Art willingness to participate in the evaluative nature of the study. The assistance I received from the Queens Museum of Art’s ArtAccess department was vital to the successful completion of this paper. I am especially grateful to Michele López, Manager of ArtAccess Programs & Autism Initiatives at Queens Museum of Art, and Jennifer Candiano, Associate Coordinator of Autism Initiatives in the ArtAccess program of the Queens Museum of Art, who provided logistical and organizational support from start to finish.

An exceptional amount of gratitude I owe to my mentor, Dr. Marcia Singer, whose guidance and inspiration motivated me through the entire work.

My family support and encouragement through the Bank Street College’s journey meant everything to me. Thus, I am addressing to all of you a big thank you!

Last but not least, the actual study was possible with the support and trust of families with children with Autism Spectrum Disorder who were participants in educational programs developed at the Queens Museum of Art. All the findings are dedicated to them and to their wonderful children who taught me to see the world in a different way.
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Introduction

Background of Study

After a few months of searching for museums that showed a deep interest in developing educational programs for children with Autism Spectrum Disorder (ASDs), I found out that a particular museum already had a long and dedicated history of developing programs for this audience. Thus, in each of my randomly online research episodes, the Queens Museum of Art appeared as an initiator, or coordinator, of many successful projects developed for the mentioned audience. The beginning of this research was based on intrinsic and personal reasons. First, I have a strong desire to know more about this specific segment of the audience for the purpose of creating meaningful inclusive educational programs for children with Autism Spectrum Disorder. Secondly, it struck me the idea of going beyond of the letter of the American with Disabilities law and addressing the spirit of the law to see if museums are truly available to these children and their families. Moreover, the present study constitutes the first step for additional research, personal reflections and potential framework of developmental issues to Autism Spectrum Disorder visitors and possible finds that might help to increase this particular visitors segment.

Moreover, when I contacted the team from QMA, my personal desire fit the museum’s need to observe and evaluate the latest program developed for ASD children. That was the moment when the actual study was born.
This study presents the findings from the evaluation of two distinct programs developed around the needs of children with autism and their families. The programs were supported by a courtesy three-year grant from the Institute of Museum and Library Services, a long-term partnership with Queens Library, and No Longer Empty Gallery. Both programs were developed to provide accessible, sensory-rich, project-based learning experiences, where the families with children on the autism spectrum can learn together while pursuing the children’s social and behavioral goals and the health of the community overall.

iPad Stories started in June 2012 as a model of learning for children with autism to create opportunities for family-centered use of facilities and resources currently underused by children on the spectrum. This interdisciplinary program (storytelling & technology-craft activities) inspired the building of a framework around community programing that creates therapeutic spaces in which children with special needs can generalize the skills they have learned in a contained classroom space and apply them in a community setting, such as a museum or library. iPad Stories uses an interdisciplinary approach that combines a strong background in behavioral principles with the goals and methods of socialization, literacy, museum practices, art therapy and education.

The Spinnerz Teen Photo Club debut was in 2010, and was received well appreciation by the public. The main goal was to have a broad range of programs developed for ASD children and their families, within different age groups. Thus, Spinnerz Teen Photo Club covered the ASDs adolescence audience and addressed both, adolescence and autistic issues.
As its “counterpart” iPad Stories, Spinnerz Teen Photo Club encouraged socialization through activities that are more appropriate to adolescences, such as music and photography. Throughout five sessions teens are encouraged to build friendship and develop new social skills. They are also encouraged to take on different roles such as documenting and exploring unconventional art spaces and art gallery. They will create story books that have at least two characters. Through exploration of the surrounding they will integrate their story’s characters as the visitors of the exhibit “How Much Do I Owe You?”.

Additionally, by accompanying the travelers characters, adolescences will be able to discuss real life topics such as, "Where the money are coming from?", “How much does this cost?”, “How can I save money.”

Significance of the Study

It is possible for many museums to ensure a pleasant and memorable experience for children with Autism Spectrum Disorder. In order to accomplish the creation of inclusion programs, interventions and attitudes, specific and generalized characteristics of autism need to be identified and accepted. To acknowledge possible contextual learning frameworks that might apply and create a nurturing museum environment is essential if universal accessibility is the goal. If a museum does not know the variables that might influence visitor’s experience learning, it is not a museum that can be accessible to everyone. Then, the cultural world is exclusive and not meeting the needs of a diverse society.
Statement of Purpose

There is growing awareness of developing programs for those who experience Autism Spectrum Disorder (ASD) (Integrator, 2003). It is essential to acknowledge all variables that can enhance learning experiences for ASD children in museums, especially because of current society goals – universal accessibility.

The purpose of this study is to pair the specific and general characteristics of ASD with key variables fundamental to free choice learning. I will accomplish this purpose through a literature review of theoretical constructs for investigating learning within a free-choice setting. A review of previous research will identify the key variables fundamental to free-choice learning for audiences who present ASD. I will also accomplish this by presenting findings that did it overcome through evaluation and research of two educational programs developed for ASD audience that include specific learning outcomes for the previous mentioned audience.

Guiding Questions

As substantiated through academic inquiry, there is growing awareness of knowing key variables that influence learning experience of visitors within free choice settings. John Falk and Lynn Dierking’s Contextual Model of Learning was used as a theoretical construct for investigating learning within a free-choice setting for ASD children.
Additionally, a review of previous research identified key variables fundamental to free-choice learning for audience who present ASD. The study sought to answer two questions:

(1) Does the Contextual Model of Learning provide a useful framework for understanding learning within museums for ASD children?

(2) What specific variables individually contribute to the following specific outcomes: social skills (children eye contact; initiating and ending interaction; using gestures to supplement verbal communication; conversational style; using and following social rules; flexibility in transition; emotional understanding; perspective taking; maintaining interactions), behavior changes (self-stimulatory activities; distress with the assessment; excessive movement; tantrum or protest; flapping hands) and 21st century skills (project-based learning activities; problem solving through story’s characters; using technology such as iPad devices; digital cameras, DJ mixers, public presentation) and learning experience for ASD children within museum setting?

Limitations

The pair of key variables fundamental to free choice learning and ASD’s characteristics (both generals and specifics) is analyzed for a specific location and specific educational programs.
Although it can serve as a framework for looking up how theoretical construct for investigating learning within a free-choice setting might be applicable for ASD audience.

This study was limited to two educational programs that were developed at the Queens Museum of Art. It is my intention to formulate final findings and contents for this specific location.

The precise nature and severity of the characteristics associated with ASD varies widely, therefore, this study cannot addresses all the needs of all visitors who experience symptoms of the disorder. This study contains the most current appropriate descriptive terminology and syntax regarding ASD. The sample data for autism prevalence mentioned in this paper is among aged 4 to 16 years, living in different neighborhoods of Queens.

All material and data reviewed for this study was focused on children and youth with ASD and did not deal with the adult population with ASD.

Design of the Study

The study was based on a repeated measured design\(^3\) that included parents’ questionnaires (closed and open-ended questions), and observational and behavioral measures obtained through unobtrusive tracking of all participants throughout the duration of both educational programs.

\(^3\) Repeated measured design is one in which a single sample of individuals is measured more than once on the same dependent variable.
Setting and content

The headquarters of this investigation was Queens Museum of Art. Additionally, for all sessions of the iPad Stories program, the main site was the North Forest Park Library, Queens. The Spinnerz Photo Club program had two out of five sessions at the Queens Museum of Art, and the rest sessions were at the No Longer Empty Gallery, Former Bank of Manhattan, Long Island City.

The overarching goal of iPad Stories is to provide experiences for children with autism in community settings (museum and library) by using technology (iPad), social-behavioral exploration and techno-craft activities. Individual objectives vary depending on the weekly theme.

Each session incorporates problem solving objectives such as What if I travel to the city? What if I make new friends? What if I have to stay safe in a new place?

The main goal of Spinnerz Teen Photo Club program is to encourage socialization through music and photography among adolescents. All participants display mild or severe ASD characteristics and encounter less or more severe socialization issues. Through music and photography participants create characters that are becoming part of the gallery throughout traveling within the main gallery.

For the summative evaluation (both programs) were tracked, observed and interviewed three children and three adolescences for each program, within the museum.
Participants were asked about, or observed, in relationship with their social-skills, behavioral-changes and 21st century skills.

The overarching goals of the summative evaluation was to better understand the nature of the programs experiences for children and parents/caregivers, as well as the range of the following outcomes: social skills (children eye contact; initiating and ending interaction; using gestures to supplement verbal communication; conversational style; using and following social rules; flexibility in transition; emotional understanding; perspective taking; maintaining interactions), behavior changes (self-stimulatory activities; distress with the assessment; excessive movement; tantrum or protest; flapping hands) and 21st century skills (project based-learning activities; problem solving through story’s characters; using technology such as iPad devices; public presentation).

The iPad Stories program evaluation is designed around the following key questions:

- What is the impact of shifting from storytelling to digital stories for participating children over the three categories of outcomes – social skills, behavior and 21st century skills?
- How children will develop social skills such as ones mentioned above during the iPad Stories program? How children will change behaviors such as ones mentioned above during the iPad Stories program? How children will develop 21st century skills such as ones mentioned above during the iPad Stories program?
To what extent are the specific outcomes – social skills, behavior changes, 21st century skills- of each week’s program being met?

How do multiple experiences (according to the program’s design, six consecutive weeks) of the iPad Stories program impact children over time?

The Spinnerz Teen Photo Club is designed around the following key questions:

How youth will develop social skills such as – (peers eye contact; initiating and ending interaction among peers and art educators; conversational style; using and following social rules; flexibility in transition; emotional understanding; perspective taking; maintaining interactions)

How youth will change behaviors such as – (self-stimulatory activities; distress with the assessment; excessive movement; tantrum or protest; flapping hands)

To what extent are the specific outcomes – social skills, behavior changes, 21st century skills- of each week’s program being met?

How do multiple experiences (according to the program’s design, five consecutive weeks) of the Spinnerz Teen Photo Club program impact adolescences over time?
Sample

Beginning November 18th to December 3rd 2012, a sample of three children, all of them participants in the iPad Stories program, and three parents as their caregivers, participated in the study.

A sample of three youths, participants in the Spinnerz Photo Teen Club participated in the study, beginning January 26th to March 23rd 2013.

Participants’ characteristics

Participants in the iPad program were children from the proximity of the Queens Library’s branch, North Forest Park Library, the branch that accommodated the whole six sessions required by program. Participating students and their parents/caregivers were selected because of long-lasting relationship created between their parents/caregivers and the museum educators. The age of students varied between 4 years old to 12 years old. Of the sample of students’ participants, all of them were boys. Students’ autism’s symptoms varied from mild to severe characteristics.

Two families out three have had two children with autism spectrum disorder. In one family out of three, one children presented low functioning characteristics, while the other child was in the high functioning ASD’s developmental framework.
Two families out of three have had both children in the high functioning ASD’s developmental framework.

Participants in the Spinnerz Photo Teen Club were youth that formed a long-lasting trusty relationship with the art therapists and artist teacher. The age of students varied between 14 years old to 16 years old. Of the sample of students’ participants, one was a boy and two were girls. As in the other program, students’ autism’s symptoms varied from mild to severe characteristics.

Human Subject Protection

As required by the Queens Museum of Art policy, throughout the programs’ sessions I obtained parental consent for all instruments. Thus, verbal parental consent was secured for all students participating in the instruments during the session. The permission letter was signed by the Queens Museum of Art to use student’s digital stories (see Appendix for the Queens Museum of Art consent form).

All data generated from the study are confidential. Students’ and parents/caregivers’ names were stricken from all data and replaced with ID initials that I generated through the evaluation process.
Chapter II

Literature Review

Historically, much of the research on learning in museums was theoretical. For the last ten years these have been changed. Currently a variety of theoretical frameworks have been proposed for understanding the nature of learning from museums. One of these theories is particularly prevalent for the actual study - the Contextual Model of Learning as proposed by John Falk and Lynn Dierking (1992, 2000). This theory supported the present study and underlines its variable that might be important to understand how ASD children might learn in museums.

Contextual Model of Learning and its variables

Conceptual framework & how museum audiences learn in museum settings

From a constructivist perspective, learning is seen as a continuous, personal process. Learners begin to experience museums from different cognitive frameworks and create unique individualized experiences. It is also
seen as a highly contextual process. Learning takes place within a physical context influenced by personal and sociocultural contexts of individuals.

In constructivism, learning in museums is not just about what the museum intends to teach visitors, but also about what the visitors choose to experiences from their museums (Adams et al., 2003). Learners construct their own meanings and find their own values from museum experiences. Accordingly, the role of museum educators is that of providing appropriate learning environments where students may explore, increase, and confirm their knowledge.

For this study I will conceptualize the Falk & Dierking’s (2000) Contextual Model of Learning as the mechanism for understanding the personal nature of museum experiences and the contextual learning in museums for children with Autism Spectrum Disorder.

Before 1992, Falk and Dierking stated the need to “develop a comprehensive museum-centered model that embraces certain elements of mainstream learning theories, but that prescribes much stronger role for the variables of motivation, beliefs, and attitudes of the personal context and for the influences of social and physical contexts (Falk & Dierking, 1992, p. 99).”

Thus, in 1992, they developed what is known as the Interactive Experience Model (see Table 1). Later on, they have built upon and redefined this model, recasting as the Contextual Model of Learning (see Table 2).
Table 1:

**Interactive Experience Model**

Or Eight Key Factors that Influence Learning in Museum Setting

<table>
<thead>
<tr>
<th>Personal Context</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Motivations and expectations</td>
</tr>
<tr>
<td>2. Prior knowledge, interests, and beliefs</td>
</tr>
<tr>
<td>3. Choice and control</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Socio-cultural Context</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Within-group socio-cultural mediation</td>
</tr>
<tr>
<td>5. Facilitated mediation by others</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Physical Context</th>
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</thead>
<tbody>
<tr>
<td>6. Advance organizers and orientations</td>
</tr>
<tr>
<td>7. Design</td>
</tr>
<tr>
<td>8. Reinforcing events and experiences outside the museums</td>
</tr>
</tbody>
</table>
Table 2: Contextual Model of Learning Or Twelve Key Factors that Influence Learning in Museum Setting

<table>
<thead>
<tr>
<th>Personal Context</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Visit motivation and expectations</td>
</tr>
<tr>
<td>2. Prior knowledge</td>
</tr>
<tr>
<td>3. Prior experiences</td>
</tr>
<tr>
<td>4. Prior interests</td>
</tr>
<tr>
<td>5. Choice and control</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Socio-cultural Context</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. Within group social mediation</td>
</tr>
<tr>
<td>7. Mediation by others outside the immediate social group</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Physical Context</th>
</tr>
</thead>
<tbody>
<tr>
<td>8. Advance organizers</td>
</tr>
<tr>
<td>9. Orientation to the physical space</td>
</tr>
<tr>
<td>10. Architecture and large-scale environment</td>
</tr>
<tr>
<td>11. Design and exposure to exhibits and programs</td>
</tr>
<tr>
<td>12. Subsequent reinforcing events and experiences outside museum</td>
</tr>
</tbody>
</table>
The Contextual Model of Learning is a refined version of the Interactive Experience Model and involves three overlapping contexts: the personal, the socio-cultural and the physical. As Falk and Dierking (2000) stated, learning is both, a process and a product of the interplay of these three contexts. The main difference between these two contextual learning frameworks is based on the eight factors of the Interactive Model that are seen as fundamentals to museum learning.

The Contextual Model of Learning is not a model in its truest sense; it is not built upon predictions other than that learning is always a complex phenomenon situated within a series of contexts. More appropriately, the “model” can be thought of as a framework. The view of learning embodied in this framework is that learning can be conceptualized as a contextually driven effort to make meaning in order to survive and prosper within the world; an effort that is best viewed as a continuous, never-ending dialogue between the individual and his or her physical and sociocultural environment.

The Contextual Model of Learning portrays this contextually driven dialogue as the process/product of the interactions between an individual’s (hypothetical) personal, sociocultural, and physical contexts over time. None of these three contexts are ever stable or constant; all are changing across the lifetime of the individual. The Contextual Model of Learning draws from constructivist, cognitive, as well as sociocultural theories of learning.
The key feature of this framework is the emphasis on context; a framework for thinking about learning that has also been emphasized by others (e.g., Ceci 1996; Ceci & Bronfenbrenner, 1985; Sternberg & Wagner, 1996).

According to Falk and Dierking, the personal context represents the sum total of personal and genetic history that an individual carries with him/her into a learning situation. Building upon constructivist theories of learning, the influences of prior knowledge and experience on museum learning have been widely described and documented (Dierking & Pollock, 1998; Falk & Adelman, 2003; Gelman, Massey, & McManus, 1991; Hein, 1998; Roschelle, 1995; Silverman, 1993); so, too, the role of prior interest (e.g., Adelman et al., 2001; Adelman, Falk,&James, 2000; Csikzentmihalyi & Hermanson, 1995; Falk & Adelman, 2003). The exact nature of a visitor’s motivations, or “agenda”, for visiting a museum has also been shown to significantly influence the visitor’s learning outcomes (e.g., Falk, 1983; Falk, Moussouri, & Coulson, 1998; Graburn, 1977; Hood, 1983).

More recently, it has been appreciated that the degree of choice and control over learning also affects museum visitors learning (e.g., Griffin, 1998; Lebeau, et al., 2001). Thus, from the personal context perspective, one should expect new learning to ascend to the realities of an individual's motivations and expectations, which in the case of museums normally involve a brief, usually leisure-oriented, culturally defined experience. One should expect learning to be highly personal and strongly influenced by an individual's past knowledge, interests and beliefs.
One should expect learning to be influenced by an individual’s desire to both select and control his/her own learning.

The constructivist theorists also stated that humans are extremely social creatures. Moreover, they said that we are all products of our culture and social relationships (Ogbu, 1995; Wertsch, 1985). Hence, one should expect museum learning to always be socio culturally situated. Factors affecting learning have been hypothesized to include such large-scale influences as the cultural value placed upon free-choice learning (Ogbu, 1995) as well as the cultural context of the museum within society (Bal, 1996; Bennett, 1995; Hooper-Greenhill, 1992); although this is almost certainly true, empirical evidence for these impacts are difficult to find.

However, considerable research now exists which shows that visitors to museums are strongly influenced by the interactions and collaborations they have with individuals within their own social group (Borun et al., 1997; Crowley & Callanan, 1998; Ellenbogen, 2002; Schaubel et al., 1996). Research has also shown that the quality of interactions with others outside the visitor’s own social group, for example museum explainers, guides, demonstrators, performers or even other visitor groups, can make a profound difference in visitor learning (Crowley & Callanan, 1998; Koran et al., 1988; Wolins, Jensen, & Ulzheimer, 1992).

Finally, learning always occurs within the physical environment. In fact, as they said, is always a dialogue with that physical environment.

Thus, one should expect visitors to museums to react to the physical
context of the museum itself; which includes both the large-scale properties of space, lighting, and climate as well as the smaller scale aspects such as the exhibitions and objects contained within. Since museums are typically free-choice learning settings, the experience is generally voluntary, non sequential, and highly reactive to what the setting affords (Falk & Dierking, 2000). As such, visitor learning has been shown to be strongly influenced by how successfully visitors are able to orient within the space (e.g., Evans, 1995; Falk & Balling, 1982; Falk, Martin, & Balling, 1978; Kubota & Olstad, 1991; Hayward & Brydon-Miller, 1984); being able to confidently navigate within a complex three-dimensional environment turns out to be highly correlated with what and how much an individual learns.

Research has also shown that a myriad of architectural design factors such as lighting, crowding, color, sound, and space subtly influence visitor learning (Coe, 1985; Evans, 1995; Hedge, 1995; Ogden, Lindburg & Maple, 1993). Considerable research has focused on the exhibitions and labels themselves since they are designed to be the primary teaching tool within museums. Not surprisingly then, ample evidence exists that exhibition design features influence learning, in particular the sequencing, positioning, and content of exhibitions and labels (Bitgood & Patterson, 1995; Falk, 1993; Serrell, 1996), as well as how many exhibit elements a visitor attends to, and for how long (Bitgood, Serrell, & Thompson, 1994; Serrell, 1998).
Finally, less well documented, is the expectation that learning from museums will not only rely on the confirmation and enrichment of previously known intellectual constructs but will equally depend upon what happens subsequently in the learner’s environment since learning is not an instantaneous phenomenon, but rather a cumulative process of acquisition and consolidation (Anderson, 1999; Bransford, Brown, & Cocking, 1999; Medved, 1998).

Thus, experiences occurring after the visit frequently play an important role in determining, in the long term, what is actually “learned” in the museum. Recent longitudinal studies show that the learning that results from a museum experience does change over time, and not always just by declining (Anderson, 1999; Adelman et al., 2001; Falk et al., 2004; Goldman et al., 2001; Medved, 1998).

The Contextual Model of Learning provides the large-scale framework with which to organize information on learning. Inside the framework hang the details. These details are myriad. As Falk and Dierking (2000) mentioned, the total number of factors that directly and indirectly influence learning from museums probably number in the hundreds, if not thousands. Some of these factors are apparent and have been summarized above and in previous publications (cf. Falk & Dierking, 2000), others are either not apparent or are not currently perceived by us to be important.

Research has shown that the 12 factors included in the Contextual Model of Learning, contribute to the quality of a museum experience, though the relative importance of any one of these factors may vary between particular visitors and
venues (later on the study see how the factors influenced the learning of ASD children). While there exist evidence that each of these factors influences learning, there is not a direct answer to what extent each of these factors contributes to learning outcomes, in what ways, and for whom.

The above cited authors, and others, have made a case for one of these factors being the significantly critical variable influencing learning from museums many years ago. Arguably, all are important, but one or two these factors more important than the others, particularly for the intended audience, ASD children? Or, do none of these factors, individually, satisfactorily explain ASD visitor learning from educational programs as would be hypothesized by the Contextual Model of Learning?. Possible answers for these questions are suggested by the actual body of work within the nominated sample, time frame and limitations that have been previously presented.

Main characteristics of children with Autism Spectrum Disorder and their influences on how ASD children and youth learn in museum settings

Autism is a pervasive developmental disorder that falls into the category of autism spectrum disorders (ASDs). When speaking of autism, most are referring to Autistic Disorder (AD), or classic autism. Other children display Asperger Syndrome (AS) and Pervasive Developmental Disorder - Not Otherwise Specified (PDD-NOS), as distinct disorders with their own symptoms and diagnostic criteria.
Autism appears different in each person because it is a spectrum disorder, ranging from mild to severe. According to Fortunato (2007), children can demonstrate different combinations of behaviors that are symptomatic of autism, and they can display them to different degrees of severity. Because each individual falls in a different place on the spectrum, autism affects each person in a different way. This can be confusing to non-autistic people, who might expect people with the same disability to act in the same way.

With autism growing at a rate of 10-17% per year, the prevalence of ASD could reach 4 million Americans in the next decade (Hecita, 2004). Statistics say that prevalence rates for ASDs is between 2 and 6 per 1,000 individuals. Therefore, it is estimated that between 1 in 500 (2/1,000) to 1 in 166 children (6/1,000) have ASD (“How Common is Autism,” 2006). According to latest statistics, autism cases appear to be on the rise again in the United States. Despite the fact that experts say the country's highest ever rate could be a result of wider screening and the disorder's expanding definition, the fact is the rate of U.S. cases of autism and related disorders rose to about one in 88 children. An increase of nearly 25 per cent on the previous estimate was 1 in 110 in 2006.

This new number means autism is nearly twice as common as officials said it was only five years ago, and likely affects roughly 1 million U.S. children and teens. (See Appendix A for US cumulative growth chart, 2008).

Some characteristics of ASD that might be essential for learning in museum, include:

Stimulus over-selectivity: responding to only part of a stimulus, rather
than to the whole thing or the whole social setting, with implications for an inability to maintain multiple attention, or stress resulting from over-stimulation.

Literalness of language: implies that nothing should be taken for granted in the autistic [person’s] response to instructions.

Concreteness: a difficulty in understanding a slang word or unspecific communication where a general understanding exists within a particular culture (Connor, 1999).

As I mentioned before, every person with ASD has unique and specific characteristics within the spectrum. When these symptoms are acknowledged and addressed by employing tools and strategies, a degree of accessibility to museum exhibits and visual art experiences exists. Experts believe some general guidelines exist that can be utilized. Providing the most positive and accessible environment possible to learn and grow takes information, compassion and commitment.

However, each person with autism, just like each person without autism, is an individual and deserves to be treated as such. This might be a barrier for many museums in creating educational programs for children with ASD. In fact, many of the museums that have already done some programs for these children do not really stress on distinctions among individual students with ASD.

Nowadays, there is a real significant increase in researching autism, its causes, and therapies, including autism awareness. As publicity for this disability has increased, naturally more cases were recognized and diagnoses made (Frith,
2003). Increased publicity for autism has made more information about warning signs available to parents and doctors. It is possible that the odds of being born with autism have not actually increased, but instead parents and doctors are better equipped to spot autism in a young child. Unfortunately, the concept of an autism epidemic has led to the sentiment that autism is a disease that needs to be prevented or cured.

However, autism is a disability, not a disease, and while effective treatments are available, there is no proven cure for autism (Frith, 2003). Developmental disabilities can last a lifetime, but some organizations publicly claim that a cure is possible. In conclusion, it is important to remember that autism is blameless. There is no particular person who causes it, and it is possible for the people who have it to lead normal lives as functional adults.

Queens Museum of Art Approach to Autism

According to Queens Museum of Art, the goals of all programs developed for children or youth on the spectrum are to increase communication skills and solving problems skills, increase self-esteem, learn or develop appropriate behaviors for the community space, build independence, learn about community members and spaces, and develop story telling skills (Lopez & Candiano, 2012). The QMA approach is an “interdisciplinary approach that combines a firm background in behavioral principles with the goals and the methods of
socialization, literacy, museum practice, art therapy and education” (Lopez & Candiano, p. 11).

In its programs dedicated to children on the spectrum, the QMA believes in a multidimensional model, adaptable to a variety of environments and flexible for museums settings and its educators. One important key of all programs is the parent-feedback. Moreover, in their programmatic decisions, museums educators relay on parents and caretakers feedback to create and develop tools that are specifically tailored to the needs and concerns of families affected by autism (Lopez & Candiano, 2012).

The iPad Stories is part of the programs developed around the needs of children with autism and their families, courtesy of three-year grant from the Institute of Museum and Library Services and a long-term partnership with the Queens Library.

The iPad Stories is a pilot program to provide accessible, sensory-rich, project-based learning experiences, where the families with children on the autism spectrum can learn together while pursuing the children’s social and behavioral goals and the health of the community overall.

iPad Stories started in June 2012 as a model of learning for children with autism to create opportunities for family-centered use of facilities and resources currently underused by children on the spectrum. This interdisciplinary program (storytelling & technology-craft activities) inspired the building of a framework around community programing that creates therapeutic spaces in which children with special needs can generalize the skills they have learned in a contained
classroom space and apply them in a community setting, such as a museum or library. IPAD Stories uses an interdisciplinary approach that combines a strong background in behavioral principles with the goals and methods of socialization, literacy, museum practices, art therapy and education.

iPad Stories program runs and lets autistic children and their parents use the iPads to create stories every week with recorded sound, cartoon images and effects. The iPad storytelling classes' goals are two-fold: teaching children the basics of storytelling while placing them in a social environment. The use of technology, such the IPAD, is based on its familiarity to the children. Each session is developed around a topic, per se, the concept of a problem or conflict in the story and runs half of the time on debating how the characters solved problems/conflicts, and the other half on creating new stories by using the IPADs.

Throughout the latter half of the class, parents and teachers help the children craft their interactive stories, which the kids create using Bookabi, a free iPad app that allows kids to add photos and record their voices. When the stories are done, children can present their masterpieces, which play back the recorded audio each time a page is flipped, in the front of class.

The Spinnerz Teen Photo Club is a club for teens with autism to encourage socialization through music and photography. Teens build lasting friendships while learning how to DJ using turn tables while documenting and exploring their surroundings and relationships through photography.

Spinnerz’s participants spend three of the sessions at No Longer Empty’s
exhibitions at the Bank of Manhattan in Long Island City. At No Longer Empty, participants create a digital story book about visiting new spaces while viewing the exhibition How Much Do I Owe You?.

Besides the two ArtAccess Educators, trained to support people with special needs through art, another artist-teacher have taught photography and DJ's skills. ArtAccess is an awarded winning program of the Queens Museum of Art dedicated to visitors with special needs. The course has had Spanish Language and Autism supports and parent & child were paired to explore the activities together.
Chapter III
Methodology of Study and Findings

I collected all data onsite, at the designated branch of the Queens Library, Queens Museum of Art and No Longer Empty Gallery, Former Bank of Manhattan, Long Island City.

Overall Strategy & Development of Instruments

Dependent Variables.

The dependent measures for this study were deemed to be changes in behaviors, skillful uses of technology (iPad, camera and DJ mixer), changes in social interactions through the programs' session.

The technique to capture these behavioral, cognitive and social changes was based upon a series of repeated measures using the following three very different, unique and specific instruments: students' naturalistic observations, parents' questionnaires, and rubric to measure the achievement outcomes.

The parent's questionnaires, utilized for the iPad Stories (because of its parent/caregiver-child component) were developed as standardized questionnaires used to measure attitudes in children with autism spectrum disorders.

A questionnaire was selected because of its advantages in providing evaluator access to parents' thoughts, ideas, and reflections (Note: according to
iPad Stories program and researcher thoughts, parents were considered and treated as a significant segment of visitors and didn’t analyze their answers just from the perspective of being parents/caregivers).

The questionnaire includes a small number of questions in order to offer to parents a pleasant experience and give the parents the opportunity to manage easily a friendly evaluation instrument. The questionnaire also allows participants to keep their anonymity and gives them a certain level of privacy. The questionnaire offers a consistency of responses. Each questionnaire has the same questions, in the same order, in the same format leading to consistency in the data collected.

One disadvantage to using questionnaire was the common situation of participants not completing the questionnaire. Because of the format of the program (each week the participants meet one time), combined with tragic weather issues (due to Hurricane Sandy – November 2012, many Queens’ neighborhoods were devastated and affected) the researcher asked the parents who were present at the program location to complete the questionnaires.

As a part of the evaluation of iPad Stories at the Queens Museum of Art and partner library’s branch, I utilized the parents’ questionnaires to gather information from participants – parents/caregivers- related to the first and second research questions, “What is the impact of shifting from storytelling to digital stories for participating over three categories of outcomes-social skills, behavior and 21st century skills?”, and “Did children develop social skills/change some of the behaviors/develop 21st century skills?” The parents/caregivers were asked
their feedback on the program through open-ended questions. The responses to these questionnaires were manually input into the online tool Survey Monkey. All questionnaires collected were hand distributed during or after the iPad Stories program.

The data collected was analyzed based on the type of questions with different analysis conducted on open-ended questions. The data was coded and then sorted into categories. Quotations from the questionnaires were used to illuminate the range of responses within each category. Another limitation was based on the small number of samples that the evaluator collected, partially due on the mentioned unexpected issues, but also because of the small sample of participants in accordance to program’s design.

The strength of using the questionnaire was in the direct and focused responses possible to gather. This was beneficial in attempting to gather information related to specific research questions. While this was helpful in some respects, the direct questions did limit the range of responses, potentially excluding important participant information.

The occurrence of this kind of response suggests that while generally effective, the questionnaire’s design could have been improved.

Once all of the data was collected I began the process of organizing and reviewing it. All questions were open-ended questions and offered qualitative data. For all qualitative data the information was organized by question and then reviewed for trends within questions. Trends were developed after carefully reviewing parents’ responses, and then those trends were used to
organize the information by occurrence rate. The process of organizing by trends was similar to Merriam's (1998) use of categories for organizing evaluation data.

Naturalistic observations offered the opportunity to gain valuable insight into visitors’ experiences without requiring their time or attention. Instead, visitors were left to engage in programs. During observations there were information that gained an understanding of what children with autism spectrum disorders actually do, which weren’t possible to be achieved by administrating questionnaires, surveys or interviews.

The naturalistic observations followed the rubric included in the observation guide. This allowed for observations and focuses on behaviors that were interesting for the museum staff. Additionally, for the effectiveness of the evaluation, the observation guide was created in cooperation with the museum staff. As Diamond stated, when determining what will be observed categories of observation are created (Diamond, 1999).

Using categories for observation will insure consistency between data collectors, and assist in the analysis of the data (ibid.). However, the strength of collecting information through observations is in its unobtrusive nature. This factor is major especially for subjects with mild or severe form of autism.

One limitation of naturalistic observations is the limit of the amount of information one observer can gather at a time.

As part of the study conducted at the Queens Museum of Art, structured observations of families were conducted from the time they gathered in the activity’s room till the end of the session. The created observation offered the
possibility to observe frequency of behaviors among children, changes in their behaviors, interactions among child participants, interactions among child participants and their parents, interactions among child participants and museum educators, and even interactions among child participants and evaluator. Methods and their corresponding categories are discussed below. In each case, child is an adjective so it’s child instead of children.

Observations were conducted when all children participants received the book, to determine if the children showed interest in reading and reviewing pictures from the discussed story. During the observation’s time, there were observed also interactions among child participants and their parents during the story time/activity and how children engaged in the conversation about the story, discussion led by the museum educator.

For approximately twenty to twenty five minutes, the time allocated to the story activity, there were observed the prescribed categories of child behavior and adult behavior, as following:

CHILD BEHAVIOR:

- Is the child holding the book
- Looks at the book and its images
- Shows interest in story
- Asks questions about the story characters and the encountered events
- Shows interest in understanding how to solve the encountered situation
• Shows interest in drawing the story that was read or described through images
• Is leading the story time activity

PARENT BEHAVIOR:
• Is parent holding the book
• Initiates conversation with the child about story's characters, setting, the encountered events/situations
• Is leading the story time activity

The next naturalistic observation of child and parent participants was during the digital story activity. For the same amount of time, there were observed child and parent behaviors, as following:

CHILD BEHAVIOR:
• Is child holding the iPad
• Shows interest in crafting the digital story
• Engages in digital crafting activity's discussion with the parent and the museum educator
• Shows interest in explaining, solving and understanding problems on the behalf of his characters
• Is crafting the digital story without asking any help from his parents
• Is leading the digital story activity

PARENT BEHAVIOR:
• Is parent holding the iPad
• Initiates conversation with the child about story’s characters, setting, the encountered events/situations

• Is leading the digital story activity

Another observation time was dedicated during one session to observe staff effectiveness on delivering content, and conducting or leading during story time and digital story.

During each observation time has been used the observation guide to tally the child and parent behaviors. For each mentioned activity, there were six participants, three children and their parents/caregivers. The information gathered from observing participants and staff was useful in understanding the visitor’s experience during the iPad Stories program.

Another instrument that measured dependent variables was a scoring rubric. The scoring rubric consists in a set of criteria linked to program objectives. The set of criteria was used to asses performance of behaviors, social skills and 21st century skills for child participants. The scoring rubric was useful because it allowed qualitative data to be measured in a quantitative way, thus allowing all three categories of outcomes (behavior, social skills, and 21st century skills) to be measured.

So, the rubric created measured children’s skills related to all three categories of outcomes. Each child observation was considered as an item. For each item, the final observation was scaled from “Weakness”, to “Slightly Change” and “Strengths”. The scoring rubric was developed based on the patterns and trends that emerged from the QMA input along the program.
For the Spinnerz Teen Photo Club, the naturalistic observations were the main tools to observe changes in participants' behaviors grow of social skills or develop of 21st century skills (use of technology – digital camera and DJ mixer). Observations were conducted over three different sessions. The observations conducted at the Queens Museum of Art (first session) revealed information about the way participants created their own clay characters, learned basic elements to create a good photography, and discussed about the upcoming visit at the No Longer Empty Gallery.

Thus, the first activity was dedicated to journaling, looking at pictures book, choosing a character, drawing the character in their journals and thinking about a story in which the main character will be the new created character. During the time allocated to the journaling activity, there were observed the prescribed categories of adolescent behavior, as followed:

- Is adolescent looking at the sample book to find characters that are appealing to him?
- Looks at the images and comments images to define potential characters
- Shows interest in drawing characters
- Shows interest in creating a story – plot, setting, events, (maybe some special situations that the characters may encounter through the story)

The next naturalistic observation was during the art making characters. For the same amount of time, there were observed the prescribed categories of adolescent’s behavior:

- Shows interest in art making process
- Engages in crafting characters activity
- Initiates conversation with the educator about story characters, setting, possible encountered situations/events that the characters is going through
- Shows interest in sharing his/her characters story

The most significant findings during naturalistic observations were gathered within the second and third session that happened at the No Longer Empty Gallery. For these two sessions, there were observed the prescribed categories:

- Shows interest in the content (Where did the money come from? How we can save money? What is the function of a bank? What are we finding in a gallery? What happens when a space becomes empty? How we can transform these spaces and give it a different function? What are some of the materials that the contemporary artist using to create their art works?
- Shows interest in exploring the art gallery
- Shows interest in learning about the art works
- Shows interest in caring conversations with their peers about the art works
- Shows interest in trading and understanding the role of money in the society
- Show interest in learning and using basic photography notions to create their own photography
- Show interest in free choice activity – DJ mixing;
Independent Variables

Independent variables create an impact on outcome or dependent variables. For example, the main independent variable in this study was the educational intervention – the participants experience in the iPad Stories and Sppinerz Photo Teen Club. However, as Falk and Dierking (2000) stated in the framework of the Contextual Learning Model, the visitors’ experience is actually a complex of independent variables (factors) such as design, setting, advance organizers, orientation, and subsequent reinforcing experiences. Within the Contextual Model of Learning, Falk and Dierking place these variables within the physical context.

However, the Contextual Model of Learning posits that a range of other independent variables, not directly associated with the educational intervention, may also affect learning outcomes. These include personal context variables such as prior knowledge, prior experience, prior interest, visit motivations and expectations, and choice and control, and sociocultural contextual variables such as interaction within one’s own social group.

As the findings of the study will be presented, each of the major factors were in itself, a multidimensional construct.
Chapter IV
Findings and Discussions

Introduction

The actual study represents the result of a qualitative research. As Marshall stated, qualitative studies aim to provide illumination and understanding of complex research questions such as “How?” and “Why?” (Marshall, 1996). In fact, the nature of the actual research is to provide the most effective way of developing and understanding complex issues related to human behavior. The actual research analysis potential changes in children with autism spectrum disorders at the level of behaviors. Compared to other qualitative research the size sampling is very small but it is an appropriate sample size for a qualitative study that adequately answers the research questions.

The approach to selecting a sample for the current qualitative research was based on practical, realistic and ethical principles. Thus, the use of a convenience sample became part of the methodology framework. Despite the fact that this method is the least rigorous technique, it involves the selection of the most accessible subjects. It was the least costly to the researcher in terms of time and effort. It was also determined by internal or external factors such as, the design of the program, (six families per program, and six sessions per program), unexpected weather issues that influenced the attendance of the participants.
Overall, if we are taking into consideration the design of both programs, the convenience sample was realistic to accomplish the final goals of the study.

Findings and discussion

Out of six families (six parents) that enrolled in the iPad program, three of them completed the parents’ questionnaire. The parents’ questionnaire wasn’t designed to offer any demographic data. However, two of the parents were male and the other one was a female. Their age varied between 35 years old and 45 years old. All families had previously participated in a QMA ArtAccess program. Because of the main characteristic of the sampling group, all children were diagnosed with mild to severe forms of ASD (Autism Spectrum Disorders), parents’ questionnaire findings describe parents’ and students’ attitudes about using technology, attitudes about 21st century skills, attitudes about social skills, and attitudes about specific behaviors.

MOTIVATION AND EXPECTATIONS (iPad Stories)

Parents’ Questionnaires Responses to: "How did you find about the iPad Stories program?"

The majority of parents mentioned the "museum email list" as the principal source of getting the latest information on programs developed for ASD children. The other family mentioned that they got knowledge about the programs developed at the QMA for families affected by autism through the Queens Library, the actual branch that hosted the iPad Stories program.
Parents’ Questionnaires Responses to: “Why did you choose the iPad Stories program over other programs for children on the spectrum developed at the QMA?”

**MOTIVATION AND EXPECTATIONS – PARENTS’ CHILDREN (iPad Stories)**

The following responses are all related to why parent participants choose the iPad Stories program over other programs for ASD children developed at QMA. All parents indicated that they highly value 21st century skills for their children. Thus, they stated, “I want my child/children to know to use technological devices such as the iPad etc.”. Almost as many parents, 2 out of 3, strongly agreed with the statement “My child/children know/love to use the iPad or other tablets/devices”

**MOTIVATION AND EXPECTATIONS AND PRIOR EXPERIENCES AND PRIOR INTEREST (iPad Stories)**

Parents’ Questionnaires Responses to:”Which activity of the program – the story activity or the iPad activity – did you find more interesting for your children? Why?”

**WITHIN GROUP SOCIAL MEDIATION (iPad Stories)**

For this question all respondents totally agreed that the most appealing activity during the program was the activity in which their children crafted the digital story using the iPad.
SUBSEQUENCE REINFORCING EXPERIENCES (iPad Stories)

Parents’ Questionnaires Responses to: "After the program did you use the iPad at home to create stories? Was it your idea or your child?"

CHOICE AND CONTROL (iPad Stories)

All families/parents stated, “I used the iPad or other tablets/devices at home”. The majority also added “I will use at home any devices/tablets that I will have in my possession.” For the second part of the question, the majority responded, “The digital story time was initiated by my child/children”. The other segment of parent participants stated, “I was the initiator of digital story time”.

Findings of the naturalistic observations (iPad Stories)

As described earlier, the iPad stories naturalistic observations consist in three students participated; each student participated in each of the three observations. As part of the structured observation, students were presented a picture book that has a plot; at least two characters, a setting, and the characters have to solve a problem.

All naturalistic observations focused on three categories of outcomes.
OBSERVATION 1: DISCUSSING PICTURE BOOK A AND THE THEME “SAFETY IN THE CITY”

Each student was presented with a few picture books about cities, type of architecture in cities, skyscrapers etc. The theme of the session was “Safety in the City!”. The museum educator told students, “We are going to visit a big city. Which city do you want to visit? It might be Manhattan, what do you think? What buildings are we seeing when we are going to Manhattan?”

After giving the students a few minutes to examine all the picture books, museum educators encouraged them to pick one book. The book that each student picked served as the visual prompt for having a conversation about the theme of the week, “Safety in the City”! The museum educators led the entire discussion about safety in the city. Each student received one–to-one attention from one of the museum educators. Each student was challenged to create his own story using the setting from the chosen picture book and adding at least two new characters. The museum educators asked students to draw their new story on a blank paper. After the traditional storytelling activity, the museum educators led the conversation to find out more about how students solved the problem of the week, “How we can be safe in a big city” After drawing the students were invited to craft a digital story using the iPad. With the help of the app Bookabi students created their digital stories. Each story touched on the week’s theme and solved the problem of being safe in a big city.
OBSERVATION 2: DISCUSSING PICTURE BOOK B AND THE THEME “HOW WE TREAT OLD PEOPLE”

The second naturalistic observation respected the same protocol of steps as the first naturalistic observation. The only differences were the picture books. In that case all picture books have as main characters grandparents, parents, or personalities of small cities.

OBSERVATION 3: DISCUSSING PICTURE BOOK AND THE THEME “MY BEST FRIEND”

The third naturalistic observation followed the patterns of the previous observations. The picture books selected by the museum educators together with the librarian depicted meaningful friendships between brothers, classmates, playmates etc.

PRESENTATION OF FINDINGS FOR ALL NATURALISTIC OBSERVATIONS (iPad Stories)

The findings are organized according to the three categories of final outcomes: social skills, behavior, and 21st century skills.

SOCIAL SKILLS are students’ abilities to maintain eye contact through a conversation; students’ ability to initiate and end an interaction or conversation with the adults (museum educators) or among other participants; students’ ability
to use gestures to supplement verbal communication; students’ ability to define and maintain a conversational style; students’ ability to show flexibility in transitions; students’ emotional understanding.

BEHAVIORS explore students’ abilities to change, correct or avoid some of the ASD’s behaviors: self-stimulatory activities; distress with the assessment; moving around; tantrum or protest; flapping hands.

21ST CENTURY SKILLS are students’ abilities to participate in project-based learning activities; to solve problems through the stories characters; to use advanced technology such as Tablets, devices (iPads); to present in public their final stories/products.

Through surveying three families (six families enrolled for the iPad Stories program), and observing three children (eight children were enrolled at the beginning of the program), a picture of the impact of shifting from storytelling to digital stories for participating children over the three categories of outcomes – social skills, behavior and 21st century skills, emerges.

MOTIVATION AND EXPECTATIONS AND PRIOR EXPERIENCES AND PRIOR INTEREST (Spinnerz Teen Photo Club)

Through informal discussions with parents, all adolescents’ participants expressed their own desire to participate in the Spinnerz Teen Photo Club. The main reason was based on their own interest to learn how to take “professional” pictures. Besides that, all participants were also interested to know how to use a
DJ mixer, such a fun activity for their developmental age. Overall, participants showed special interest and motivation in using technological devices that are age appropriate.

**WITHIN GROUP SOCIAL MEDIATION (Spinnerz Teen Photo Club)**

The most appealing sessions for adolescents were the sessions that happened at the No Longer Empty Gallery. The uniqueness of the place (contemporary gallery where many technological devices are involved in artists' works- touch screens, contemporary art of work displayed in a modern manner, the young crowed) was just some of the factors that allowed adolescents to completely engage in the art space. The participants in Spinnerz Teen Photo Club embedded social skills trained in natural, age-appropriate settings and learning in context with the support of typical peer roles model such as young museum educators or interns.

**SUBSEQUENCE REINFORCING EXPERIENCES (Spinnerz Teen Photo Club)**

All subjects participated in other programs developed for ASD adolescence audience at the Queens Museum of Art. Moreover, they looked accustomed to the use of digital camera or Dj mixer. In fact, in the second session, at No Longer Empty Gallery, two of the subjects revealed their own interest in digital photography and affirmed that photography is one of their hobbies.

**OBSERVATION 1: DISCUSSING THE ROLE OF MONEY AND THE THEME “NO LONGER EMPTY”**
Participants were part of in depth conversation about the role of money. Participants were sitting in a circle in small chairs and look around what works of art were displayed in that particular gallery. The museum educators encouraged them to try to describe within their own words some of the works they were noticed and explained why did they chose this art of work. All of the works displayed in that gallery (The Dragon Money; The Money Making Station) were related to their theme “The Role of Money in our Society”. Each student had the chance to describe at least one characteristic of one work of art. In fact, the whole display was a good environment that accommodated visuals or prompts for having a conversation about the theme of the session. The two museum educators led the entire discussion about money. Each student received one-to-one attention from one of the museum educators. Each student was challenged to describe the art works using the setting.

The conversation was guided by the following questions; “What do we need money in our live” “What is the fun part about the money?” For this particular question, the most common answer was “You can buy whatever you want”.

Other questions were: “How you can save money?” Where you can keep money?” The museum educators to connect the overall theme “Role of Money” with the physical space, No Longer Empty Gallery, a former bank of Manhattan intentionally addressed this question. In this way, students found out that the gallery, after the bank was closed, was an empty space for about 30 years. This information was either confuse or hard to perceive by students, since most of them repeated constantly this idea for two or three times. During the whole
conversation was a very high peer–museum educator’s engagement that conduct to a very great scaffolding of social skills.

Then, museum educator moved the pole of the attention to one of the art work, “The Branches Work”, and introduced in discussion what is the material that the money are made out of. Through VHS method (open-ended questions and different entry points) students discussed what are some of the materials that some of the art works from the gallery are made out of. Despite the background music and noise, all students were very engaged at the level of their own pace and comfort.

Moreover, the discussion continued in the direction of exploring some of the artistic techniques that were presented through the displayed works. Pointed to the branches work of art, students described what they saw, and even some ideas related to how the work is presented – branches of tree displayed in organized layers and not any presence of the mess. From here, the museum educators let the group to recall their own experiences, such as to enumerate some of their favorite trees and favorite fruits. At the end, the museum educators revealed that the branches artwork was made out of peaches branches.

The next step involved sensory exploratory, students were invited to smell fruits and describe in their own words what they felt when they touched a peach. The energy of group and the level of conversation revealed a very engaged environment for all participants.
The next gallery stop was at the Lava artwork. Based on the same techniques, museum educators engaged students to describe in their own words what they saw, materials and what was the artist’s intention. The main material of this work was rice and sand. Next, students received “an empty paper bag” where they stocked some items that were traded to each other. At the end, the items constituted their materials to construct their own piece of art.

OBSERVATION 2: Including social skills (role of money) and artistic skills (their own traded items) into a piece of artwork

Back in to the classroom setting, they used the goods that they traded to create an artwork as the artist did with sand, rice and light. The trading action continued within the classroom setting, but that time the main trader’s characters were their artwork – characters made out of clay. The characters, as I mentioned before, were created in the first session that happened at the Queens Museum of Art.

Already done the trading session, students were invited to take pictures of their artwork – using some of the techniques that they already learned – birds view; macro pictures; picture parts, or the whole object. In that case, the 21st century skills played an important role. Two out of the subjects declared their passion for photography. In fact, both showed less and less tantrum behaviors when were focused on taking professional pictures to their characters. From time to time, all students chose to play with the Dj Mixer.
OBSERVATION 3: Walk with characters into the gallery, take pictures of characters as they walk and turn the pictures into digital stories.

The most surprising fact was that students didn’t express any distraction by the time they walked into different parts of the gallery. Moreover, they were concentrating on creating artistic pictures by blending/integrating their own characters into other artists’ works (see the image). At the end, students passed the pictures to the museum educators who created the digital presentation of students’ story. That observation revealed interesting aspects in the way students enjoyed manipulating the digital camera, and tried some of the technical notions that they previously assimilated when they learned about “eyes’ birds; macro picture”. The results of these findings are represented in the graphic organizer that showed the evolution of 21st century skills, particularly, technology skills.

PRESENTATION OF FINDINGS FOR ALL NATURALISTIC OBSERVATIONS (Spinnerz Teen Photo Club)

The findings are organized according to the three categories of final outcomes: social skills, behavior, and 21st century skills.

SOCIAL SKILLS are students’ abilities to maintain eye contact through a conversation; students’ ability to initiate and end an interaction or conversation with the adults (museum educators) or among other participants; students’ ability
to use gestures to supplement verbal communication; students’ ability to define and maintain a conversational style; students’ ability to show flexibility in transitions; students’ emotional understanding.

BEHAVIORS explore students’ abilities to change, correct or avoid some of the ASD’s behaviors: self-stimulatory activities; distress with the assessment; moving around; tantrum or protest; flapping hands.

21ST CENTURY SKILLS are students’ abilities to participate in project-based learning activities; to solve problems through the stories characters; to use advanced technology such as digital camera, Dj mixer; to present in public their final stories/products.

Through observing three participants showed a high desire of shifting from storytelling/journaling to digital stories created through the digital camera. Overall, over the three observations, participating children showed all three categories of outcomes – social skills, behavior and 21st century skills.
Chapter V

CONCLUSION

Based on the experiences of these families, conclusions can be drawn as to what changed or what was gained for most families who participated in these programs based on the three visits, helping to shape and design future programs and marketing decisions for this particular segment of audience.

The majority of families who participated in the program tend to have two children affected by the ASD, usually one child high functioning and the other child showing a lower level of communication and socialization skills. This fact affects the level of parent’s engagement during the program in a different way for each child. Thus, most of the time, the low functioning child received more attention from parent while the high functioning child gained more self-esteem and independence in approaching his assessments. Likewise, the level of attention from the museum educators is also seemed to be on child diagnoses. Moreover, during particular severe events, such as tantrum or flapping hands, the leader role is totally transferred from the museum educator to the parent. In that case, an experienced and trained museum educator who can easily recognize specific behaviors in ASD children is more able to transfer the leader role for the parents.

However, the trained museum educator/librarian gained some experience in anticipating ASD symptoms by the time he/she worked more and more with this particular audience. In fact, sooner the staff is able to recognize the symptoms of
some behaviors, is better for the pace of the whole group and the success of the whole program.

For the adolescent audience, most of the findings highlighted the importance of embedding social skills training in natural, age-appropriate settings and learning in context with the support of typical peer roles model. As many studies revealed, the generalization of age-appropriate communication is natural embedded into regularly occurring classroom experiences. Thus, I saw impressive reductions in “autistic-like” behaviors when students were exposed to repeated and prolonged interactions with typically developing peers.

Despite the fact that the gallery was overall, an environmental stressor – loud noises, bright lights, and all students didn’t manifest any concern that the environment wasn’t an appropriate space to hang out. Moreover, there was also a social stressor factor– large young crowds walking around. The students blended within the gallery based on person-centered support that they received from the museum educators.

Students acquired new knowledge like technical abilities to manipulate a digital camera based on student motivation, social interaction, communication and compliant/supportive behavior created at the gallery. They also encountered regular basis exposure to sensory activities (different lights, sounds and displayed devices into gallery).

Overall, for all ASD adolescents all three sessions were examples of inclusive education. There opportunities intentionally created for this specific audience. It
empowered students to feel self-worth due to a positive attitude of the museum educators and recognize their involvement in a gallery. It was an educational practice, is based on the assumption that all students can learn, given the appropriate support and instructional content. Moreover, it was an inclusive education that recognized the importance of belonging and friendship as an integral part of adolescent development.

The success of the program was based on the above-mentioned approach, the emphasize of schedules and procedures that were prominently displayed. The room arrangement (the classroom setting) was designed to eliminate distractions, enhance instruction, and manage materials. Students seating arrangements place high value on peer support. There were talks about proper etiquette for audience behavior.

In conclusion, the program was a success for ASD adolescents. They walked away with positive changes in some of the autism-like behaviors, added knowledge in using some technological devices and continued to build on relationships.

The case of the iPad Stories program shows that children can interact and grow together as a community of learners in relatively contained environment. The QMA’s PBS approach can’t grow within a chaotic and continuously disruptive environment. The majority of families who participated in the program have previous experience participating in at least other two programs developed at the QMA for families affected by ASD. Since the majority of the parents and
children who participated in the survey and were observed had previously attended some of the Queens Museum of Art- ArtAccess programs, even if not for a program that incorporated technological skills, it seemed that the majority of parents have some familiarity with the QMA’s approach, the PBS (Positive Behavior Support). It can be assumed that they want to come back and expose their children to the museum setting environment and engage them in many museums’ programs dedicated to families with children affected by ASD.

Through observing three children during three sessions, according to the findings – rubric’s tables, all children showed significant improvements in all three categories of outcomes that were observed – social skills, behaviors and 21st century skills. Specifically, each child started the program with poor or less social skills. Over the three sessions all of them mastered all social skills and allowed them to have the sense of inclusion in a museum setting or library, which later it may be helpful in gaining inclusion in other settings of their community.

In fact, social skills achieved the highest level among all categories of skills in which children with ASD improved or changed over the whole program.

The number of behaviors that children changed or corrected is pretty high. Additionally, according to the museum educators, the behaviors category represents the biggest achievement of the entire program. Amazingly, the majority of the students started with a very low number of changed or improved behaviors and finished with crucial changes in some of the behaviors.

The third category of 21st century skills showed slight changes and Improvements. The final result actually was predictable since the all parents of
the students stated in the questionnaires that their children know, use, and love to manipulate devices such as iPads, Tablets, etc.

Finally, if I can answer the question of whether or not the Contextual Model of Learning provides a useful framework for understanding learning from museums for ASD audience, I would say that the results in this study appear to support the value of the Contextual Model of Learning as an operational framework, with some caveats. The study reinforces what most already know that learning from museums is highly complex. The Contextual Model of Learning provided a useful framework for beginning to unravel the complexities of learning in museums for ASD audience.

As the results reported here, depending upon who the visitors were (a particular audience with its own characteristics), what they knew (prior experiences and interests), why the students came (young students came with parents, older students chose to come), and what they actually saw and did (as the naturalistic observations revealed). All these factors influenced the outcomes of the museum experience and determined if there were changes in their behaviors.

However, as the scholars of the Contextual Model of Learning stated, this framework appeared to be a major turning point in describing the complexity of museum learning experiences for ASD audience. I believe that is an important starting point to continue the work and to redefine and improve upon this framework in relationship to ASD audience characteristics.
I believe this, study such as the one summarized here, provides the beginnings of a more conceptually based and empirically approach to understanding learning from settings like museums. The promise of this research is that further analysis of data collected here, combined with additional data from similar studies, will begin to yield and ever-more-refined model of learning from museums for ASD audience.

Thus the real take away message of this study is that simple, reductionist, linear approaches to affecting and understanding learning from museums will simply not suffice. Besides that, the complexity of characteristics that define the ASD audience, added upon the complexity of learning in museums settings, make the research job even more complicated. However, an awareness of this reality has begun to appear among museums specialists. Only by appreciating and accounting the true complexity of the museum experience will improved facilitation and understanding of learning in museums for audiences that were left aside for so long, will the museum experience become more powerful for the ASD students.
References


Appendixes

Identified Prevalence of Autism Spectrum Disorders
ADDM Network 2000-2008
Combining Data from All Sites

| Surveillance Year | Birth Year | Number of ADDM Sites Reporting | Prevalence per 1,000 Children (Range) | This is about 1 in X children...
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>1992</td>
<td>6</td>
<td>6.7 (4.5-9.9)</td>
<td>1 in 150</td>
</tr>
<tr>
<td>2002</td>
<td>1994</td>
<td>14</td>
<td>6.6 (3.3-10.6)</td>
<td>1 in 150</td>
</tr>
<tr>
<td>2004</td>
<td>1996</td>
<td>8</td>
<td>8.0 (4.6-9.8)</td>
<td>1 in 125</td>
</tr>
<tr>
<td>2006</td>
<td>1998</td>
<td>11</td>
<td>9.0 (4.2-12.1)</td>
<td>1 in 110</td>
</tr>
<tr>
<td>2008</td>
<td>2000</td>
<td>14</td>
<td>11.3 (4.8-21.2)</td>
<td>1 in 88</td>
</tr>
</tbody>
</table>

Information retrieved from

Appendix B - Matrix of iPad Stories Evaluation

The research matrix used to identify appropriate research methodologies, with research questions along the left and methodologies along the top.

<table>
<thead>
<tr>
<th>Specific Research questions/ evaluation objectives</th>
<th>Family surveys distributed to parents in the first session</th>
<th>Naturalistic observation s during the three sessions</th>
<th>Staff interview s during the second session</th>
<th>Rubric to measure the achievement of the outcomes prepared with the staff</th>
<th>Criteria of the effectiveness of program prepared with the staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What is the impact of shifting from storytelling to digital stories for participating children over the three categories of outcomes – social skills, behavior and 21st century skills?</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>2a. Did children develop social</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>skills such as – children's eye contact; initiating and ending interaction; using gestures to supplement verbal communication; conversational style; using and following social rules; flexibility in transition; emotional understanding; perspective taking and maintaining interactions during the iPad Stories program?</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2b. Did children change some of the behaviors such as - self-stimulatory activities; distress with the assessment; moving around; tantrum or protest and flapping hands during the iPad Stories program?</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2c. Did children develop 21st century skills</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
such as – project based-learning activities; problem solving through story’s characters; using the iPad device and public presentation during the iPad Stories program?

3. To what extent are the specific outcomes – social skills, behavior, 21st century skills- of each week’s program being met?

4. How do multiple experiences (according to the program’s design, six consecutive weeks) of the iPad
<table>
<thead>
<tr>
<th>Stories program impact children over time?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
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<td></td>
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<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
Appendix C - iPad Stories Parents’ Questionnaire

As part of my graduate work at Bank Street College of Education in New York, I am conducting research for my Master’s thesis on the Queens Museum of Art iPad Stories Program. I am interested in learning more about your family’s experience participating in the iPad Stories Program.

The final Master’s thesis will be housed in the Bank Street Library, where it will be available to faculty, students, and through interlibrary loan to those beyond the Bank Street community. The final study will also be available to the Queens Museum of Art. Your family’s privacy will be maintained through changing of names of all participants.

By returning this survey you are confirming your consent for your responses to be used in this study.

Thank you for taking the time to share your insights with me. If you have any questions or concerns about the research, please feel free to contact me at mschwartz@bankstreet.edu

1. How did you find out about the iPad Stories Program?

2. Why did you choose the iPad Stories Program over other programs for children on the spectrum developed at the QMA?
3. Which activity of the program - the story activity or the iPad activity did you find more interesting for your children? Why?

4. Did you use the iPad at home to create stories? Was it your idea or your child?
Appendix D - iPad Stories, Guide of Naturalistic Observation

Date: ________________  Data Collector’s initials: ________________

# of people in family group: __________________________

  # of children in family group: _____  Approximate ages of children:  2-4;  4-7;  8-10;  11-13;

Scale range of child: communication – from 0-4; socialization - from 0-4

Family is listening the story? Yes / No

Family is creating the story map? Yes / No

Family is using the iPad?: Yes / No

Approximate Amount of Time Spent @ Each Section:  <20 min.  >20 min.

<table>
<thead>
<tr>
<th>Child Behavior</th>
<th>Yes</th>
<th>NA</th>
<th>Notes and/or Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does child hold the book?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does child ask the adult questions? Are questions related to the story?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does child show interest in activity of story?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does child show interest in drawing the story?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does child lead the way/set the pace?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does child show interest in crafting the digital story?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Adult Behavior</th>
<th>Yes</th>
<th>NA</th>
<th>Notes and/or Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does adult hold the book?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does adult ask the child questions about story/characters/situations/problems encounter in story?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Question</td>
<td>Yes</td>
<td>NA</td>
<td>Notes and/or Examples</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>-----</td>
<td>----</td>
<td>-----------------------</td>
</tr>
<tr>
<td>Does adult ask questions to create/craft the digital story?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does adult lead the way/set the pace?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Behavior</td>
<td>Yes</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>Do families spend time (how many min.?) looking at story together?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do families show interest/engagement with the iPad?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do families show interest/engagement with each other in program?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix E - Parental Informal Consent

This is an evaluation and research study to help us evaluate the "Spinnerz Teen Photo Club" designed for Teens with an Autism Spectrum Disorder at the Queens Museum of Art. Your son or daughter is being asked to participate because he or she will be attending the weeks’ program mentioned above.

Participation in this study will be integrated as part of the Master Thesis that I am writing for completing Museum Education: Childhood Education program at the Bank Street College of Education.

In each session of the "Spinnerz Teen Photo Club" your child will be observed during the time she participates in activities at the workshop or off-site location. There are no known risks or discomfort associated with this research. Moreover, by provided feedback through your children’s participation, you will be helping to improve how youth activities are designed for future. The staff at Queens Museum of Art has reviewed the research proposal and is comfortable with the evaluation and its process.

Your children's name will be kept confidential. Thus, results of this study will be published and present as a master thesis at the Bank Street College of Education, but your child will not be identified in any reports of this study. All data will be reported in aggregate.

You and your child may ask any questions concerning this research and have
those questions answered before agreeing to participate in or during the study. Or you may call the researcher at any time, cell phone 347-....

..... If you have questions concerning your child's right as a researcher participant the researcher has not answered that, or to report any concerns about the study, you may contact Michele López, Manager of ArtAccess at Queens Museum of Art with your questions 718- 592-9700 x 138.

You and our child are free to decide to not participate in this study. Your decision to participate will no way influence or impact you or your child's experience within our current or future programs.

Your signature indicates that you have read the information given above. Mihaela Schwartz has offered to answer any questions you may have concerning this study.

I hereby, voluntarily consent for my child to participate in the study. I will be given a copy of the consent form to keep.

Signature of
Parent of Research Participant March 1st, 2013
Appendix F1 - Graphic Representation of iPad Stories, Subject DT,

RUBRIC 1 – SOCIAL SKILLS

RUBRIC CRITERIA

Rubric 1 describes the continuum of student’s abilities to gain and develop social skills based on Observation.1 Picture Book A, Observation 2 Picture Book B, and Observation 3 Picture Book C. for all samples.

Social skills DT

- Eye contact
- Interaction
- Gestures
- Conversational style
- Flexibility in transition
- Emotional understanding

Legend:
- Weakness
- Slight Change
- Strength
Appendix F3 - Graphic Representation of iPad Stories, Subject DT

RUBRIC 2 – BEHAVIOR CHANGE

RUBRIC CRITERIA

Rubric 2 describes the continuum of student’s abilities to change behaviors based on Observation 1 Picture Book A, Observation 2 Picture Book B, and Observation 3 Picture Book C. for all samples

Behavior DT

- Self-stimulatory activities
- Distress with the assessment
- Excessive movement
- Tantrum or protest
- Flapping hands

Legend:
- Red: Weakness
- Blue: Slight Change
- Green: Strength
Appendix F4 - Graphic Representation of iPad Stories, Subject DT

RUBRIC 3 – 21ST CENTURY SKILLS

RUBRIC CRITERIA

Rubric 3 describes the continuum of student’s abilities to gain or polish 21st century skills based on Observation. 1 Picture Book A, Observation 2 Picture Book B, and Observation 3 Picture Book C. for all samples.
Appendix F5 - Graphic Representation of iPad Stories, Subject AC

RUBRIC 1 – SOCIAL SKILLS –

RUBRIC CRITERIA

Rubric 1 describes the continuum of student’s abilities to gain and develop social skills based on Observation 1 Picture Book A, Observation 2 Picture Book B, and Observation 3 Picture Book C. for all samples.

### Social skills AC

- **Eye contact**
- **Interaction**
- **Gestures**
- **Conversational style**
- **Flexibility in transition**
- **Emotional understanding**

- **Weakness**
- **Slight Change**
- **Strength**
Appendix F6 - Graphic Representation of iPad Stories, Subject AC

RUBRIC 2 – BEHAVIORS

RUBRIC CRITERIA

Rubric 2 describes the continuum of student’s abilities to change behaviors based on Observation. Picture Book A, Observation 2 Picture Book B, and Observation 3 Picture Book C. for all samples.

![Behavior AC Diagram]

Legend:
- Red: Weakness
- Blue: Slight Change
- Green: Strength
RUBRIC 3 – 21ST CENTURY SKILLS

RUBRIC CRITERIA

Rubric 3 describes the continuum of student’s abilities to gain or polish 21st century skills based on Observation.1 Picture Book A, Observation 2 Picture Book B, and Observation 3 Picture Book C. for all samples.

[Diagram showing 21st century skills AC with categories: Project based-learning activities, Problem solving through story's characters, Using technology (iPad), Public presentation. Each category has a bar chart indicating Weakness, Slightly Change, and Strengths.]
Appendix F8 - Graphic Representation of iPad Stories, Subject BG

RUBRIC 1 – SOCIAL SKILLS –

RUBRIC CRITERIA

Rubric 1 describes the continuum of student’s abilities to gain and develop social skills based on Observation 1 Picture Book A, Observation 2 Picture Book B, and Observation 3 Picture Book C. for all samples.
Appendix F9 - Graphic Representation of iPad Stories, Subject BG

RUBRIC 2 – BEHAVIOR CHANGE

RUBRIC CRITERIA

Rubric 2 describes the continuum of student’s abilities to change behaviors based on Observation 1 Picture Book A, Observation 2 Picture Book B, and Observation 3 Picture Book C. for all samples.
Appendix F10 - Graphic Representation of iPad Stories, Subject BG

RUBRIC 3 – 21ST CENTURY SKILLS

RUBRIC CRITERIA

Rubric 3 describes the continuum of student’s abilities to gain or polish 21st century skills based on Observation.1 Picture Book A, Observation 2 Picture Book B, and Observation 3 Picture Book C. for all samples

21st century skills BG

- Project based-learning activities
- Problem solving through story's characters
- Using technology (iPad)
- Public presentation

Legend:
- Weakness
- Slightly Change
- Strengths
Appendix F11 - Graphic Representation of iPad Stories,

Subjects AC, BG, DT, RUBRIC 1 – SOCIAL SKILLS –

RUBRIC CRITERIA

Rubric 1 describes the continuum of all students’ abilities to gain and develop social skills based on Observation 1 Picture Book A, Observation 2 Picture Book B, and Observation 3 Picture Book C.
Appendix F12 - Graphic Representation of iPad Stories,

Subjects AC, BG, DT, RUBRIC 2 – BEHAVIORS

RUBRIC CRITERIA

Rubric 2 describes the continuum of all students’ abilities to change behaviors based on Observation.1 Picture Book A, Observation 2 Picture Book B, and Observation 3 Picture Book C.

<table>
<thead>
<tr>
<th>Behavior</th>
<th>AC</th>
<th>BG</th>
<th>DT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-stimulatory activities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distress with the assessment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excessive movement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tantrum or protest</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flapping hands</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Weakness**
- **Slight Change**
- **Strength**
Appendix F13 - Graphic Representation of iPad Stories,

Subjects AC, BG, DT, RUBRIC 3 – 21ST CENTURY SKILLS

RUBRIC CRITERIA

Rubric 3 describes the continuum of students' abilities to gain or polish 21st century skills based on Observation. Picture Book A, Observation 2 Picture Book B, and Observation 3 Picture Book C. for all samples

<table>
<thead>
<tr>
<th>21st century skills</th>
<th>AC</th>
<th>BG</th>
<th>DT</th>
<th>AC</th>
<th>BG</th>
<th>DT</th>
<th>AC</th>
<th>BG</th>
<th>DT</th>
<th>AC</th>
<th>BG</th>
<th>DT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project based-learning activities</td>
<td>Slightly Change</td>
<td>Strengths</td>
<td>Weakness</td>
<td>Slightly Change</td>
<td>Strengths</td>
<td>Weakness</td>
<td>Slightly Change</td>
<td>Strengths</td>
<td>Weakness</td>
<td>Slightly Change</td>
<td>Strengths</td>
<td>Weakness</td>
</tr>
<tr>
<td>Problem solving through story's characters</td>
<td>Slightly Change</td>
<td>Strengths</td>
<td>Weakness</td>
<td>Slightly Change</td>
<td>Strengths</td>
<td>Weakness</td>
<td>Slightly Change</td>
<td>Strengths</td>
<td>Weakness</td>
<td>Slightly Change</td>
<td>Strengths</td>
<td>Weakness</td>
</tr>
<tr>
<td>Using technology (iPad)</td>
<td>Slightly Change</td>
<td>Strengths</td>
<td>Weakness</td>
<td>Slightly Change</td>
<td>Strengths</td>
<td>Weakness</td>
<td>Slightly Change</td>
<td>Strengths</td>
<td>Weakness</td>
<td>Slightly Change</td>
<td>Strengths</td>
<td>Weakness</td>
</tr>
<tr>
<td>Public presentation</td>
<td>Slightly Change</td>
<td>Strengths</td>
<td>Weakness</td>
<td>Slightly Change</td>
<td>Strengths</td>
<td>Weakness</td>
<td>Slightly Change</td>
<td>Strengths</td>
<td>Weakness</td>
<td>Slightly Change</td>
<td>Strengths</td>
<td>Weakness</td>
</tr>
</tbody>
</table>
Appendix F14 - Graphic Representation of Spinnerz Teen Photo Club,

Subject CT, RUBRIC 1 – SOCIAL SKILLS –

RUBRIC CRITERIA

Rubric 1 describes the continuum of student’s abilities to gain and develop social skills based on Observation.1 No QMA A, Observation 2 No Longer Empty Gallery B, and Observation 3 No Longer Empty Gallery C. for all samples

<table>
<thead>
<tr>
<th>Social skills CT</th>
<th>Weakness</th>
<th>Slight Change</th>
<th>Strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eye contact</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interaction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gestures</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conversational style</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flexibility in transition</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional understanding</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix F15 - Graphic Representation of Spinnerz Teen Photo Club, Subject CT, RUBRIC 2 – BEHAVIOR CHANGE

RUBRIC CRITERIA

Rubric 2 describes the continuum of student’s abilities to change behaviors based on Observation 1 No QMA A, Observation 2 No Longer Empty Gallery B, and Observation 3 No Longer Empty Gallery C. for all samples.

![Behavior Change CT Diagram]

- Self-stimulatory activities
- Distress with the assessment
- Excessive movement
- Tantrum or protest
- Flapping hands

Legend:
- Red: Weakness
- Blue: Slight Change
- Green: Strength
Appendix F16 - Graphic Representation of Spinnerz Teen Photo Club,
Subject CT, RUBRIC 3 – 21ST CENTURY SKILLS

RUBRIC CRITERIA

Rubric 3 describes the continuum of student’s abilities to gain or polish 21st century skills based on Observation 1 No QMA A, Observation 2 No Longer Empty Gallery B, and Observation 3 No Longer Empty Gallery C. for all samples.
Appendix F17 - Graphic Representation of Spinnerz Teen Photo Club, Subject DS, RUBRIC 1 – SOCIAL SKILLS –

RUBRIC CRITERIA

Rubric 1 describes the continuum of student’s abilities to gain and develop social skills based on Observation. 1 No QMA A, Observation 2 No Longer Empty Gallery B, and Observation 3 No Longer Empty Gallery C. for all samples.

Social skills DS

- **Eye contact**
- **Interaction**
- **Gestures**
- **Conversational style**
- **Flexibility in transition**
- **Emotional understanding**

Legend:
- Red: Weakness
- Blue: Slight Change
- Green: Strength
Appendix F18 - Graphic Representation of Spinnerz Teen Photo Club, Subject DS, RUBRIC 2 – BEHAVIOR CHANGE

RUBRIC CRITERIA

Rubric 2 describes the continuum of student’s abilities to change behaviors based on Observation.1 No QMA A, Observation 2 No Longer Empty Gallery B, and Observation 3 No Longer Empty Gallery C. for all samples.

Behavior Change DS

- **Weakness**
- **Slight Change**
- **Strength**

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Weakness</th>
<th>Slight Change</th>
<th>Strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-stimulatory</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>activities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distress with the</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>assessment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excessive movement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tantrum or protest</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flapping hands</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix F19 - Graphic Representation of Spinnerz Teen Photo Club,
Subject DS, RUBRIC 3 – 21ST CENTURY SKILLS

RUBRIC CRITERIA

Rubric 3 describes the continuum of student’s abilities to gain or polish 21st century skills based on Observation 1 No QMA A, Observation 2 No Longer Empty Gallery B, and Observation 3 No Longer Empty Gallery C. for all samples

21st century skills DS

- Weakness
- Slightly Change
- Strengths

- Project based-learning activities
- Problem solving through story's characters
- Using technology (Digital camera & DJ Mixer)
- Public presentation
Appendix F20 - Graphic Representation of Spinnerz Teen Photo Club, Subject MG, RUBRIC 1 – SOCIAL SKILLS –

RUBRIC CRITERIA

Rubric 1 describes the continuum of student’s abilities to gain and develop social skills based on Observation.1 No QMA A, Observation 2 No Longer Empty Gallery B, and Observation 3 No Longer Empty Gallery C. for all samples.

Social skills MG

- Eye contact
- Interaction
- Gestures
- Conversational style
- Flexibility in transition
- Emotional understanding

Legend:
- Weakness
- Slight Change
- Strength
Appendix F21 - Graphic Representation of Spinnerz Teen Photo Club,

Subject MG, RUBRIC 2 – BEHAVIOR CHANGE

RUBRIC CRITERIA

Rubric 2 describes the continuum of student’s abilities to change behaviors based on Observation.1 No QMA A, Observation 2 No Longer Empty Gallery B, and Observation 3 No Longer Empty Gallery C. for all samples

![Behavior Change MG Diagram]

- **Self-stimulatory activities**
- **Distress with the assessment**
- **Excessive movement**
- **Tantrum or protest**
- **Flapping hands**

Legend:
- **Weakness**
- **Slight Change**
- **Strength**
Appendix F22 - Graphic Representation of Spinnerz Teen Photo Club, Subject MG, RUBRIC 3 – 21ST CENTURY SKILLS

RUBRIC CRITERIA

Rubric 3 describes the continuum of student’s abilities to gain or polish 21st century skills based on Observation 1 No QMA A, Observation 2 No Longer Empty Gallery B, and Observation 3 No Longer Empty Gallery C. for all samples.

21st century skills MG

- Project based-learning activities
- Problem solving through story’s characters
- Using technology (Digital camera & DJ Mixer)
- Public presentation

Weakness | Slightly Change | Strengths
Appendix F23 - Graphic Representation of Spinnerz Teen Photo Club,

Subjects CT, DS, MG, RUBRIC 1 – SOCIAL SKILLS –

RUBRIC CRITERIA

Rubric 1 describes the continuum of all students’ abilities to gain and develop social skills based on Observation.1 No QMA A, Observation 2 No Longer Empty Gallery B, and Observation 3 No Longer Empty Gallery C. for all samples.
Appendix F24 - Graphic Representation of Spinnerz Teen Photo Club,

Subjects CT, DS, MG, RUBRIC 2 – BEHAVIOR CHANGE

RUBRIC CRITERIA

Rubric 2 describes the continuum of all students’ abilities to change behaviors based on Observation. 1 No QMA A, Observation 2 No Longer Empty Gallery B, and Observation 3 No Longer Empty Gallery C. for all samples.
Appendix G1- Student's Sample of Work, Clay Characters and Journal, Spinnerz Photo Teen Club
Appendix G2- Student's Sample of Work in the Classroom Setting, Spinnerz Photo Teen Club
Appendix G3- Student's Sample of Work in the Classroom Setting, Spinnerz Photo Teen Club
Appendix G4- Student's Sample of Work in the Classroom Setting, Spinnerz Photo Teen Club
Appendix G5- Student’s Sample of Work in the Classroom Setting,
Spinnerz Photo Teen Club
Appendix G6- Student's Sample of Work in the Classroom Setting, Spinnerz Photo Teen Club
Appendix G7- Student's Sample of Work in the Gallery, Spinnerz Photo Teen Club
Appendix G8- Student's Sample of Work in the Gallery, Spinnerz Photo Teen Club
Appendix G9- Pictures of Contemporary Dancer, Spinnerz Photo Teen Club
Appendix G10- Student Taking Picture of Contemporary Dancer, Spinnerz Photo Teen Club
Appendix M Queens Museum of Art, Visual Vocabulary,
Sppinerz Teen Photo Club

<table>
<thead>
<tr>
<th>Spinperz Teen Photo Club on the Road</th>
<th>Visual Vocabulary</th>
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<tr>
<td>Sol Aramendi</td>
<td>No Longer Empty - Gallery</td>
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<td>Artist:</td>
<td>Artist:</td>
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<td>[Image]</td>
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<th>Queens Museum of Art</th>
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<td>Date: 2/23/13</td>
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Today, you will use your camera to tell a story.

<table>
<thead>
<tr>
<th>ARTIST:</th>
<th>Photography</th>
<th>Storytelling</th>
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<tbody>
<tr>
<td>[Image]</td>
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</tbody>
</table>
May 6, 2013

Mihaela Schwartz

Dear Mihaela,

Your proposal and consent letters and forms with human participants for your Independent Study have been approved. You may commence your work with human participants. If you make any significant changes to your work with human participants, you need to inform the IMP Committee in writing your plans. Please place a copy of this letter along with unsigned sample copies of any consent letters and forms in a Permissions selection at the end of your appendix. Keep the original signed forms in a safe place for five years.

The best of luck with your study. We look forward to having the completed copy in the Bank Street College Library.

Sincerely,

Nina Jensen

Nina Jensen
Integrative Master’s Project Committee
Dear Ms. Lopez,

My name is Mihaela V. Schwartz and I am a graduate student in Museum Education at Bank Street College of Education in New York. I am currently conducting research for my Master's thesis and will be acting as the principal investigator for this study.

The goal of Master's thesis is to analyze two of the educational programs that your institution develop for ASD children and families – (iPad Stories and Spinnerz Teen Photo Club) in the framework of the contextual model of learning (CML) for museums settings. I am interested in learning about programs' goals and impacts in ASD children and families life.

The information that you provide will provide me with insights that will be used in the planning of this program.

Please note that the Master's thesis will be shared as a PDF with the Bank Street community in a password protected searchable database and may also be submitted as a PDF to the Bank Street Library where it would be catalogued as part of the Library collection and entered into an international database for wider circulation.

Thank you for giving the permission to use information that you provide to be used for the purpose of this study.

Sincerely,
Mihaela V Schwartz

Signature, Michele Lopez

November 20, 2013