

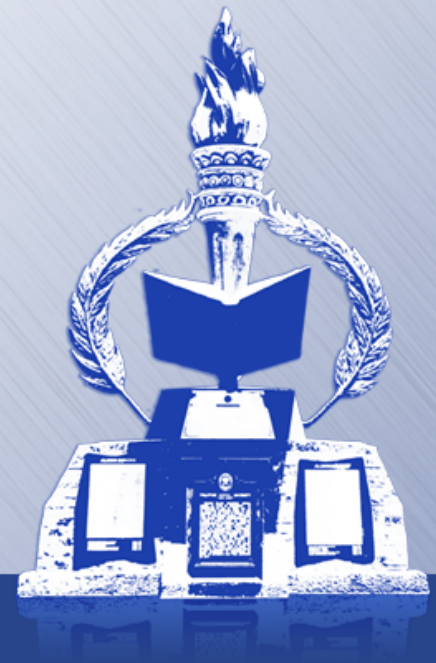


April 2019

Kathang Salaysay (KatSay): An Interactive Social Story App for Children with ASD

Seleena Anne R. Briones
Philippine Normal University

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KATHANG SALAYSAY (KatSay): AN INTERACTIVE SOCIAL STORY APP
FOR CHILDREN WITH ASD

A Thesis
Presented to the
Faculty of the Graduate Teacher Education
College of Graduate Studies and Teacher Education Research
Philippine Normal University
Taft Avenue, Manila

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts in Education with Specialization in Special Education - Intellectual
Disabilities Stream

by
SELEENA ANNE R. BRIONES

Ma. Jenina N. Nalipay, Ph.D.
Adviser

April 2019

ABSTRACT

Name: Seleena Anne R. Briones

Title: Kathang Salaysay (KatSay): An Interactive Social Story App for Children with ASD

Key Concepts: Social story, social skills, technology

Degree: Master of Arts in Education

Specialization: Special Education – Intellectual Disabilities Stream

Adviser: Dr. Ma. Jenina N. Nalipay

The purpose of this study was to develop and validate an interactive social story app for children with ASD. The study used the descriptive method of research through the Research and Development (R&D) Cycle by Borg and Gall (1991). Documentary analysis, questionnaire and unstructured interviews were used as instrument/techniques while weighted mean and standard deviation were used to interpret the data. A total of three children with ASD aged 5-10 years old, together with their parents and SPED teachers, were asked to participate. The study was conducted in Sinag SPED Center located at Kalalake Elementary School in Olongapo City. Both reading readiness skills and difficulties in social skills of the students were determined as basis in developing and validating the interactive social story app. The reading readiness skills of children with ASD in terms of making predictions and

connecting the story and characters to own life and difficulties in social skills such as taking turns during games and activities, asking questions to request information about a person and all social communication deficits should be well developed since these skills become increasingly more sophisticated and needed of children with ASD. This is highlighted in this study in which students in the surveyed school appeared to have not acquired these skills. In the light of foregoing findings, the following conclusions were drawn: the developed and validated interactive social story app proved that it is an effective e-learning tool for children with autism aged 5 to 10 which can facilitate learning. It also showed that it can be a supplementary aid to SPED teachers in developing the social skills of children with autism

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And above all, to the **Lord Almighty**, who endlessly love her in spite of her weaknesses.

Another journey has ended.

SARB

DEDICATION

To the respected special education teachers,
the number one asset of their institution,
the committed ones,
the difference makers...
the mentors.

To the educational managers of special education department,
the problem owners,
the project managers,
the transitional managers,
the change agents.

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Chapter 1

The Problem and Literature Review

Introduction

Nowadays, the number of children with Autism Spectrum Disorder (ASD) has significantly increased worldwide. The World Health Organization (2017) reported that as many as one in 160 children are diagnosed with ASD worldwide and is three (3) to four (4) times more common in boys than in girls. In the Philippines, estimated cases of ASD rose from 500,000 in 2008 to one million people at present. The number could be much higher since there are still a lot of areas in the Philippines not covered (Borromeo, 2014).

According to Hallahan and Kauffman (2005), autism spectrum disorder is “characterized by extreme social withdrawal and impairment in communication.” Other common characteristics are stereotyped movements, resistance to environmental changes or changes in routines, and unusual responses to sensory experiences. It is usually evident before age three and it consists of five similar conditions: Autism, Asperger’s Syndrome, Rett syndrome, child disintegrative disorder, and pervasive developmental disorder. All involve varying degrees of problems with communication skills, social interactions and repetitive and stereotyped patterns of behavior. Children with autism have impaired social interactions or social difficulties. The social difficulties associated with Autism involve the inability to read other people’s emotions, lack of reciprocity and the use of socially discouraging gestures.

Social stories have been used to teach social awareness and socially appropriate behaviors. Developed in 1993 by Carol Gray, the Social Stories intervention describes a social

situation from a student's point of view using short and simple sentences. Over the past two decades, teachers, parents, and other professionals have been using social stories with individuals with ASD and other disabilities.

Social Story as a teaching method interprets the rapid social information exchange among people, visualizing and structuring complicated and changeable social interaction for autistic students, and pointing out important social clues and appropriate reactions to enhance the comprehension of social information and further reduce autistic students' maladaptive behaviors, enhance adaptive behaviors, and even establishes new behaviors.

However, results of some research showed that insufficient evidence exists to demonstrate that social narratives are effective interventions for increasing social behaviors and decreasing challenging behaviors for children and adolescents with ASD. Taken together, these reviews suggest disagreement in the field regarding the extent to which research supports the use of social narratives for children with ASD. Disagreements may be due to inadequate or variable assessments regarding experimental rigor and quality of measurement.

The advent of mobile technology has increased the chances for the children with ASD to learn in an effective way. Currently, supportive technology can also be used by ASD patients. It is important to highlight that mobile devices have gained attention recently and can help people with disabilities in their daily life activities and social contacts by overcoming some of the challenges faced by differentially abled people and by allowing connectivity, portability, and a sense of belonging.

A number of projects use digital approaches to social skill training for youth with ASD (Kandalaft, Didehbani, Krawczyk, Allen & Chapman 2013). However, very little research has been in on promoting the social story-based or other narrative-based interventions using the native Filipino language.

The main goal of this study is to investigate the effect of social story intervention to Filipino children with Autistic Spectrum Disorder (ASD) by developing and validating an interactive social story to create a motivating context equipped with social narrative, digital interactive storytelling and fun-learning concept that contribute to the learning among children with ASD when they use the application, as this application can be utilized to improve their social skills. The study will also involve caregivers, teachers, usability experts, and the end users of the application in the design and the development process of the application.

The researcher made some modifications by using and constructing Filipino/Tagalog social stories, since it is believed that social stories will be more effective if it is properly comprehended by the listeners and that it would be helpful if the language used in narrating the story is familiar to the listeners (Kokina and Kern's, 2010).

While in terms of social story construction, the researcher took the recommendations of Reynhout and Carter (2009) study reiterating that the sample in it is stated that the sample of social stories described by teachers as very effective tended to have a greater proportion directive sentences, (inconsistent with construction guidelines) and to a lesser extent a greater number of descriptive sentences. Interestingly, there was evidence that as the proportion

perspective sentences increased, reported efficacy decreased while the relationship between efficacy and consequence sentences was unclear. The need for explicit instruction for children with disabilities, particularly those with ASD, has been extensively described in many literatures (Odom, Brown, Frey, Karasy, Smith-Canter & Strain, 2003).

Autism Spectrum Disorder

Autism Spectrum Disorder is a developmental disorder that affects some children from either birth or infancy and characterized by atypical social functioning and communication skills, in addition to restricted, repetitive, and stereotyped patterns of behavior (American Psychiatric Association, 2013). The continuum of impairments can range from mild to severe. The umbrella of ASD includes Asperger's syndrome, atypical autism, pervasive developmental disorder and disintegrative disorder.

According to Cohen and Bolton (2008), ASD is a condition that affects some children from either birth or infancy, and leaves them unable to form normal social relationships or to develop normal communication. As a result, the child may become isolated from human contact and absorbed in a world of repetitive, obsessional activities and interest. Meanwhile, Mercado (2003) stated that autism was formally identified in 1943. Dr. Leo Kanner of Johns Hopkins Hospital in Maryland is credited with the first structured description of children with autism. Kanner studied 11 children who exhibited poor social skills, self-abuse and repetitive or stereotyped patterns of behavior and named this phenomenon "early infantile autism". The word autism is derived from the Latin root "auto", meaning self. This refers to the morbid

self-absorption of a schizophrenia patient. Dr. Kanner used the term to identify his young patients who lack interest in the outside, social world.

There are three components that a child with ASD lacks: first is the impairment in social interaction; second is the qualitative impairment; and restriction in communication and last is the repetitive pattern of behavior. The researcher therefore focused on the impairment in social interaction since this area is given the least priority to be developed by the SPED teacher. Thus, this application will further help the teacher to improve the area of socializing among children with ASD.

Dawson (2010) stated that autistic children are profoundly impaired in personal relations. These impairments are probably a kind of unique autism. Children with autism also have disabilities in the realms of cognition, language and play. He stated that a crucial issue in the understanding of the psychology of autism is the nature of the relationship between social and non-social facets of the normal and autistic children's development.

One of the main issues of ASD has something to do with social skills. The way in which a person with ASD interacts with another individual is quite different compared with how the rest of the population behaves. ASD impacts the normal development of the brain in the areas of social interaction and communication skills. Children and adult with ASD typically have difficulties in verbal and non-verbal communication, social interaction and leisure or play activities. The disorder makes it difficult for them to communicate with others and relate to the outside world. In some cases, aggressive and/or self-injury behavior may be

present in a person with ASD who exhibits repeated body movement such as hand flapping and rocking, unusual responses to people or attachments to objects and resistance to changes in routine. Individuals may also experience heightened sensitivities in the five senses, sight, hearing, touch, smell and taste.

According to Edelson (1997), children with autism have pronounced characteristic symptoms of dysfunction in social behavior. Social behaviors enable one to relate to the environment and to interact with others in social settings (Dizon, 1999). Social behaviors are ways to behaving that result in pleasant companionship with emphasis on how individuals adapt and adjust to the environment.

This social problem is classified into three categories:

1. Socially avoidant. Children with ASD are known to shun people. They hate to socialize with other beings, may these be adults or their own peers. Social avoidance is an act of escaping or having escaped from what one does not wish to incur, encounter or endure. This results to tantrums when they see people.
2. Socially indifferent. Children with ASD do not mind being with people or being by themselves. They have a marked lack of concern for people and for themselves. They seem aloof, detached and withdrawn. They do not mind if people, things and even themselves are in danger.
3. Socially awkward. Children with ASD have a hard time making friends. Sometimes they lack physical ease and grace usually because of poor coordination or inept lack

of appropriateness and grace of expression. Children with ASD love solitary play, they revolve around themselves and are self-centered.

Children with ASD also have difficulty in anticipating other person's perspectives. They lack complex elements in understanding what other people feel, perceive and think. They do not understand that other people have their own plans, thoughts and points of view. Unlike regular children who have the ability to sympathize and empathize with other people, children with ASD have difficulty understanding/empathizing with others. Hence, they do not have the capacity to experience the feelings and thoughts of another individual because of self-centeredness. Sometimes, children with ASD seem smart enough to answer questions correctly when compared with regular children. Children with ASD can even memorize letters A to Z, numbers one to one hundred or provinces with their capitals within three days because they are highly functional. They have sharp minds with very good memory. However, one distinction that separates them from regular children is their inability to rationalize. They are keen in memorizing lessons but when asked how they arrived at a certain answer; they do not know how to reason out. Children with ASD do not understand that other people think differently from themselves and since they have their own world, they have difficulty socializing and communicating with others. This theory is believed to be independent of intelligence and is a unique phenomenon to children with ASD.

According to Wagaman (2008), students with ASD thrive on a predictable routine. When something unexpected happens, an ASD child has difficulty coping and may

demonstrate some stereotypical autistic such as rocking, and repeating the same word or phrase.

While according to McDevitte (2010), teaching children with autism is a challenging task for educators. Children with autism present a unique array of problems that are confusing because they often seen inconsistent with what is known and understood about human learning and behavior. It is generally assumed, particularly in education, that all children follow similar development paths at various rates. That is why it is expected that special educators should provide legitimate learning opportunities that build academic and behavioral capacity for students with autism.

Communication and Social Interaction Skills of Children with ASD

Impairments in social interactions serve as a defining characteristic of individuals with ASD; deficits can range from mild to severe and may manifest as issues with integrated verbal and nonverbal communication, poor eye contact and body language, deficits in understanding and use of gestures, lack of facial expressions, and other nonverbal communication issues (American Psychiatric Association, 2013).

One of the main issues of ASD has something to do with social skills. The way a person with ASD interacts with another individual is quite different compared with how the rest of the population behaves. ASD impacts the normal development of the brain in the areas of social interaction and communication skills. Children and adult with ASD typically have difficulties in verbal and non-verbal communication, social interaction and leisure or play

activities. The disorder makes it difficult for them to communicate with others and relate to the outside world.

Challenges in social communication make up one of two core challenges that must be present for a diagnosis of autism spectrum disorder (ASD). Within the domain of social communication, social interaction has been a key focus of research. While typically developing children gain a full collection of nonverbal social interaction and requesting skills by about 20 months of age (Paparella, Goods & Freeman, 2011), children with ASD demonstrate few social interaction behaviors (coordinating gaze, gestures including pointing to share) and tend to master requesting skills prior to rather than concurrent with social interaction skills (Mundy and Sigman, 1989). Social interaction impairments uniquely distinguish children with ASD from children with other developmental disabilities (Shumway and Wetherby, 2009). Most importantly, social interaction skills predict the acquisition of spoken language skills for both typically developing children (Carpenter, Nagell, Tomasello & 1998) and children with ASD (Kasari, Gulsrud & Freeman, 2012).

Thus, social interaction skills have important implications for early intervention programs. Research interventions have shown that social communication skills can be taught in the context of play-based interactions and that demonstrating more of these behaviors leads to better language skills 1–5 years later (Kasari, Gulsrud & Freeman, 2012). Although social communication skills can be enhanced during play, children with ASD must also learn functional and symbolic play skills.

Functional play emerges first, between 12 and 24 months of age and includes play with objects as they are intended to be used such as simple play (cause and effect), combination play (building), and pre-symbolic play (extends familiar actions to self and figures). Symbolic play then emerges in the second year of life where children begin to pretend an object is something else followed by dramatic role-play (Ungerer and Sigman, 1981). For children with ASD, play is often limited in range and flexibility both at the functional (Williams, Reddy & Costall, 2001) and symbolic levels (Rutherford, Young & Hepburn, 2007). Increasing the complexity and flexibility of play while sharing the interaction with another person presents another core challenge for children with ASD. Children with ASD may not show interest in toys or may show intense interest in some toys to the exclusion of other toys, or to the people around them (Adamson, Bakeman & Deckner, 2009).

Like social communication, play skills also have important developmental consequences including communication skills for typically developing children (Vygotsky, 1967) as well as children with ASD (Mundy & Sigman, 1989) and therefore are critical intervention targets. Despite the recognition that social interaction and play skills are uniquely challenging for children with ASD and critical intervention targets, many teachers in preschool programs spend little time addressing these behaviors (Wong & Kasari, 2012). Some reasons for this inattention include lack of training on how to recognize delays in social communication and play and access to few assessments that can lead to specific developmentally appropriate intervention targets.

Given the substantial challenges in social communication and play experienced by young children with ASD and the influence of these key skills on development, it is critical that teachers accurately assess these skills and set developmentally appropriate goals.

For many individuals with ASD, these characteristics have affected their academics and social life. Yapko (2003) indicated that socialization and the ability to interact with others are very important in human life, requiring social skills. Unfortunately, impaired social skills not only hinder child development but also lead to rejection and non-acceptance by friends, peers, and adults, and to loneliness and isolation (Delano & Snell, 2006).

The limited repertoire of social skills of students with ASD affect the ability to form and maintain friendships (Locke, Ishijima, Kasari, & London, 2010). For example, students with ASD are reported to have fewer friendships but have the desire to engage in relationships with others (Locke et. al., 2010). The importance of social skill development is critical. Such deficits may impede children's development and increase the risk of social withdrawal and isolation (Matson, Dempsey & LoVullo, 2009). Children who are socially withdrawn may be rejected by peers thus impeding social inclusion (Kagohara, Ramdoss, O'Reilly, Lancioni, Davis & Sigafoos, 2013). Their isolation likely will affect their overall educational experience (Delano & Snell, 2006).

Lack of appropriate social skills has been identified as a critical component of education programming; the Individuals with Disabilities Education Act (IDEA) have stressed those educational goals for children with ASD should include the development of social skills.

Social interaction skills center on increasing the frequency of and competency in social interaction. Skills that may be taught can include initiating or responding to other students (verbally, physically, or gesturally), maintaining conversations, offering to help, asking and answering questions, requesting information from others, and interacting in games (Bellini, Peters, Benner, & Hopf, 2007).

Other disadvantages of impaired social skills include weak academic progress, social failure, anxiety, depression, abuse, obstacles to social relationships, and social isolation (Bellini, Peters, Benner, & Hopf, 2007). In summary, socialization and the ability to interact with others are very important skills in life, and children with ASD have serious impairments in this regard. Therefore, it is necessary to plan and conduct appropriate interventions to improve the social skills of children with ASD.

Teachers, professionals, peers, and other adults can be very effective in promoting the social engagement of individuals with ASD by using specific intervention strategies (Barnard-Brak, Ivey-Hatz, Ward, & Wei, 2014). Strategies used have included behavioral interventions, modeling, peer training, pivotal response treatment, and scripting (National Autism Center, 2015). One strategy that is frequently used to modify the social engagement of students with ASD is social stories or story based interventions (National Autism Center, 2015).

Reading Comprehension Skills

Research investigating effective interventions with school-aged children with ASD tends to focus on improving central deficit areas associated with the disorder; namely, communication and social skills (Ramdoss, Lang, Mulloy, Franco, O'Reilly, Didden & Lancioni, 2010). Independence into adulthood requires abilities beyond social and communication skills, specifically reading skills. Reading is a pivotal skill, which can expand learning opportunities, adaptive living skills, future employment, and improve general quality of life (Grigorenko, Klin, & Volkmar, 2011).

A number of skills are required to read a sentence ranging from recognizing each individual letter, letter group, whole-word recognition, through to understanding the intended meaning of the text (Nation, Clark, Wright & Williams, 2006). In early school years, children typically learn to decode unknown words, recognize sight words, read connected text with some fluency and comprehend simple sentences (Kittel, 2013). In later years, reading becomes more complex, focusing on expanding vocabulary and grammatical concepts. In order to comprehend text, the reader requires certain pre-requisite skills. These are multi-faceted skills, which include the following; proficient oral language skills, adequate vocabulary, making inferences from text, relating text to prior knowledge, and integrating each of these skills together.

An important period for reading development is in early childhood (Newman, Copple, & Bredekamp, 2000). Neurotypical children as young as two years-of-age demonstrate

emergent or pre-reading behaviors. These emergent reading behaviors include print awareness (letters and words have meaning), oral language skills (recite rhymes and letters) and print conventions (knowledge of book orientation, turning pages of a book; Davidson & Weismer, 2014).

Historically, reading instruction was not provided for individuals with ASD based upon the premise that pre-requisite skills were deficient within this population. However, more recently, research has begun to investigate emergent reading skills in this population (Justice & Kaderavek, 2017). Westerveld, Trembath, Shell shear, and Paynter (2016) conducted a systematic review to investigate emergent literacy skills of preschool children with ASD. Results found three studies (Davidson & Weismer, 2014; Dynia, Lawton, Logan, & Justice, 2014; Lanter, Watson, Erickson & Freeman, 2012) which indicated that children with ASD tend to have comparable alphabet knowledge to their neuro-typical peers, however, they lag behind in print-concept knowledge, vocabulary, and phonological awareness (Dynia, Lawton, Logan & Justice, 2014). The authors also noted that there seems to be a common subset profile of heterogeneity across emergent-literacy skills (Davidson & Weismer, 2014). Finally, they found that performances of emergent literacy seem to be associated with deficits related to ASD, such as language (McIntyre, Solari, Gonzales & Mundy, 2017), cognition and social skills (Davidson & Weismer, 2014).

Previous research in reading abilities in children with ASD have reported varied results (Jones, Happé, Golden, Marsden, Tregay, Simonoff, 2009). Researchers have suggested that reading abilities are highly correlated with language skills (McIntyre, Solari, Gonzales &

Mundy, 2017), as well as with ASD symptom severity (Westerveld, Trembath, Shell shear & Paynter, 2016). Since one of the core deficits associated with a diagnosis of ASD is a delay in language development, it is therefore not surprising that associations between poor language skills and poor reading skills have been demonstrated (Miniscalco & Sandberg, 2010). Therefore, this population may be at considerable risk of reading delays or difficulties. Other challenges in acquiring reading skills may be associated with difficulties integrating information in context (Hill & Frith, 2003) and deficits in phonological skills (Gabig, 2010), all of which are necessary for reading.

A substantial number of individuals with autism spectrum disorder (ASD) have poor reading comprehension; estimates from recent studies range from 38 to 73% (McIntyre, Solari, Grimm, Lerro, Gonzales & Mundy, 2017). Similar to children without ASD, word reading and oral language abilities predict reading comprehension across the lifespan in children on the autism spectrum who have average to above average nonverbal cognition (McIntyre, Solari, Grimm, Lerro, Gonzales & Mundy, 2017).

Word reading abilities generally fall in the average to above-average range, in individuals with ASD (Norbury and Nation 2011); although, some children with ASD display poor word reading abilities in addition to poor comprehension (McIntyre, Solari, Grimm, Lerro, Gonzales & Mundy, 2017). In particular, word reading deficits are more common in those children with ASD who have co-occurring language impairments than those children with ASD who do not have co-occurring language impairments (Lucas and Norbury 2014; Norbury and Nation 2011). A further consideration in determining word reading abilities in

children with ASD is that most studies consider both word recognition (ability to read known, real words) and word decoding (ability to read unknown words, or non-words) to index word reading abilities together. However, Henderson, Clarke, and Snowling, (2014) recommended not collapsing word recognition and decoding measures, given that children with ASD in their study had stronger word recognition than decoding abilities.

Overview of Social Story

In 2010, The National Autism Center listed story – based intervention package (with Social Stories™ identified as the most well-known) as one of eleven established treatments for children on the autism spectrum.

Social story approach promises a lot of potential in helping children with ASD when it was used to teach social awareness and socially appropriate behaviors (Ivey, Heflin, & Alberto, 2004). Developed in 1993 by Carol Gray, the Social Stories intervention describes a social situation from a student's point of view using short and simple sentences. Since it is believed that the philosophy of social story since 1991 is to abandon all assumptions and that the social impairments in ASD is shared. The two equally valid but different perspectives in writing a social story are yours (the writer) and the person with ASD. Over the past two decades, teachers, parents, and other professionals have been using social stories with individuals with ASD and other disabilities.

Social story approach is characterized as an individualized way of using short story that describes situations, concepts, or social skills designed to increase the quality or quantity

of social interactions of individuals having ASD with others. The stories describe and explain the cues in the social contexts as well as provide appropriate responses. The goal of a social story is to share relevant information that includes (but is not limited to) where and when a given situation takes place, who is involved, what is occurring, and why (Gray, 1998).

There is a wide variety of ways that social stories have been constructed. Information in the social story can be presented with text and/or visual components (Gray & Garand, 1993). According to Gray's (2010) social story guidelines, a social story should be individualized and consist of seven types of sentences: descriptive, perspective, affirmative, three types of sentences that coach and partial sentences. According to Gray (2010), the social story formula is complete when the total number of descriptive, perspective and affirmative sentences divided by the number of sentences that coach is equal or larger than two. In the story, descriptive, perspective, and affirmative sentences can be partially written. A partial sentence encourages the person with ASD to complete a given statement in terms of his or her perception of what will happen next or to make a guess regarding the responses of another person (Gray, 2010).

Ten out of 12 studies surveyed in a literature review indicated that they drew upon Gray's criteria (developed between 1993 and 2010) to create the social stories. Three studies (Barry & Burlew, 2004; Kagohara, Ramdoss, O'Reilly, Lancioni, Davis & Sigafos, 2013; Norris & Dattilo, 1999) did not specifically mention the criteria used but included some references to Gray and Garand (1993). Four studies (Sansotti & Powell-Smith, 2008; Scattone, 2008; Scattone, Tingstrom & Wilczynski, 2006; Thiemann & Goldstein, 2001) showed

effective or very effective intervention results, with the exception of one participant in the study conducted by Scattone and her colleagues (2006). All of the other studies used Gray's criteria in developing their social story interventions. On the other hand, five studies (Crozier & Tincani, 2007; Delano & Snell, 2006; Malmberg, Charlop & Gershfeld, 2015; Sansotti & Powell-Smith, 2006; Schneider & Goldstein, 2010) that also used Gray's guidelines reported varied results. Moreover, the last two studies' authors reported significant increases (Barry & Burlew, 2004) or slightly positive results (Norris & Dattilo, 1999), but they did not mention using Gray's criteria. Gray's criteria may affect the implementation of social stories, but the adherence to these criteria alone might not result in effective interventions. In the metaanalysis conducted by Reynhout and Carter (2006), social stories that deviated from Gray's suggested ratio (included more sentences that coach rather than descriptive sentences) seemed to produce better intervention outcomes than did those that followed Gray's criteria (Kokina & Kern, 2010).

Effectiveness of Social Story. Many research studies show that there are many advantages of using Social Stories as the main tool to help children with ASD. It is also considered as an inherently attractive instructional strategy because they are relatively easy to implement and are reported to be applicable to a wide variety of behaviors (Reynhout & Carter, 2006). Social stories were implemented for increasing social and daily living skills (Agosta, Graetz, Mastropieri, & Scruggs, 2004; Bledsoe, Myles, & Simpson, 2003) and decreasing behaviors (Crozier & Tincani, 2005; Scattone, Wilczynski, Edwards, & Rabian, 2002).

In the study by Ozdemir (2010), among the functions of Social Stories are to; (a) reduce aggressive behavior; (b) teach adaptive skill; (c) teach social skills; (d) inculcate appropriate behavior; and (e) increase the use of appropriate social skills. These written stories, often accompanied with visuals, describe challenging social situations by omitting irrelevant information and break them down into simple steps. It aims to help individuals with ASD to understand the entirety of a situation and answer the questions such as who, what, when, where, and why in social situations (Scattone, Wilczynski, Edwards & Rabian, 2002).

While according to Rymanowicz (2015), memory development is one of the advantages of using social stories to children with ASD. Reading and rereading stories that include a series of events help young children practice their memory skills, including prediction. Also, social stories address the feelings and opinions of characters, meaning several points of view can be represented. When children are exposed to others' perspectives, it encourages the development of empathy or understanding of how one's actions affect and impact others.

Following a concrete instruction is also an advantage in using a social narrative. Creating social stories for young children is an opportunity to connect with a child's personal experiences and build upon their current understanding. Children are more likely to learn from the strategies used in the literature if they can relate to them. When children clearly understand what is expected of them and they are given specific instructions, they are better prepared to learn strategies and norms and follow them through. Clearly, social stories give a clear

communication to children with ASD. It also practices literacy skills; any opportunity to practice building literacy skills with a child is beneficial.

There are several points to be made regarding format and implementation as they relate to intervention effectiveness. The four studies (Barry & Burlew, 2004; Sansotti & Powell-Smith, 2008; Scattone, 2008; Thiemann & Goldstein, 2001) that reported significant increases in social interactions all included visual components that differed from the other studies that used visual symbols as printed pictures with the text. These visual components (photographs of participants, peers, and the environment; computer-presented social stories; and video feedback) appeared to be a more effective means of increasing social skills than written text alone or written text with printed pictures. That is to say, these studies' outcomes may have been influenced by their introduction of familiar illustrations or computer usage. Children with ASD appear to remember familiar faces (Volkmar, Sparrow, Rende, & Cohen, 1989). Likewise, computers tend to act as controlled environments with minimal distractions, making the use of computers attractive for the education of children with ASD (Boucenna, Narzisi, Tilmont, Muratori, Pioggia & Cohen, 2014).

When considering implementation, it should also be noted that the number of stories and the readers for the stories varied across studies. The use of one social story for one social situation as opposed to several stories for several situations may affect intervention effectiveness. In relation to readers and reading time, teachers, experimenters, or parents read the stories to students in four studies immediately prior to the target activity. Social stories were slightly more effective when used with students who were able to read, but there was no

difference between groups of students with limited and poor reading skills concerning the effectiveness of social stories. These findings imply that, given modifications to their implementation, social stories may be appropriate for students with varying reading skill levels.

There was a wide range of combined strategies in the intervention of social stories. Comprehension questions were assigned in seven studies. Early guidelines identified comprehension as a mandatory component of the intervention to prevent inaccurate interpretation of the situation due to the use of visual representations (Gray & Garand, 1993), but later guidelines did not mention a mandatory comprehension component. Both assessing comprehension with discussion and questioning are needed because it is important to make certain that individuals with ASD understand the main points of the story (NAC, 2015). The mean effect size for studies that included comprehension questions was moderate. Prompting strategies were assigned in four studies for either triggering target behaviors or decreasing challenging behaviors during intervention. The mean effect size of four studies in which prompting strategies were used in conjunction with the intervention was large. The other two studies included verbal prompting by creating a verbal prompting only condition. Combining visual cues and verbal cues in a social story may help individuals with ASD understand described skills and behaviors (Dettmer, Simpson, Myles, & Ganz, 2000).

Recently, significant efforts have been made within the field of special education to identify EBPs (Campbell, 2013; Kratochwill, Hitchcock, Horner, Levin, Odom & Rindskopf, 2013). Due to the increase in the reported prevalence of children with ASD and their diverse

learning characteristics, there is a growing demand for evidence-based practices (EBP) for this population. Specifically, social narratives have been identified as an (EBP) (Mayton, Menendez, Wheeler, Carter & Chitiyo, 2013; Wong, Odom, Hume, Fetting, Kucharczyk, & Schultz, 2014). And recent reviews evaluating the effectiveness of social narrative interventions have had mixed results (Leaf, Oppenheim-Leaf, Leaf, Taubman, McEachin & Parker, 2015).

There have been concerns ascertaining the efficacy of social stories (Mayton, Menendez, Wheeler, Carter, & Chitiyo, 2013). Efficacy of an intervention can be represented in a number of ways, one of which is calculation of effect size. Effect size serves as an indication of the magnitude of the effect of the intervention.

Several meta-analyses have been conducted by researchers that report effect size. Two meta-analyses were conducted by Reynhout and Carter (2006, 2011) that provided a descriptive synthesis (16 and 62 studies, respectively) to determine the effectiveness of the interventions. Both of these studies questioned the effectiveness of social stories.

While a meta-analysis conducted by Kokina and Kern (2010) that included 18 studies also had the same result with the meta-analysis study of Test, Richter, Knight, and Spooner (2011), all found that social story intervention effectiveness were questionable.

Although stories met standards related to dependent variables, experimental designs failed to meet quality standards for internal and external validity (Mayton, Menendez, Wheeler, Carter & Chitiyo, 2013). All the established effect size metrics most have problems

for applied research such as having esoteric meanings, assuming data properties lacking in datasets, or encouraging oversimplified misinterpretations (Parker, Vannest, & Brown, 2009). Results showed that insufficient evidence exists to demonstrate that social narratives are effective interventions for increasing social behaviors and decreasing challenging behaviors for children and adolescents with ASD. Taken together, these reviews suggest disagreement in the field regarding the extent to which research supports the use of social narratives for children with ASD. Disagreements may be due to inadequate or variable assessments regarding experimental rigor and quality of measurement.

In line with this, according to the National Standards Project (NAC), although there are some studies with strong scientific outcomes for an intervention designed for individuals with ASD, additional high quality studies must be conducted to show the effectiveness of the intervention consistently (2015). The NAC standards designate story based interventions, which includes social stories, to be an emerging treatment. As an emerging intervention, social stories related to social interaction need additional and consistent research support to be rated as an established intervention. Given the great variability in research environments in terms of story format, implementation methods, and additional strategies, it is difficult to ascertain whether the social story or another component of the intervention is the critical reason for the decrease or increase in target behavior. Additional studies are still needed to examine the efficacy of social story interventions on social interactions for students with ASD.

Since social stories are interventions that operate in multiple ways and produce varying results. There is no conclusive evidence to support a specific format or method of

implementation for providing effective social stories either alone or with other components. The confounding of social story interventions with additional strategies is a problem in many existing studies (Kuo & Mirenda, 2003). Although there are a number of issues that need to be addressed in future research, several emerge of particular importance. First, inadequate descriptions of participants make it difficult to determine whether participant-related variables moderate the effects of the interventions. Adequate participant descriptions, including information pertaining to the participants' cognitive abilities, severity in ASD, and language abilities, should be a component of future research for social story interventions. Likewise, future researchers should employ NAC guidelines as quality indicators of their research to provide stronger intervention evaluation. Further, examining social validity is important; stakeholder concerns have not been fully explored in either the studies reviewed or previous research on social stories. Social validity refers to the social significance of the goals, the social appropriateness of the procedures, and the social importance of the effects (Wolf, 1978). One of the most objective forms of social validity is conducting comparisons with typical peers via direct observation (Ennis, Jolivette, Fredrick, & Alberto, 2013). Peer comparison could be used for all single-subject study designs since examining a typical peer's behavior can provide insight into the social acceptability of treatment (Ennis, Jolivette, Fredrick, & Alberto, 2013).

In summary, social narratives are an evidence-based practice to enhance the social skills of individuals identified with ASD. When considering social narratives, it is important to identify target skills, team member roles, and data collection methods which the team will

utilize to support the child to acquire skills. It is also critical to think about the individual with ASD, and developmental level and learning style to determine which social narrative strategy would be most appropriate. Social narrative strategies is a practice which teachers might consider to support them in delivering services to children with ASD within inclusive environments. It is significantly important for not only educators and individuals with ASD but also parents and service providers to make a decision about the most beneficial intervention selection.

Emerging Technologies in ASD

Computer multimedia teaching has been largely promoted in domestic and international educational world in past decade. Bauminger-Zviely, Eden, Zancanaro, Weiss & Gal (2013) indicated that multimedia, with the presentation of graphics, color, and dynamic images, allowed students enhancing the learning from perception link to meaning link. Computer multimedia combined several media, e.g. texts, graphics, still images, CD, sound, midi, animation, video, and some special effect, with computers (Johnson, Blood, Freeman & Simmons, 2013). With the advance of computer technology, the competence of retrieving, storing, processing, editing, transmitting, controlling, and playing images and sound was the meaning of computer multimedia. Bernardini, Porayska-Pomsta and Smith (2014) referred computer multimedia teaching to instructors, in the teaching process, combining computer equipment and various media with light and sound effects as the media of teaching methods. Christensen-Sandfort and Whinnery (2013) indicated that computer multimedia teaching combined texts, pictures, sound, images, animation, and music to present the teaching effect

different from traditional didactic instruction (Chao, Chao, Yao & Liu, 2016). In addition to allowing instructors presenting teaching contents with interactive expression, computer multimedia teaching allowed students measuring their own competence, learning speed, learning time, and learning effect to determine the learning schedule and further enhance the learning interests and motivation as well as conforming to students' individual differences and individual needs to achieve the optimal learning effect (Karayazi, Kohler & Filer, 2014). Computer multimedia teaching presents the teaching effect with multiple sensory stimulations that it has become the essential teaching competence of instructors of either regular education or special education and forms the new teaching trend (Ao-Tian 2017).

The advent of mobile technology has increased the chances for the children with ASD to learn in an effective way. The children with ASD need an intermediary either human or a mechanical robot to socially interact with other people. A lot of courseware, mobile application, and other technological medium have been developed to help the children with ASD and to improve their impairments. As stressed Lovaas, a world renowned ASD expert, "If a child cannot learn in the way we teach, we must teach in a way the child can learn." The use of mobile applications in education has become more popular since the applications can be accessed anytime and anywhere. Through mobile applications, the learning process occurs without being tied to a situation and environment.

Currently, supportive technology can also be used by ASD patients. It is important to highlight that mobile devices have gained attention recently and can help people with disabilities in their daily life activities and social contacts by overcoming some of the

challenges faced by differentially abled people and by allowing connectivity, portability, and a sense of belonging.

When using technology, the skills that people with ASD most frequently develop (Hourcade, Williams, Miller, Huebner, & Liang, 2013) are communication (Frauenberger, Good, Alcorn, & Pain, 2012), recognition of emotions (Madsen, El Kaliouby, Goodwin, & Picard, 2008; Sampath, Indurkha, & Sivaswamy, 2012), time management, social skills (Gilson & Carter, 2016; Zaffke, Johnson, Alam, Magiera, Ahamed & Mokhtari, 2015), and collaborative learning. To train these skills, the use of mobile applications has grown exponentially in the last decade, making digital tablets a very popular device in educational institutions.

Interacting with tablet computers has been shown to be cognitively simpler than interacting with desktop computers (Geist, 2012), and tablets can provide a wide variety of support to children with ASD. For example, interactive visual supports (Hayes, Hirano, Marcu, Monibi, Nguyen & Yeganyan, 2010) help children with ASD manage their schedules (Hayes, Hirano, Marcu, Monibi, Nguyen & Yeganyan, 2010), improve their speech and language (Bowker, 2009), and communicate with others (Sampath, Indurkha & Sivaswamy, 2012). Furthermore, children with ASD have shown their preference for these devices (Lorah, Parnell, Whitby, & Hantula, 2015), which has resulted in these students feeling more motivated in interventions based on the use of tablets, as opposed to those based on more traditional devices (Allen, Stephens, Dennison Himmelfarb, Stewart Kerry & Hauck, 2016). Tablet computers use touch interaction to interact with them, a way of interacting that differs

from the traditional use of a mouse and a keyboard. Touch interaction enables the user to interact with the content presented directly through natural gestures, which helps them to focus on the content when doing activities and allows them to acquire deeper knowledge of the content presented (Roldán-Álvarez, Márquez-Fernández, Rosado-Martín, Martín, Haya & García-Herranz, 2014). Touch interaction and the portability of the devices have reduced the barriers for interacting with information and communications technology (Hourcade, Williams, Miller, Huebner & Liang, 2013; Yee, 2012), bringing the use of technology closer to this collective.

However, caution is advised when designing for tablet computers since several issues can arise. For instance, touch interaction can lead to fingers occluding valuable screen items and information (Butler, Izadi, & Hodges, 2008), gestures used to interact should be natural so they do not add interaction problems (Dix, Finlay, Abowd, & Beale, 2004) which will help to overcome physical issues such as dyspraxia (Aziz, Batmaz, Stone, & Chung, 2013), and fatigue issues should be also considered due to the physicality of touch gestures (Al-Megren¹, Kharrufa, Hook, Holden, Sutton & Olivier, 2015).

Gal, Bauminger, Goren-Bar, Pianesi, Stock, Zancaro and Weiss (2009) and Hourcade, Bullock-Rest, and Hansen (2012) studied the use of tablet computers among people with ASD. The results indicated that users avoid distracting elements due to the benefits of touch interaction. Other studies promote the enhancement and development of social skills for people with ASD when they interact in collaborative environments (Gal, Bauminger, Goren-Bar, Pianesi, Stock, Zancaro & Weiss, 2009), such as multi-touch tabletops (Zancanaro,

Giusti, Gal, & Weiss, 2011). Touch technology can promote the accomplishment of social and collaborative activities and provides new forms of expression (Hourcade, Bullock-Rest & Hansen, 2012). Tablet computers' flexibility, anytime and anywhere learning and personalization for each user, enables them to be used in the learning of children with ASD (Kagohara, Ramdoss, O'Reilly, Lancioni, Davis & Sigafoos, 2013) and holds promise for the development of innovative interventions where hardware and software can be customized for each participant (Zaffke, Johnson, Alam, Magiera, Ahamed & Mokhtari, 2015). In the area of ASD and education, we can find two main methods of teaching behavior and daily life activities when using tablet computers. The first, oriented toward task sequencing, consists of breaking down an activity into steps and replacing words with pictures (Kagohara, Ramdoss, O'Reilly, Lancioni, Davis & Sigafoos, 2013). The second one is called Social Stories (Gray, 1998), which adds emotion recognition and behavior, and uses a series of pictures with words representing the steps of a routine (e.g., "prepare breakfast"), along with scripting of expectations for the child (e.g., "I might have to wait"). Stories help to improve understanding of social expectations for a child with ASC (Ozdemir, 2008). Social Stories have had a variety of uses, including increasing task performance or compliance, social interaction, engagement in activities, and decreasing problem behavior (Gray, 2004).

Although technology may seem beneficial, it is important to be cautious (Boser, Goodwin, Wayland, & Robinson, 2014). If technology is the only method used for people with ASC, it may end up further affecting social interaction abilities, which may already be impaired by the condition (Bernard-Opitz, Ross, & Tutas, 1990). This occurs because they

could lose the human-to-human interaction that can have a positive effect on developing social skills. Furthermore, implementers do not always adapt all technology appropriately for use by people with disabilities. The lack of adjustment to their needs can cause user frustration. It is necessary to consider that ASD is a spectrum with a very uneven set of abilities and capacities.

Fletcher-Watson's work (2016) provided more insights about the use of tablet computers to train communication skills. She advised caution about the potential use of these devices. These results were also observed by Wass and Porayska-Pomsta (2014). In their work, they concluded that observed improvements within the computerized training paradigm failed to generalize to altered behavior in more naturalistic settings, which may result from problems that people with ASD experience in generalizing and extrapolating knowledge. In spite of these results, there are also other authors that highlight the usefulness of technology when used in therapy, but they agree that the tools are too generic, which means that there is a lack of personalized tools to meet each person's needs (Aresti-Bartolome & Garcia-Zapirain, 2014; Georgescu, Kuzmanovic, Roth, Bente, & Vogeley, 2014).

Mobile Applications for ASD. Crespo and Martín (2017) performed a study where they selected 701 applications from different portals such as Happy autism, autism speaks, and Bringingapps, among others. The main areas of these apps are learning (35%), communication (24%), emotions and social behavior (22%), supportive tools (19%), resources for parents and professionals (15%), and leisure (6%). There is a considerable gap between existing apps on the market and their scientific validation, with only 3% of the apps

reviewed having scientific evidence. Most apps have more than one approach, and most seek to encompass several approaches that contribute to the daily lives of people with ASD.

The most popular areas are learning or training about behaviors or situations in daily life and augmentative and alternative communication (AAC) (Morfidi, Mikropoulos, & Bellou, 2012; Shane, Laubscher, Schlosser, Flynn, Sorce & Abramson, 2012). Some applications focus on learning to behave appropriately in a variety of situation, which is often training with people with ASD. Not knowing how to behave in certain situations can cause a crisis for people with ASD (Doyle & Arnedillo-Sanchez, 2011). Other applications teach users to recognize emotions, situations, or daily habits, like Social Stories (Android). Others such as iCommunicate (Apple) help them to establish a timetable for tasks or help them perform the tasks.

Since its introduction in the early 1990s, the paper-based social stories have been widely used in schools and homes to teach children with ASD a variety of social skills (Reynhout & Carter, 2011). Also, there have been many efforts to adapt social stories into digital media, especially by video and computer graphics, which have been shown to be effective in previous studies (Hagiwara and Myles, 1999).

Authoring tools such as “Story Maker” have been developed for caregivers, educators, and clinicians to create their own social stories. While most digital social stories remain linear, researchers have looked into interactivity. For instance, the “I Can Problem Solve” program, with the help of human instructors, allows children to choose solutions or propose novel ones

to problem situations (Bernard-Opitz, Sriram & Sharul Nakhoda-Sapuan, 2001). The Refl-ex system, paired with its authoring tool, aims to help children with high-functioning ASD through obstacle-based branching (Boujarwah, O'Riedl, Abowd, & Arriaga. 2011).

The use of technological and multimedia-based devices has said to increase interest in learning. Technological intervention is promising to improve the children's social interaction, communication skills and learning environment in order to encourage the communication between children with ASD.

Recently in the Philippines, the use of technology particularly mobile devices like smartphones and tablets has transformed the way children with ASD learn to communicate. In addition, mobile application has provided parents, special educators and speech therapist several techniques and strategies to develop the child's academic concepts like reading skills, numeracy skills, art, imaginative and creative play.

In 2017, multimedia mobile learning application software was developed to reinforce the communication skills of non-verbal children with autism. This study revealed that integrating technology in preparing teaching materials for children with autism can develop, though slowly, their communication skills. The multimedia mobile learning application software was found to be suitable and an appropriate tool for teachers to use in enhancing the communication skills of non-verbal children with autism. (Parrocha, 2017)

ASD and Special Education in the Philippines

The number of people with autism spectrum disorder (ASD) in the Philippines and other countries worldwide has almost doubled in the past six years and the number is still rising. According to DOH Regional Program Manager Dr. May Ann Sta. Lucia, one in 68 children worldwide has autism and the figure is way above the five cases in every 1,000 children in the 1980s and one in 110 children in 2008. It occurs in all racial ethnic and socio-economic groups and is more common among boys (1 in 42) than girls (1 in 189). The estimated cases of autism in the Philippines rose from 500,000 in 2008 to one million people at present. However, it is believed that the number could be much higher since there are still a lot of areas in the country that are not yet covered.

To intensify awareness on the disorder, the following activities were held yearly for the citizens of the Philippines to see, Angels walk, World Autism Day Celebration, Orientation on Autism for parents and teachers, Launching of Planning Session on Autism and workshop on screening questionnaire for mental health and developmental conditions.

However, it is still evident that children having disability faces different forms of discrimination leading to their exclusion from the society and school (UNICEF). Many children around the world are excluded from society because of disability, race, language, religion, gender and poverty (OSP, 2015). Countries of the world are encouraged to put forward rights of everyone against all forms of discrimination. Stipulated in the Conventions

on the Rights of the Child (CRC) and the Education for All (EFA) framework is to provide equal access to quality education regardless of race, religion, etc., including disabilities.

Most children with disabilities face daily discrimination in the form of negative attitude, lack of concrete policies or legislation barring them from realizing their rights to health care, education even survival (UNICEF, 2013). To promote the fundamental rights of persons with disabilities, the United Nations has crafted several declarations and elaborated previous efforts to promote rights of disabled persons set out in the World Program of Action Concerning Disabled Persons of 1982 and 1993 (United Nations Conventions on the Rights of Persons with Disabilities UNCRPD, 2006). In response to this UN declaration, many governments around the world have exerted efforts to allow people with disabilities their rights such as but not limited to opportunities to receive similar services that normal people has. One of these efforts is providing them access to education.

Based on 2010 census, the Philippines has about 1.57% of its 92.1 million people have disability (PSA). Of this number, about 18.9% of them are less than 14 years old, 40% are between 15-49 years old (Garcia, 2014). Children with disability in the Philippines are expected to be in the range of 2.13 to 2.22 million in 2018 based on the calculations by AIM for the Advisory Council for the Education of Children and Youth with Disability.

Children with special educational needs are those who experience difficulties in learning the basic education curriculum and need a modified or functional curriculum, as well as differentiated special education curriculum to help them attain their potential (Heward,

2003).The provision of EPA is a constitutional right in the Philippines as stipulated in Article II, section 17 of the Philippine Constitution. It provides that the state must give priority to education and Article XIV, section 1 guarantees that this education be accessible to all. Several laws concerning disabled persons have been passed in the Philippines such as RA 7277 or the Magna Carta for Disabled Persons and the BP 344 to enhance the mobility of disabled persons among others. These acts have been amended to expand the provisions such as RA 10524, RA 10070, RA 09442 and RA 07277 to name a few (Congress of the Philippines, 1992; 2006; 2009; 2012; Batasang Pambansa, 1983). The Magna Carta for Disabled Persons has introduced some rules on special education in the Philippines. The law provides for the rehabilitation, self-development and self-reliance of disabled persons and their integration into mainstream society. In support to RA 7277, a DepEd Order No. 26, s. 1997 was issued requiring all divisions to organized at least one SPED center to cater to children with special needs (DepEd,1997).

Special education is a part of the Department of Education's basic education program. With its modest historical beginning in 1907, special education is now a major part of the basic education program in elementary and secondary schools (Bureau of Elementary Education Annual Reports, 1995-2003). There are special education programs in public elementary and private schools in all the regions of the country.

In Fiscal Year 2015, a target of 300,307 elementary learners and 8,014 secondary learners with special needs to be served in 448 recognized Special Education (SPED) Centers

and 173 regular schools with SPEC classes (DepEd, 2015). The Department of Education strongly advocates inclusive education as a basic service for all types of exceptional children.

Synthesis

Children with ASD typically have difficulties in verbal and non-verbal communication, social interaction and leisure or play activities. The disorder makes it difficult for them to communicate with others and relate to the outside world. Modification and intervention is essential to help children with ASD with regards to their difficulties. To be able to address these difficulties, we need to determine what each child with ASD reading readiness skills and social difficulties are in order to develop and validate a social intervention that would help children with ASD with regards to their social skills.

Social stories helped the researcher on what to consider in developing a social intervention. The Social Stories intervention describes a social situation from a student's point of view using short and simple sentences. Many research studies show that there are many advantages of using social stories as the main tool to help children with ASD, but not all social stories gained attention of children with ASD.

Since the advent of mobile technology has increased the chances for the children with ASD to learn in an effective way, the researcher utilized this supportive technology to gain attention and to develop interactive social stories app of children with ASD.

In social story construction, the need for explicit instruction for children with ASD and the language used in narrating the story were described thoroughly by Reynhout & Carter (2009) helped the researcher in having a clear picture of how the social skills of children with

ASD can be modified and developed using social stories app. As well as the essence and importance in developing and enhancing the social skills by the American Psychiatric Association helped the researcher facilitate the study. Moreover, the readings from Grigorenko, Klin, & Volkmar gave the researcher a comprehensive background about reading comprehension skills and Ivey, Heflin, & Alberto on social story approach in helping children with ASD. The review of literature and studies related and connected to this research paved the way on how the researcher will develop an interactive social story app and how the app can assist the SPED teachers to create a motivating context equipped with social narrative, digital interactive storytelling and fun-learning concept that will contribute to develop the social skills among children with ASD.

Theoretical Perspective

This study utilized several theories. The organization was anchored on Research and Development (R&D) Cycle by Borg (1991) and the social difficulties of children with ASD is fundamentally premised on the integration of the Theory of Mind (ToM), the Weak Central Coherence Theory and Social Motivation Theory.

In an article written by Uta Frith in 2003, about “Theory of Mind” (ToM), she emphasizes that children with ASD have difficulty in anticipating other person’s perspectives making it difficult for them to socialize. They lack complex elements in understanding what other people feel, perceive and think. They do not understand that other people have their own plans, thoughts, and points of view. Unlike regular children who have the ability to sympathize

and empathize with other people, children with ASD have difficulty understanding/empathizing with others. Hence, they do not have the capacity to experience the feelings and thoughts of another individual because of self-centeredness. Children with ASD do not understand that other people think differently from themselves and since they have their own world, they have difficulty socializing and communicating with others. The theory of mind is believed to be independent of intelligence and is a unique phenomenon to children with ASD.

Many of the tasks used to test this theory have been given to non-autistic children as well as children with mental retardation, and the theory of mind phenomenon appears to be unique to those with autism. In addition, theory of mind appears to be independent of intelligence even though people with Asperger's syndrome exhibit this problem to a lesser degree.

By not understanding that other people think differently than themselves, many autistic individuals may have problems relating socially and communicating to other people. That is, they may not be able to anticipate what others will say or do in various situations. In addition, they may have difficulty understanding that their peers or classmates even have thoughts and emotions, and may thus appear to be self-centered, eccentric, or uncaring.

This theory emphasized the capabilities to infer other people's emotions and to understand their beliefs play a key role in determining the appropriate acquisition of social competences in typical developing children. Likewise, the lack of these ToM abilities or

understanding the thought and beliefs of others, compromises the appropriate development of social behavior in children with ASD.

Following the basic idea of the ToM is another theory for the development of the social deficits observed in ASD, the theory of Weak Central Coherence created by Uta Frith (1989). Central coherence describes the normal tendency to examine the context of a piece of information to glean its overall meaning. Typically, developing children spontaneously link items of information together in order to understand the “broad picture” of an event. This need to integrate information in order to come up with a general meaning, whether that information is received verbally, visually or by other means, is not only a central cognitive process but also a key motivational force for most typically developing children.

However, this linking and striving for cohesion is not considered to be the overarching process for children on the autistic spectrum, that is, in this theory people with ASD are described as having poor central coherence. Typically, children will attend tiny details as if each was interesting in itself. This is particularly true of visual detail, which often holds particular fascination. This attention to tiny aspects of visual or verbal detail can both distract and mislead the children with ASD from gathering the central essence of a situation or a problem.

This theory focuses on explaining the difficulty that children with ASD have in including information in a single coherent and general , focusing their attention on small

details. From this perspective, tiny aspect of visual or verbal detail can both distract and mislead the children with ASD from gathering the central essence of a situation or a problem.

Along with the Theory of Mind (ToM) and the theory of Weak Central Coherence is Social Motivation Theory. Social Motivation refers to the human need to interact with other humans and to be accepted by them. These interactions are considered to be social behaviors that address, either directly or indirectly, other people with the purpose of soliciting a response. These have been very important to human survival. People tend not to survive very well on their own and working with other people, spending time with other people is a pretty important strategy. Social motivation is an idea that has been around for a very long time. Social motivation theory of autism has emerged, suggesting that people with autism have differences in many aspects of social interaction, have differences in their motivation to engage with other people. So they might avoid other people, they might not look at other people so much, they might not learn from other people so much.

This theory emphasizes on how social motivation can be very important for understanding individual differences in social behavior. From this viewpoint, we can quantify these things and have an understanding about where they are coming from, then that will give us a much better scientific basis, on which to know why children make particular decisions and how we can then help children who are struggling in social situations from a wide variety of social conditions.

The given relevant theories contributed much to the present study. The researcher became aware that understanding children with ASD problems relating socially and communicating to other people as well as impaired ability to derive generalized meaning from the context may be of particular importance for the development of children with ASD social skills. We need to understand children with ASD as mental beings, each with his or her own mental states – such as thoughts, wants, motives and feelings. They need to interact with other children and to be accepted by them. We cannot develop children with ASD social skills without this knowledge base. Even though this information is not straight forward nor consistent, it is our professional responsibilities to make personal sense of it and use it to inform our practices.

Hence, it is necessary to focus on the application of these theories most importantly in the proposed interactive social stories, Kathang Salaysay (KatSay) on children with Autism Spectrum Disorder.

Synthesis

Children with ASD have difficulty in anticipating other person's perspectives making it difficult for them to socialize. Unlike regular children who have the ability to sympathize and empathize with other people, children with ASD have difficulty understanding and empathizing with others. Social intervention is essential to help the children with ASD with regards to their social difficulties. To be able to address these difficulties, we need to develop

their skills to infer other people's emotions and to understand the need of social competences in typical developing children.

The theory of mind helps the researcher on what to consider in developing the social skills of children with ASD. The theory of mind is believed to be independent of intelligence and is a unique phenomenon to children with ASD. It has been found to be related to inadequate social behavior and poor social communication skills. Following the basic principle of theory of mind has been a subject of great deal of research for the development of the social deficits observed in ASD constituting to the development of this research. ToM difficulties, social deficits, and cognitive abilities that were specific to the social cognition competences, social behavior and social communication skills were defined comprehensively and helped the researcher in having a vibrant picture of how the social skills of children with ASD can be modified and improved.

The theory of Weak Central Coherence on the other hand helped the researcher in understanding the difficulty that children with ASD have in including information in single coherent and general and small details. The researcher utilized this information to develop a social story that outlines a single social situation clearly and simply, thereby addressing children with ASD difficulties stemming from weak central coherence.

The Social Motivation theory emphasizes on how social motivation can be very important for understanding individual differences in social behavior.

The given relevant theories contributed much to the present study. These theories paved way on how the researcher develops an interactive social stories app and how the social stories app can assist the SPED teachers in developing the social skills of children with ASD.

Conceptual Framework

The Research and Development (R&D) Cycle by Borg was utilized as framework of this study.

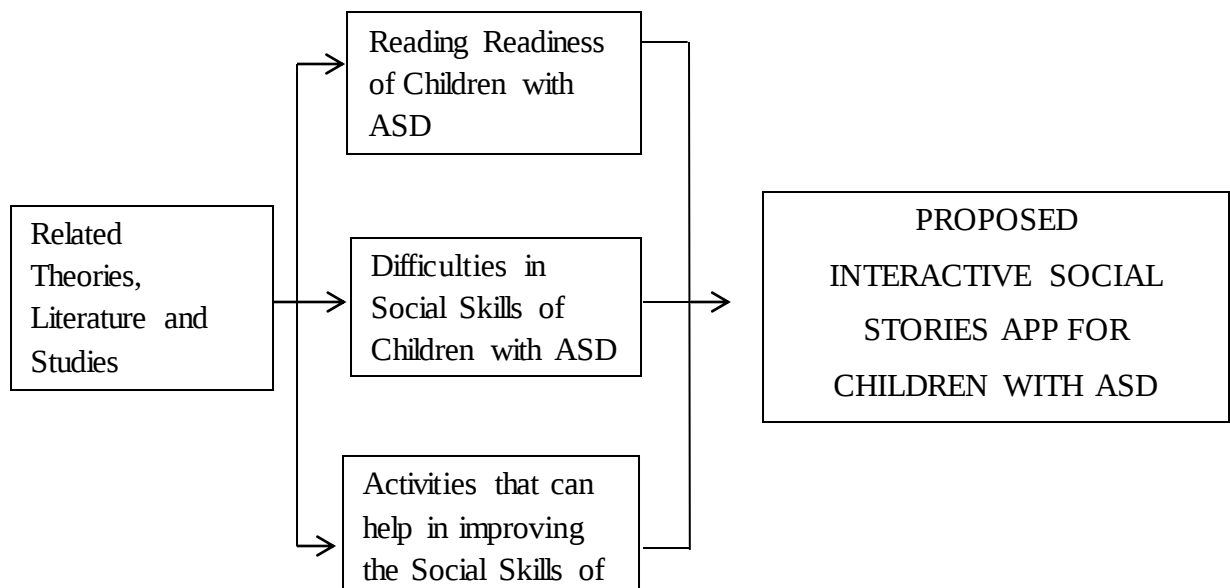


Figure1. The Conceptual Framework of the Study

As illustrated in Figure 1, the first box is the related theories, literature and studies, the three boxes on the left side represent the needed input to the proposed interactive social stories app for children with ASD: the reading readiness skills of children with ASD that were used as basis in the construction of the interactive social stories app, the difficulties in

social skills of children with ASD that were addressed in interactive social stories app, and the activities that can help in developing the social skills of children with ASD that were included in the proposed interactive social stories app. Reading readiness skills, difficulties in social skills, activities that can help in developing social skills of children with ASD were gathered through the questionnaire. The fifth box contained the proposed interactive social stories app for children with ASD followed by the validation of the app and the last box is the finalized interactive social stories app.

Data gathered through the questionnaire. The result of the unstructured interview, observation, informal consultation with the experts and review of related literature and studies guided the researcher in the design and actual making of the proposed interactive social stories app.

As shown in the conceptual framework, the study ended with the SPED teacher-respondents' evaluation of the proposed interactive social stories app with respect to objectives, content, time allotment, assessment and effectiveness to student teachers and the study ended with the finalized interactive social stories app.

Statement of the Problem

The study proposed an interactive social story app for children with ASD with ages that ranged from 5 to 10 years old who are enrolled in SINAG-SPED CENTER, Kalalake Elementary School, Olongapo City during the academic year 2018-2019.

Specifically, it sought answers to the following questions:

1. What are the reading readiness skills of children with ASD?
2. What are the difficulties in social skills of children with ASD?
3. What activities can help to improve the social skills of children with ASD?
4. What social story can be proposed to address the difficulties in social skills of children with ASD?
5. How do the teacher-respondents evaluate the proposed interactive social story app?

Definition of Terms

Autism Spectrum Disorder is a developmental disorder that affects communication and behavior. Although it can be diagnosed at any age, it is said to be a “developmental disorder” because symptoms generally appear in the first two years of life. Children with ASD appear to have difficulty with communication and interaction with other people, restricted interests and repetitive behaviors and symptoms that hurt the person’s ability to function properly in school, work, and other areas of life

App is an abbreviated form of the word "application." An application is a software program that is designed to perform a specific function directly for the user or, in some cases, for another application program.

Interactive Social Story is an interactive social story application program that involves the user in the exchange of information while the device is in operation. It consists of fusion of social story and digital media through the use of motivating context equipped with social narrative, digital interactive storytelling and fun-learning concept that contribute to the learning among children with ASD when they use the application.

Chapter 2

Methods

Research Design

This research was undertaken to develop an interactive social story to teach social skills. To gain the purpose, it is needed a research approach that highlighted an effort to produce the interactive social story. Therefore, in designing the model, the researcher used Research and Development (R&D) approach by adapting the Borg and Gall Model.

Educational research and development (R &D) is a process used to develop and validate educational products. The steps of this process are usually referred to as the R & D cycle, which consists of studying final research findings pertinent to the product to be developed, developing the product based on the finding, field testing it in the setting where it will be used eventually, and revising it to correct the deficiencies found in the field testing stage. In indicate that product meets its behaviorally defined objectives. Hence, the Research and Development Cycle (R and D cycle) adapting Borg and Gall Model was employed in the preparation of the interactive social story.

Borg and Gall model consists of ten major steps which are as follows: Step 1 involves research and information collecting or need analysis. It includes review of literature, classroom observations, and preparation of report of state of the art. Steps 2 and 3 consist of planning and developing preliminary form of product. Planning includes defining skills, stating objectives determining course sequence, and small scale feasibility testing. Developing preliminary form of product includes preparation of instructional materials, handbooks, and evaluating devises. Then, step 4 involves preliminary field testing. It concludes interview,

questionnaire data collected and analyzed from the school. For steps 5 and 6, they involve the conduct of main product revision and main field testing. Main product revision uses quantitative data on subjects' course as evaluation. Operational product revision happens in step 7, which involves revision of product as suggested by main field-test result. Next, for steps 8 and 9, they involve operational field testing and final product revision. The last step or step 10 involves dissemination and implementation. It is a report on product at professional meeting and journals, work with publisher who assumes commercial distribution and monitors distribution to provide quality control.

The researcher simplified the process in designing the product as recommended by the SPED teachers to favor children with ASD. Prolonged testing might affect the interest of the children with ASD thus the modification was made. The preliminary and operational field testing were collapsed into main field testing. Revisions of the two field testing were used in the interactive social story app.

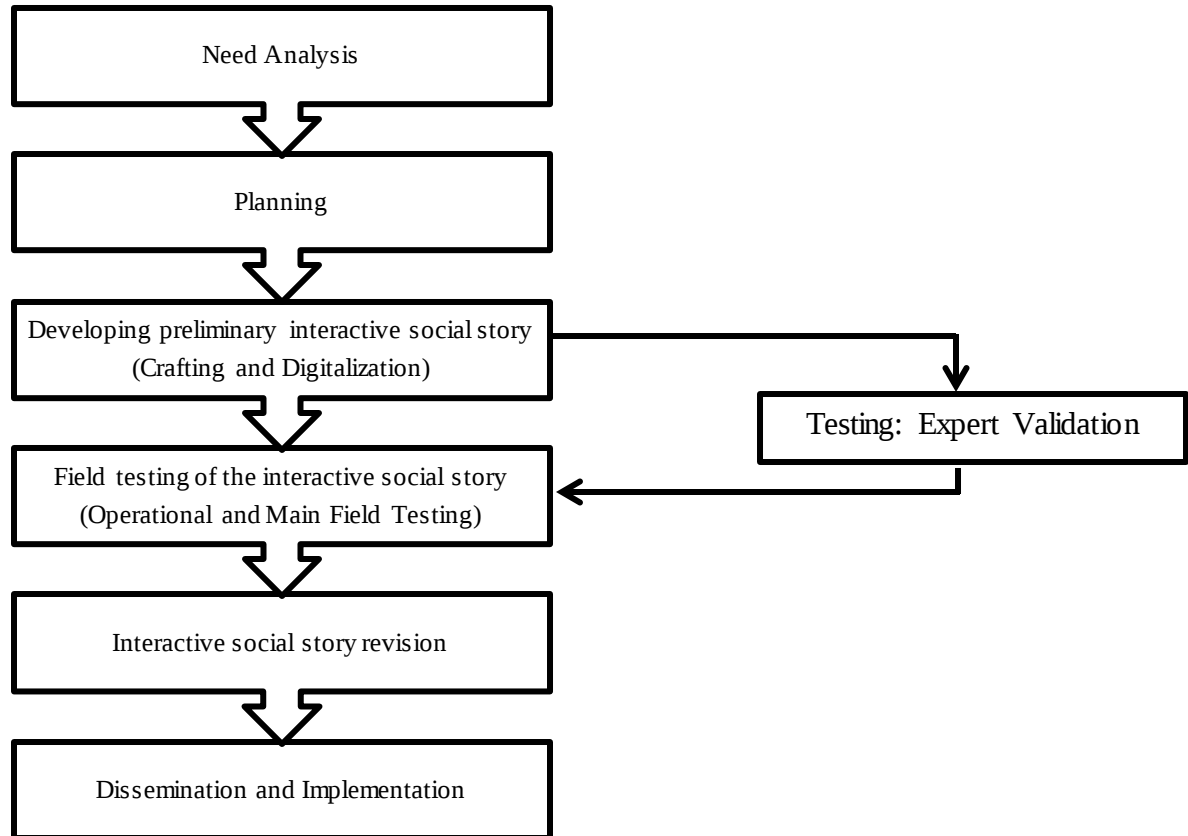


Figure 2. The Development of the Proposed Interactive Social Story Model Steps Scheme

As illustrated in Figure 2 is the research process paradigm of designing the interactive social story app. This process involved the Social Story as teaching strategy in delivering the lesson of the instructional content for children with ASD.

Needs Analysis. The first step is needs analysis. This step was done to search information and collect observations about the needs of the respondents that will be used in the development of the product. Children with ASD often experience high rates of exclusion and in many ways, their learning and social needs are often not understood or supported. These needs will be considered as it will support the social and emotional well-being of children

with ASD. The use of technology is also considered in the development of the product since the use of mobile technology increases the chances of learning effectively to children with ASD.

The need analysis was concerned with finding out information regarding the best practice in developing social skills of children with ASD and the existing connection between this practice (social stories) and digital media as a foundation of knowledge upon which to develop a given educational product. The principal instrument which the researcher utilized in searching and collecting information and data is the questionnaire. The researcher made sure that the questionnaires used in identifying the characteristics of children with ASD were anchored on the curricular framework for the transition program model of the Department of Education.

The validity of the questionnaire used in the study was validated by two experts in Special Education. The first expert is Dr. Michelle L. Sevilla, who graduated at New Era University and teaching children with ASD for thirteen (13) years. The second expert is Mrs. Marilou A. Oliveros, who was one of the Outstanding SPED teachers in the country in 2011 and handled children with ASD for twenty-one (21) years in the public school. Both of them were in good position to validate the instrument having doctorate degree and units in master's degree respectively.

Table 1

Profile of the SPED Experts

Expert	Sex	Position	School Office	Years of Teaching Children w/ ASD	Educational Background
1	F	SPED Master Teacher II	Public School Teacher	13	Doctorate Degree
2	F	SPED Teacher I	Public School Teacher	21	Master's Degree (in progress)

Table 1 presents the experts' qualifications on validation of the instruments in identification of the characteristics of children with ASD in terms of social skills at home and in the school setting and content analysis of the interactive social story application.

Planning. The planning phase deals with lesson planning in developing the features of the interactive social story application. Preparing the instructional plans based on the social story principles as the teaching strategy pursued an orderly method of identifying the learning objectives, content, skills to be learned, activities, procedure and evaluating the instructional plans for meeting the criteria of the content features of the interactive social story application.

The researcher prepared a set of written manuscripts of the interactive social story application. The researcher constructed Filipino social stories for easier understanding of the user. Likewise, she also asked the help of language experts and SPED teachers to validate the social stories made by the researcher herself. The principle that anchored in teaching social skills modified by the researcher was the use of reading comprehension test, actual task completion and interactive games. The respondents followed a simple task broken down into

steps that were accomplished by a child through prompts (if needed) and were facilitated by a teacher. First the child read an interactive social story followed by a reading comprehension and was checked if the child understood the given story. Next was applying the current learning into action through actual task completion. Lastly, as a reward the child had the opportunity to play the interactive games that were still in line with the objectives of the lesson. The researcher encouraged repetition of the task to strengthen and establish the child's initiation to communicate and socialize using the developed instructional material.

The researcher came up with nine (9) lesson plans with each lesson having the following parts:

Table 2
Instructional Plan Format

LESSON OUTLINE:
Objectives:
Subject Matter:
Topic:
Skill/s to be learned:
Materials:
Activities:
Enrichment Activities:

Table 2 shows the structure of the interactive social story application instructional plan format and it has segments for the objectives, subject matter, topic, skill/s to be learned, materials, activities and enrichment activities for both the SPED teacher and the participants in each activity.

- A. Objectives. This contained the skills expected to be acquired by the children with ASD at the end of the training/lesson.
- B. Subject Matter. This contained the topic, skills to be learned and materials used in the lesson presented.
- C. Activities. This contained the engagement activity by the child with ASD towards the interactive social story application through initiation.
- D. Enrichment Activities. This contained the steps in executing the lesson with the involvement of activities/strategies to strengthen the social skill being taught to the child with ASD. This was a supplementary guide to the interactive social story application (KatSay: Kathang Salaysay)

Developing Preliminary Interactive Social Story (Crafting and Digitalization).

After the planning has been completed, the next major step in the R & D cycle is crafting the features of the interactive social story Application. The researcher collaborated with two (2) IT experts in crafting the instructional design.

Table 3
Profile of the Information Technology (IT) Experts in Digitization of the Interactive Social Story Application

Expert	Sex	Position	Educational Background
1	F	College Professor	MIT (in progress)
2	F	College Professor	MIT (in progress)

Table 3 presents the qualification of the program developers and their expertise that remarkably contributed in materialization of the interactive social story app. Likewise, the researcher sought support from the application developers and programmers to digitize the crafted application in the design phase.

Crafting the features of the interactive social story application. The step includes the planning of the instructional design based on the principles of Social Story by Carol Gray, Theory of Mind (ToM), Weak Central Coherence (WCC) and Social Motivation Theory (SMT). In this step, the researcher made a rough sketch of the sequence, structure, layout, number and selection of images and child’s screen gestures that were used in each slide of the application software then submitted it to the IT expert to digitize.

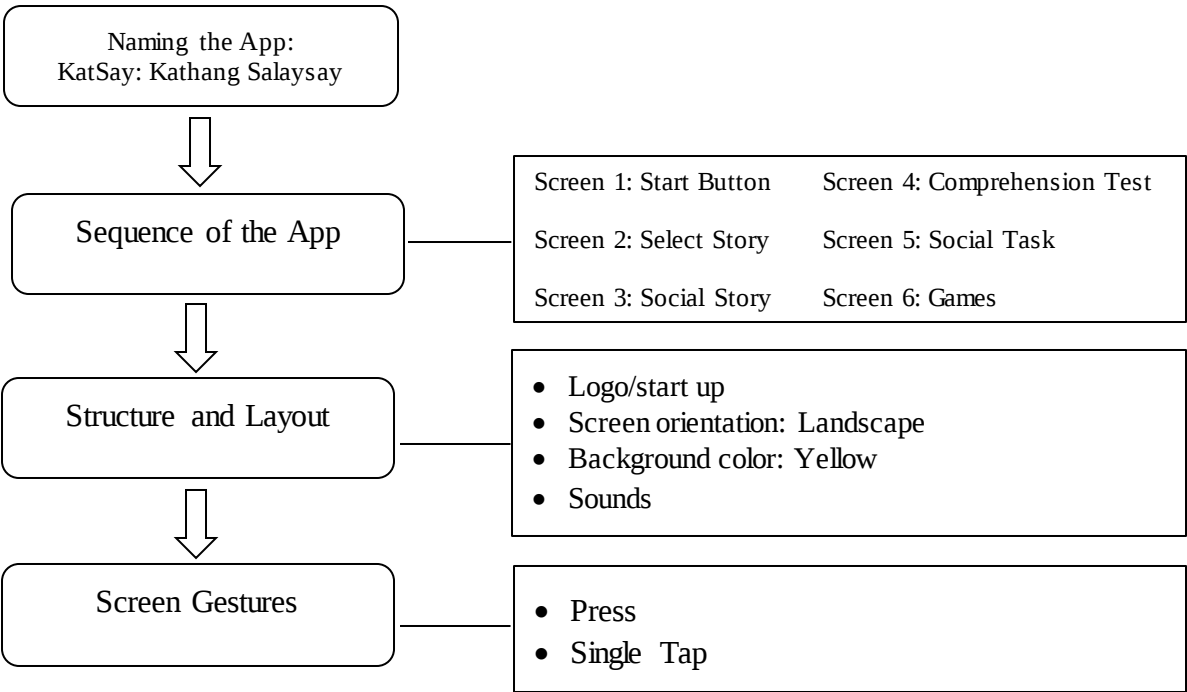


Figure 3. Flow chart on Crafting the Features of the Interactive Social Story Application “KatSay: Kathang Salaysay”

As shown in Figure 3 is the representation of the process followed by the researcher conceptualizing the design of the interactive social story application.

Firstly, the researcher thought of a proper title for the app based on social story making for the children with ASD. Hence, she gave it a name, “Kathang Salaysay” which means a narration made especially to custom fit the needs of children with ASD in terms of social skills and interaction.

Secondly, the researcher came up with six (6) screen slides as the main feature of the application which included the Screen 1: Start Button; Screen 2: Story Selection; Screen 3: Social Story; Screen 4: Comprehension Test; Screen 5: Social Tasks and Screen 6: Games.

After every social story there were reading comprehension test and social tasks that checked if the child understood the social story read by answering some questions related to the story and practicing the new skills acquired. It also helped in breaking down the social story piece by piece. It was believed in many literatures that children with ASD tend to have a weak central coherence making the researcher decide that it would be beneficial to the children with ASD if there will be a reading comprehension test and social tasks at the end of every social story. The Weak Central Coherence Theory suggests that children with ASD lack the ability to generalize meaning from a context, while having a preference for detail-focused processing (Happé 2005). This means that in some situations individuals with ASD may pay attention to irrelevant details and fail to see the bigger picture and understand the meaning of some situations.

At every end of a social story together with the completion of the reading comprehension tests and social tasks there were games for the children with ASD; this will serve as a reward for reading and completing the tasks given. This idea came from the Social Motivation Theory which suggests that individuals with ASD have “deficits in representing the reward value of social stimuli” (Abrams, Lynch, Cheng, & Phillips, 2013). Hence, deficits in social reward processing causes diminished social orienting, seeking and liking of social interactions, and social maintaining behaviors (Chevallier et al., 2012), ultimately manifesting as global deficits in social functioning. The researcher believed that the children with ASD will be motivated to read the social stories and complete the tasks if there was a reward in a form of a game at the end of every story/lesson. Both theories were used to guide the researcher in creating the main features of the application.

Thirdly, the researcher did structuring and lay-outing of the following features of the application namely: The logo/start up; Screen Orientation: Landscape; Background color: yellow; Sounds were conducted. These objects created a very important feature of the application because the appropriate graphics, images, colors and text used by the researcher stimulated the senses to motivate the child to manipulate the application.

Lastly, the researcher selected the screen gestures such as press and single tap to make it easy for the participants to follow. The features of the application motivated the children to explore, experience and utilize their sense of social motivation which was anchored from the social motivation theory. The concept of this theory had a great contribution in designing the

application because it stimulated the interest of children with ASD to engage in social communication and interaction while enjoying and learning at the same time.

Digitalization of the Material. The design through rough sketch made by the researcher was transmitted by the IT experts into graphics, images and applied the appropriate sounds. The IT experts utilized the application through the use of Unity, an android application maker. The researcher provided the content of the material by following the sequence of adopted theories in autism.

In this stage, the application was first drafted offline by the researcher through the use of a PowerPoint presentation. It was done to learn the application more. So, the development of the content of the mobile application was easier and faster for the IT expert. Figure 2.2 presents the idea of receiving continual or formative feedback while instructional materials are being created.

This model attempts to save time and money by catching problems while they are still easy to fix (Training Industry, Inc., 2016).

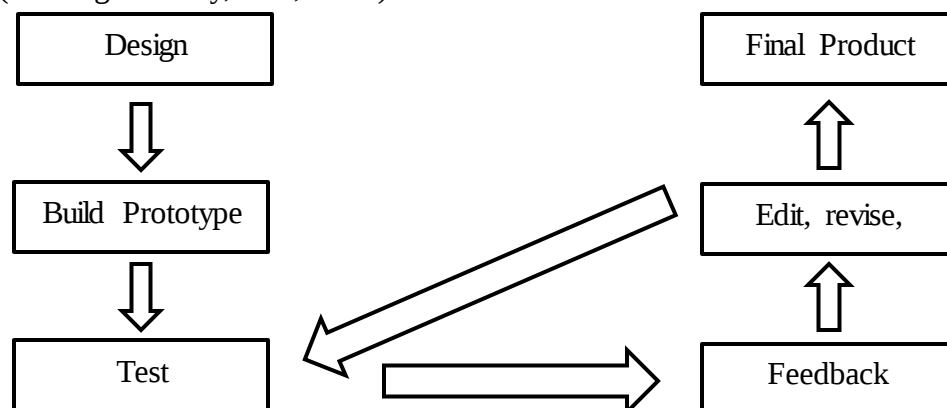


Figure 4. Prototype Model in Digitization of the Interactive Social Story Application

Figure 4 displays the flow of the development of the digitization of the interactive social story application with the participation of the IT experts. In the design stage the rough draft of the interactive social story application was drawn; in the build prototype stage, the flow chart was also outlined by the information technology expert; in the test stage, the prototype was presented to the researcher for testing out the slides/materials of its congruency with the elements of social story and theories in ASD. In the feedback stage, the researcher observed the corrections to be made. It was observed that option for narration should be included such as with or without voice narration and cool color pallets were used so it would be relaxing to the eyes of children with ASD. In the edit, revise and refine stage, the IT created the revisions needed. It took five revisions to upgrade the interactive social story application. In the final stage, the interactive social story application was completed as the final product.

Field testing of the interactive social story (Operational and Main Field Testing).

To obtain the evaluation of the Social Story app, the researcher asked the experts and SPED teachers to try-out the interactive app for dissemination and implementation to students with ASD. The experts were asked by the researcher to test, analyze and evaluate the sustainability of the criteria of the social story app in terms of objectives, subject matter, skills to be learned, activities, procedure and evaluation. The researcher provided a user guide to assist the SPED teachers on how to use the proposed interactive social story app.

Interactive Social Story Revision. After the preliminary testing of the interactive social story app, the app was retrieved from the experts, their suggestions and opinions were gathered and interpreted to improve the content. From these results to revise the social story

app and then went on to make the revision called for. For interactive social stories app validation, the researcher asked the help of SPED experts and IT experts.

Table 4

Profile of the SPED Teachers in the Validation of the App

Expert	Sex	Position	Educational Background
1	F	SPED Master Teacher	Doctorate Degree
2	F	SPED Teacher I	Master's Degree (in progress)
3	F	SPED Teacher I	Master's Degree (in progress)

Table 4 shows the profile of the three SPED experts who validated the app as to objectives, content, time allotment, assessment and effectiveness. One of the experts is a SPED Master Teacher with Doctorate Degree in Special Education and she has been teaching children with ASD for 13 years. The second and third experts were both SPED Teacher 1 with 36 units in Special Education and handling children with ASD for 21 and 16 years respectively.

Table 5

Profile of the Information Technology (IT) Experts in Evaluation of the Interactive Social Story Application as to Technical Appearance and Flexibility

Expert	Sex	Position	Educational Background
1	M	College Professor	MIT (in progress)
2	F	College Professor	MIT (in progress)

Table 5 shows the profile of the two (2) IT experts who validated the technical appearance and flexibility features of the interactive social story application. To provide substantial

evaluation in terms of suitability of the technical quality in the developed interactive social story application the IT experts were both knowledgeable in information technology.

Dissemination and Implementation. The social stories app was introduced through interactive narration, it indicated technology and performance based activities and it bore the principles in the acquisition of social skills such as social and emotional reciprocity (SER), social participation/avoidance (SPA) and detrimental social behaviors (DSB). The students used the social story app for one month. Social story app was used by integrating it to their lesson. The reading of social stories was done one at a time. Minimum of two stories per week was observed. The SPED teacher evaluated the participant's performance in terms of observed social behavior towards other people while using the interactive social story application.

Sampling and Participants

The researcher handed a copy furnished letter to the principal of the locale of the study which stated the purpose and permission to allow the SPED teachers, children with ASD and their parents to participate in the study. The principal endorsed the researcher directly to the two (2) SPED teachers who handled children with ASD at different levels. The selection of the participants in the study began with the evaluation of the checklist in identifying the social characteristics of the children with ASD by SPED teachers.

Snowball sampling technique was used to recruit all participants. Snowball sampling is a technique that is applied through recommendations made by people who share similar information or have some characteristics that a research is focusing on.

Using snowball sampling, the SPED teachers chose three (3) out of their ten (10) students. Selection was based on the students' developmental level, behavior and awareness in terms of their social skills. The children's age ranged from 5 to 10 years old.

The researcher also sought the involvement of parents of the children with ASD because these children are attached to their parents and expressed this attachment in unusual ways (Autism Speaks Inc., 2017). The parents were also the participants of the study and evaluated their children's general social skills development in terms of social emotional reciprocity (SER), social participation/avoidance (SPA) and detrimental social behaviors (DSB) using the Autism Social Skills Profile (ASSP).

The observation checklist and survey questionnaires validated by the special education experts were used for this purpose. The researcher gathered the data, reviewed, analyzed and evaluated the results that were utilized in next phase.

The following were the three (3) groups who participated in the conduct of the study at this phase: Two (2) SPED teachers who helped in evaluating the social skills of the children with ASD in school setting, three (3) identified children with ASD aged 5-10 years old who lacked social skills and three (3) parents who evaluated the social skills of these children at home setting.

Table 6

Profile of the SPED teachers in the evaluation of the Social skills of children with ASD

Teacher	Sex	Position	School Office	Years of Teaching Children with ASD	Educational Background
1	F	SPED Teacher I	Public School Teacher	16	Master's Degree (in progress)
2	F	SPED Teacher I	Public School Teacher	21	Master's Degree (in progress)

Table 6 presents the profile of the children with ASD from the data analysis of the assessment of their special education teachers.

Table 7

Profile of the Children with ASD

Student	Sex	Age	Type of ASD
1	Boy	9 years old	High Functioning Autism
2	Boy	7 years old	High Functioning Autism
3	Girl	6 years old	High Functioning Autism

Table 7 presents the three (3) children with ASD who were also the participants in the try-out of the developed interactive social story application (KatSay: Kathang Salaysay)

Sources of Data

The researcher utilized mixed approaches in terms of qualitative and quantitative data gathering. Questionnaire, document analysis, observation and interview were used to gather

needed data for the findings. To validate and cross check the findings, the researcher used combination of observations, interview and documentary analysis.

Qualitative approach in data collection involved more than a single method or technique. The researcher was encouraged to use more than one method of data collection to enhance the validity of the findings. For qualitative data, the researcher did an on-site observation, and went through documentation. Patton (2002), describes that all data sources increase validity as the strengths of one approach can compensate for the weaknesses of another approach.

Questionnaire. The principal instrument which the researcher utilized in gathering data was the questionnaire. Two sets of questionnaires were used. Part I which consisted of the modified Comprehension Checklist, Autism Social Skills Profile and Social Skills Activities were used to assess the personal information which helped in determining the students' background and other important information that were deemed important in the study: the students' levels of comprehension, characteristics exhibited during social interactions or social situations that lead to difficulties in social skills and activities that may help to improve social skills of children with ASD while Part II used IRP-15 on evaluating the application.

To identify specific characteristics of a child with ASD and his/her general reading readiness skills in the school setting, the researcher adopted and modified the Comprehension Checklist of Dr. Caroline Ramsey Musselwhite (2013). The criteria were completed in terms of comprehension and vocabulary. The researcher used two Filipino stories, "Ang Aking

Guro” and “Ang Paborito kong Pagkain” from Phoenix Publishing House to identify the general reading readiness skills in vocabulary, prediction, story elements and text to self/text to text of children with ASD. The findings were used by the researcher as bases for the construction of the social stories that were assimilated in the proposed application.

In terms of identifying the difficulties in social skills of children with ASD, the researcher adopted and modified the checklist of Scott Bellini (2007). In the current study, social skill was defined across three dimensions: social emotional reciprocity (SER), social participation/avoidance (SPA) and detrimental social behaviors (DSB) – constructs that are well represented by the Autism Social Skills Profile (ASSP), a scale completed by either the SPED teachers or parents and caregivers who work closely with the child.

In order to find out which activities are helpful for the students to develop their social skills, the researcher used the list of activities designed by Michele Meleen M.S.Ed. A modified survey questionnaire was used to be able to know which of the four social skills activity were applicable to the respondents in accordance to the opinion of their parents and SPED teachers.

Construction. The statement of the problem was used as guide in preparing the questionnaire. Rules in the preparation of the questionnaire were strictly adhere to.

Research Locale

The study was conducted at Kalalake Elementary School SINAG SPED Center. SINAG opened its services to the visually impaired children who are being handled by teachers who underwent scholarship at the PNU sponsored by the RBI. SINAG SPED Center served as venue to prepare the special children from segregation to integration. SINAG is called a “Ray of Light”, which gives HOPE and denoted ACHIEVEMENT.

Today, pupils composing of children with autism, mental retardation/intellectual disability, learning disability, visual impairment, hearing impairment, cerebral palsy, Down Syndrome, transverse mellitus, hyper active, global development delay and multiple handicap are in good hands of SPED teachers, therapists, medical staff, school administration and parents of SINAG SPED CENTER. The study was conducted at SINAG SPED Center since the chosen respondents are students of the center.

Data Gathering Procedure

The researcher then submitted a letter of request to the Principal of SINAG-SPED CENTER, Kalalake Elementary School, Olongapo City for permission to administer the questionnaires and conduct interviews and observations to the respondents. Upon the approval, the copies of the questionnaires and parental consent were personally distributed by the researcher to the selected classrooms. The written permission that was given by the school principal together with the letter of request was attached to the questionnaires and parental consent.

The said parental consent was given to the respective parent-respondent to provide complete information regarding the nature of the study. The consent included a thorough explanation concerning the purpose of the study, conduct of the study (safety and protection of participants, duration of the study and data collection tools) and ethical considerations (participation and withdrawal of participants, benefits and risks, privacy and confidentiality).

In the administration of the questionnaires, the teacher-respondents/the parent-respondents and the researcher worked hand in hand to comprehensively assess the students. The respondents were given enough time to answer the questionnaires. The questionnaires were retrieved by the researcher herself.

Interview. The researcher also conducted unstructured interviews with the teachers as to development and validation of the interactive social stories. Some SPED teachers interviewed to get ideas or insight on the data that were gathered from the questionnaire, to clarify vagueness in the response and gather additional information not obtained from the questionnaire. The interviews were done prior and after the administration of the survey questionnaire.

Ethical Considerations. In this research, both the participants and their parents were briefed fully on the purpose and conduct of the research. It was made very clear to them that participation was voluntary and they could withdraw from the project at any stage without penalty. The rationale and data collection behind this study were also explained.

When all participants and parents agreed that they understood everything clearly, they were asked to give their assent and consent to participate in this study by signing an assent of participation form and parental consent form. The consent of the participants was recorded and notes were kept of the dates of briefing and of the persons briefed.

As mentioned earlier, this study aimed to investigate the effects of social story intervention on Filipino children with Autistic Spectrum Disorder (ASD). The aim was achieved by designing an interactive social story to create a motivating context equipped with social narrative, digital interactive storytelling and fun-learning concept that contribute to the learning among children with ASD when they use the application, as this application can be utilized to improve their social skills. It was clear that the main participants of this study were children with ASD, therefore all efforts were made to ensure that no identification of who produced what information was revealed to the public. As mentioned by Creswell (2005), the researcher should consciously consider the ethical issues which involve issues of maintaining confidentiality, protecting the anonymity of individuals and seeking consent, all of which the participants were informed of.

Basically, the nature of this study used interview methods and assessment tools that were designed to assist the researcher in planning and modifying the interactive social story application. This study therefore, could not be thought of as modifying the knowledge, thinking, attitudes, feelings and or behavior of the participants. In addition, although this study dealt with a number of parents and school teachers, they worked with the researcher individually. Furthermore, the information that was obtained in interviews did not involve

sensitive questions which could cause any distraction to the participants. Basically, according to the methods of this study, there should be no risks involved. Thus, the possible benefits of this study apparently outweighed the risks.

All personal information of the participants were treated as confidential, remained confidential throughout the study and, after the project has been completed, were destroyed. Personal data such as recordings of the interview session and relevant personal information were not used without first obtaining consent from the relevant individuals.

In addition, to protect the privacy of those involved, interviewees' names were replaced with pseudonyms. Student participants' names were replaced with "Student 1", "Student 2", and "Student 3". Parents' names were replaced with "Parent 1", "Parent 2" and "Parent 3". SPED teachers' names were replaced with "SPED Teacher 1", "SPED Teacher 2" and "SPED Teacher 3". Questionnaires were named Questionnaires 1-3.

The results of the study were shared to the participants and the community right after the research has ended for it is believed that sharing qualitative research findings with participants is perceived as a procedure designed to enhance study credibility and participant involvement.

Data Analysis

The quantitative part of this study was analyzed through statistical tools like, weighted mean and standard deviation. The researcher made use of the following statistical tools to complete the study.

Weighted Mean. This was used to get the average of the overall respondents given that the data is a scale. The “x” stands for each of the variables while “N” stands for the overall population. The formula for getting the mean is as follows:

$$\bar{x} = \frac{\sum x}{n}$$

This was used to present the weighted observations of the respondents in describing the reading readiness skills of CWA students, their difficulties in social skills, and the activities that can help in developing their social skills.

Standard Deviation. Standard deviation was used to determine the dispersion or distance of the scores or values of the respondents from the mean. This was also an indication if there were outliers in the data and if the distribution of the data was even.

The results of the statistical manipulation were compared in arbitrary intervals and interpretations;

1. Identification of children with ASD in terms of social skills

Range	Interpretation
3.26 – 4.00	Very Often
2.51 – 3.25	Often
1.76 – 2.50	Sometimes
1.00 – 1.75	Never

2. Identification of children with ASD in terms of reading readiness, appropriate activities and try-out evaluation of the Interactive Social Story Application

Range	Interpretation
3.26 – 4.00	Fully Evident
2.51 – 3.25	Highly Evident
1.76 – 2.50	Slightly Evident
1.00 – 1.75	Not Evident

Chapter 3

Results and Discussion

This chapter presents the presentation, interpretation and analysis of the data or information gathered to achieve the purpose of the study. The researcher utilized visual representations to illustrate the data and the information revealed by the results during the different phases of the study. Narratives for the presentation, interpretation and analysis of data were patterned according to the purpose of this study. The connection between the results and literature was considered in explaining the data of this research.

1. What are the reading readiness skills of children with ASD?

Reading Comprehension has been described as the product of word decoding and linguistic comprehension; both essential to develop the ability to gain meaning from written text (Gough & Tunmer, 1986). Word reading, or decoding, is an early predictor of reading comprehension. There is evidence that vocabulary impacts social development – students with stronger vocabulary abilities are more able to socially interact with their peers, whereas students with weaker language and vocabulary are arguably less able to learn from peer-mediated learning activities (Connor, Rice, Southerland, Underwood, Kaya & Morrison, 2012). Studies have proposed that reading comprehension and social competence share common social-cognitive processes that might support one another in development (Baron-Cohen, Lombardo, Tager-Flusberg, & Cohen, 2013).

In research with typically developing students, automaticity of decoding individual graphemes and blending them to form words develops in the early grades; there is evidence

to support that this is also true for individuals with Autism Spectrum Disorder who have average IQ (McIntyre, Solari, Gonzales & Mundy, 2017).

In line with this, the researcher tried to determine the reading readiness of SINAG-SPED children with ASD that may be included in the proposed interactive social stories. The findings are reflected in Table 8.

The following scale and verbal interpretation were used in establishing the reading readiness characteristics of children with ASD in the area of vocabulary, prediction, story elements and text to self/text to text. The scale of four (4) [ranged from 3.26 to 4.00] was interpreted as *fully evident* revealing that the *reading readiness characteristic of children with ASD are very strongly noticeable*, as to the scale of 3 [ranged 2.51 to 3.25] was interpreted as *highly evident* indicating that the *reading readiness characteristics are much noticeable*, while the scale of 2 [extending from 1.76 to 2.50] was interpreted as *slightly evident* indicating an *observed reading readiness characteristics from the respondents* and the scale of 1 [ranging from 1.00 – 1.75] was interpreted as *not evident* showing that *the characteristics of children with ASD in terms of reading readiness are not noticeable*.

Table 8

Mean Rating of Reading Readiness Skills of Children with ASD in Terms of Comprehension, Understanding and Vocabulary

Item No.	Descriptor	Student 1	Student 2	Student 3	WM	VI
1.	<u>Vocabulary</u> Identifies key story vocabulary.	3.00	3.00	2.00	2.67	HE
2.	<u>Prediction</u> Makes reasonable predictions and back them up.	2.00	2.00	1.00	1.67	NE
3a.	<u>Story Elements</u> Can remember important story characters.	4.00	2.00	2.00	2.67	HE
3b.	Can describe story characters, and connect descriptions in the book.	3.00	3.00	2.00	2.67	HE
3c.	Can identify story settings, and show where they are in the book.	3.00	3.00	2.00	2.67	HE
3d.	Can identify feelings of main character throughout the books and refer to the book to support answer.	4.00	2.00	2.00	2.67	HE
4	<u>Text to Self/ Text to Text</u> Can connect own life to that of characters	3.00	1.00	1.00	1.67	NE
General Mean:					2.38	SE

Legend: WM- Weighted Mean, VI- Verbal Interpretation

3.26 – 4.00	Fully Evident	FE
2.51 – 3.25	Highly Evident	HE
1.76 – 2.50	Slightly Evident	SE
1.00 – 1.75	Not Evident	NE

To answer the first research question, the data were tabulated to see the reading readiness of children with ASD as shown in Table 8. The data revealed that the reading readiness skills of children with ASD in terms of comprehension, understanding and vocabulary are interpreted as *slightly evident*. However, it further shows that identifying the key story vocabulary (item 1) and classifying the story elements (item 3a-3d) appeared *highly*

evident across all the respondents. The findings were possible since all the respondents were diagnosed with High Functioning ASD.

This implies that occasionally, children diagnosed with High Functioning Autism or Asperger's Syndrome can read words-with ease- often without any reading instruction, and sometimes at a very early age. These children, who invariably show problems in socialization skills, also may exhibit significant impairments in language and auditory processing, yet they have been able to miraculously “break the code.”

Likewise the findings are somewhat consistent with what the teacher said during the interview. Teachers during the interview said that she consistently observed children with ASD difficulty in reading particularly that of story elements. The findings suggest valid reason for the inclusion of these reading readiness skills in the proposed interactive social stories.

Comparatively, the results of the findings in making predictions (item 2) and connecting the story and characters to own life (item 4) were both *not evident* to the respondents. These are known to be the impairments in Theory of the Mind (ToM) that are most observed across developmental stages and functioning levels in individuals with Spectrum Disorder (ASD), and these deficits remain evident throughout adolescence and into adulthood. (White, Hill, Happé & Frith, 2009).

This implies that without understanding ToM and being able to take other's perspectives, it could be difficult for children to read and understand narrative texts. Furthermore, children who have difficulty drawing inferences and conclusions in order to

adequately comprehend a text might also struggle with understanding and predicting others' perspectives and intentions during social interactions necessary skills involved in social competence. Social skills and reading comprehension may develop reciprocally; improvement in one domain may influence the other.

Theory of the Mind (ToM) is the ability to attribute mental states to oneself, and infer others' mental states in order to understand and predict their behavior. It also enables one to understand that oral and written language are about the expression of thoughts, emotions and desires, as well as the interpretation of intended meaning rather than literal meaning (Tomasello, 2010). Relatedly, performance on ToM tasks is associated with oral language (Happé, 1995) and communicative competence (Hale & Tager-Flusberg, 2005). Because of this, ToM and language have been posited to have a bidirectional relation in development (Miller, 2006).

This implies that without understanding ToM and being able to take other's perspectives, it could be difficult for children to read and understand narrative texts. Furthermore, children who have difficulty drawing inferences and conclusions in order to adequately comprehend a text (Catts & Weismer, 2006), might also struggle with understanding and predicting others' perspectives and intentions during social interactions (Kidd & Castano, 2013) – necessary skills involved in social competence (Wakusawa, Sugiura, Jeong, Horie, Sato & Kawashima, 2007). Social skills and reading comprehension may develop reciprocally, improvement (or lack thereof) in one domain may influence the other (Diehl, Bennetto, & Young, 2006).

Hence, the researcher's proposed interactive social stories need to include reading readiness skills ; key story vocabulary, classifying the story elements, making predictions and connecting the story and characters to own life in the proposed interactive social stories. The researcher will use variety of stories to develop these reading readiness skills particularly that of connecting the story and characters to their own life as this will facilitate fast development of their social skills.

2. What are the difficulties in social skills of children with ASD?

The second purpose of the study was to determine the difficulties of the participants in terms of their social skills, the data were tabulated to see the social skills of children with ASD in terms of social/emotional reciprocity (SER) as shown in Table 9.

Table 9

Mean Rating of Difficulties in Social/Emotional Reciprocity (SER) of Children with ASD

Item No.	Descriptor	Student 1	Student 2	Student 3	WM	VI
1.1	<u>Acquiring Self Confidence:</u> Describe others perception of self:					
a.	Considers the viewpoints of others in social situations	2.00	1.00	1.00	1.33	N
b.	Expresses sympathy for others when they are hurt or upset	3.00	2.00	1.00	2.00	S
1.2	Accept/give praises/greetings					
a.	Says "sorry" or apologizes for mistakes	4.00	2.00	2.00	2.67	O
b.	Responds to the greetings of others	3.00	2.00	1.00	2.00	S
c.	Says "excuse me" or politely asks others to move out of his/her way	3.00	3.00	2.00	2.67	O
1.3	Accept/give criticisms					
a.	Provides compliments to others	4.00	3.00	1.00	2.67	O

b.	Acknowledges the compliments directed at him/her by others	3.00	3.00	2.00	2.67	O
1.4	Develop confidence in oneself					
a.	Verbally expresses how he/she is feeling	4.00	2.00	2.00	2.67	O
b.	Introduces self to others	3.00	2.00	1.00	2.00	S
c.	Offers assistance to others	4.00	3.00	1.00	2.67	O
2.1.	<u>Achieving Self Awareness:</u> Identifying emotions					
a.	Recognizes the facial expression of others	4.00	2.00	2.00	2.67	O
b.	Recognizes the non-verbal cues, or “body language” of others	4.00	2.00	2.00	2.67	O
3.1.	<u>Communicating with Others:</u> Identify subtleness of communication					
a.	Asks questions to request information about a person	3.00	2.00	1.00	2.00	S
b.	Talks about or acknowledges the interests of others	2.00	2.00	1.00	1.67	N
c.	Responds to questions directed at him/her by others	3.00	3.00	2.00	2.67	O
3.2	Communicate with others					
a.	Takes turns during games and activities	2.00	2.00	2.00	2.00	S
b.	Maintains the “give and take” of conversations	2.00	2.00	2.00	2.00	S
c.	Adjusts voice volume based on the needs of the listener	3.00	2.00	1.00	2.00	S
d.	Joins a group conversation by politely interrupting or waiting for a pause/break in conversation	2.00	1.00	2.00	1.67	N
e.	Compromises during disagreements with others	2.00	2.00	1.00	1.67	N
General Mean:					2.22	S

Legend: WM- Weighted Mean, VI- Verbal Interpretation

3.26 – 4.00	Very Often	VO
2.51 – 3.25	Often	O
1.76 – 2.50	Sometimes	S
1.00 – 1.75	Never	N

The data revealed that the social skills of children with ASD in terms of social/emotional reciprocity (SER) were interpreted as *sometimes or occasionally exhibited*.

The data further showed that saying “sorry” or apologizing for mistakes (item 1.2a), saying “excuse me” or politely asks others to move out of his/her way (item 1.2c), providing compliments to others (item 1.3a), acknowledging the compliments directed at him/her by others (item 1.3b), verbally expressing how he/she is feeling (item 1.4a), offering assistance to others (item 1.4c), recognizing the facial expressions of others (item 2.1a), recognizing the non-verbal cues, or “body language” of others (item 2.1b), and responding to questions directed at him/her by others (item 3.1c) were the skills which are *often exhibited* by the students.

Comparatively, skills such as expressing sympathy for others when they are hurt or upset (item 1.1b), responding to the greetings of others (item 1.2b), introducing self to others (item 1.4b), asking questions to request information about a person (item 3.1a), taking turns during games and activities (item 3.2a), maintaining the “give and take” of conversations (item 3.2b) and adjusting voice volume based on the needs of the listener (item 3.2c) were the skills assessed as *sometimes or occasionally exhibited* by the students.

Further, considering the viewpoints of others in social situations (item 1.1a), talking about or acknowledging the interests of others (item 3.1 b), joining a group conversation by politely interrupting or waiting for a pause/break in conversation (item 3.2 d) and compromising during disagreements with others (item 3.2e) were the skills assessed as *never or almost never exhibited* by the students.

It is important to note that in difficulties in considering the viewpoints of others in social situations, expressing sympathy for others when they are hurt or upset and compromising during disagreements with others may be linked with deficit in Theory of the Mind (ToM).

ToM is the ability to infer the mental states of other people and to use this information to predict behavior. Difficulties in passing classic measures of ToM, the most common of which are false belief tasks - ask direct questions about the mental states of others, although they also require competency in a range of other cognitive skills, such as inhibiting reality and response selection (Baillargeon, Scott & He, 2010), are well documented in ASD (Frith, 2012).

Verbal ability is a consistent correlate of ToM (Ronald, Viding, Happe & Plomin, 2006) and one interpretation is that verbally able autistic individuals “hack out” mentalizing explanations when given time and structure but this ability does not withstand the complexities of everyday life, where mentalizing has to be intuitive, fast and reflexive (Happe, 1995). Indeed real life mentalizing requires attention to relevant social detail, which may not be forthcoming in ASD due to weak central coherence where individuals with ASD tend to process information “piece by piece”, rather than in their global context, focusing on the development of its component parts leading to cognitive abnormality that affects a wide range of psychological functions: perception, language and social skills. (Chevallier, Kohls, Troiani, Brodtkin & Schultz, 2012).

It implies that implicit mentalizing such as spontaneous looking patterns that reflect intuitive tracking of another person's belief state, are clear in documenting difficulties with ASD (Senju, Southgate, White & Frith, 2009). Intuitively, an association would be expected between mentalizing difficulties and a range of atypical social communicative behaviors characteristic of ASD. Indeed, correlations between ToM and social communication have been identified (Nagar Shimona, Weizman, Yoran & Raviv, 2012). The ToM hypothesis is specific to social cognition difficulties in ASD (Russell, 1997).

The results of the findings revealed that SINAG-SPED children with ASD showed that they have difficulties in social reciprocity. Such skills involved capacity on how the behavior of one person influences and is influenced by the behavior of another person and vice versa. Thus, impairment in these social reciprocity skills was seen in the respondents. This is parallel to the observation of the researchers, noticing children with ASD distress or lack of interest in the focus or topic of conversation.

The results of the findings also revealed that all social communication related deficits such as responding to the greetings of others (item 1.2b), introducing self to others (item 1.4b), asking questions to request information about a person (item 3.1a), taking turns during games and activities (item 3.2a), maintaining the "give and take" of conversations (item 3.2b) and adjusting voice volume based on the needs of the listener (item 3.2c), talking about or acknowledging the interests of others (item 3.1 b) and joining a group conversation by politely interrupting or waiting for a pause/break in conversation (item 3.2 d) can be associated to another prominent theory of ASD – social motivation theory, which posits that affected

individuals find social stimuli less rewarding than their neuro typical peers, leading to impaired social skills (Chevallier, Kohls, Troiani, Brodtkin & Schultz, 2012b). This implies that certain individuals with ASD are likely to be less motivated to interact with other people and derive less pleasure from social interactions due to abnormal reward processing of social stimuli.

Having general mean of 2.22 (falling in the range of 1.76 – 2.50) which was interpreted as *sometimes or occasionally exhibited* in social/emotional reciprocity (SER) among students with ASD in the surveyed school, the findings suggested the need to address the difficulties of students in skills particularly that of; considering the viewpoints of others in social situations, talking about or acknowledging the interests of others, joining a group conversation by politely interrupting as they are important foundation social skills in social/emotional reciprocity (SER) that can greatly impact on social interaction.

Hence, the proposed interactive social story application needs to focus on the said difficulties to help students with ASD develop social/emotional reciprocity (SER) through the integration of the content and performance standards stated in the Philippine Transition Program Model mandated by the Department of Education.

In the current study, the social skills were defined across these three dimensions: social emotional reciprocity (SER), social participation/avoidance (SPA) and detrimental social behaviors (DSB) – constructs that are well represented by the Autism Social Skills Profile (ASSP; Bellini, 2007), a scale completed by either the SPED teachers or parents and caregivers who work closely with the child.

Social/Emotional Reciprocity (SER), involves skills that are necessary to maintain a successful reciprocal social interaction. The items cover both explicit reciprocal behaviors and behaviors that indicate a child's ability to consider the thoughts, feelings and interests of others or to take another person's perspective. On the other hand, Social Participation/Avoidance (SPA) contains items related to social engagement and withdrawal from social participation. Items represent less active maintenance of reciprocal social interactions. Detrimental Social Behaviors (DSB) includes items that represent socially inappropriate behaviors and behaviors that could contribute to negative peer experiences. Problems on this subscale may lead directly to adverse social interactions.

The following scale and verbal interpretation were used in establishing the social characteristics of children with ASD. The scale of four (4) (ranged from 3.26 to 4.00) was interpreted as *very often* revealing that the social skills of children with ASD are *very strongly exhibited*; as to the scale of 3 (ranged 2.51 to 3.25) it was interpreted as *often* indicating that the social characteristics are *much exhibited*, while the scale of 2 (extending from 1.76 to 2.50) interpreted as *sometimes* indicating an *occasionally exhibited* social skills from the respondents and the scale of 1 (ranging from 1.00 – 1.75) was interpreted as *never* showing that the characteristics of children with ASD in terms of social skills are *not exhibited*.

Social reciprocity is the back-and-forth flow of social interaction. The term reciprocity refers to how the behavior of one person influences and is influenced by the behavior of another person and vice versa. Impairment in social reciprocity may be seen in not taking an active role in social games, preferring solitary activities, or using a person's hand as a tool or

a person as if they are mechanical objects. This may lead to not noticing another person's distress or lack of interest in the focus or topic of conversation.

Table 10

Mean Rating of Difficulties in Social Participation/Avoidance (SPA) of Children with ASD

Item No.	Descriptor	Student 1	Student 2	Student 3	WM	VI
1.1.	<u>Maintaining good interpersonal skills:</u> Demonstrate listening and responding skills					
a.	Engages in one-on-one skills interactions with peers	3.00	2.00	1.00	2.00	S
b.	Asks questions about a broad range of topics	2.00	2.00	1.00	1.67	N
c.	Uses gestures or eye contact to direct the attention of others to objects, persons or situations	3.00	3.00	2.00	2.67	O
d.	Makes eye contact when initiating interactions with others	3.00	3.00	2.00	2.67	O
e.	Maintains appropriate levels of eye contact during conversations	3.00	3.00	2.00	2.67	O
1.2.	Establish close relationship					
a.	Invites peers to join him/her in activities	4.00	1.00	1.00	2.00	S
b.	Allows peers to join him/her in activities	4.00	1.00	1.00	2.00	S
1.3.	Maintain friendship					
a.	Joins in activities with peers	4.00	2.00	1.00	2.33	S
b.	Interacts with peers during unstructured activities	3.00	1.00	1.00	1.67	N
c.	Interacts with groups of peers	3.00	1.00	1.00	1.67	N
d.	Responds to the invitations of peers to join them in activities	3.00	2.00	2.00	2.33	S
e.	Engages in solitary activities in the presence of peers	4.00	4.00	2.00	3.33	VO
General Mean:					2.25	S

Legend: WM- Weighted Mean, VI- Verbal Interpretation

3.26 – 4.00	Very Often	VO
2.51 – 3.25	Often	O
1.76 – 2.50	Sometimes	S
1.00 – 1.75	Never	N

Impairments in social communication are a defining phenotypic feature of autism spectrum disorder (ASD). Children with the disorder demonstrate reduced preference and orientation to social stimuli (Franchini, Glaser, Wood de Wilde, Gentaz, Eliez & Schaer, 2017), diminished interest in collaborative social activities (Liebal, Colombi, Rogers, Warneken & Tomasello, 2008) and find social situations less pleasant than their typically developing peers (Chevallier, Kohls, Troiani, Brodtkin & Schultz, 2012; Ruta, Fama, Bernava, Leonardi, Tartarisco & Falzone, 2017).

Table 10 of social skills of children with ASD in terms of social participation/avoidance (SPA) shows that engaging in solitary activities in the presence of peers (item 1.3e) was *very often or always exhibited* by the students while using gestures or eye contact to direct the attention of others to objects, persons or situations (item 1.1c), making eye contact when initiating interactions with others (item 1.1d) and maintaining appropriate levels of eye contact during conversations (item 1.1e) was the skills which were *often exhibited* by the students.

The findings were somewhat consistent with what the SPED teacher said during the interview. According to her, in the majority of the time spent inside the classroom, the respondents were always encouraged to engage in self-contained and group activities with peers while eye contact was exercised by the teacher every other day before starting the session.

Relatively, engaging in one-on-one social interactions with peers (item 1.1a), inviting peers to join him/her in activities (item 1.2a), allowing peers to join him/her in activities (item

1.2b), joining in activities with peers (item 1.3a) and responding to the invitations of peers to join them in activities (item 1.3d) were the skills which were *sometimes or occasionally exhibited* by the students. The skills that were *never or almost never exhibited* by the students were asking questions about a broad range of topics (item 1.1b), interacting with peers during unstructured activities (item 1.3b) and interacting with groups of peers (item 1.3c).

Based on the findings, the skills that were *occasionally* and were *almost never exhibited* by the respondents were all related to reciprocal social interaction. Difficulties in this area are among the greatest challenges that individuals with ASD face during every day activities. It infers that children with ASD often fail to appropriately initiate, maintain and respond to social interactions (White, Hill, Happé & Frith, 2009). In particular, they show difficulties in sustaining normal back-and-forth conversation and tailor their behavior to suit various social contexts (Chan, Lang, Rispoli, O'Reilly, Sigafos & Cole, 2009; Marans, Rubin & Laurent, 2005). These characteristics can be connected to atypical reward processing of social stimuli of children with ASD resulting to reduced interest in social interaction that leads to deficit in social cognition which is all in relation to the social motivation theory.

Because of this phenomenon, though SPED teachers tend to motivate their students to engage in group activities or social interaction still students are somewhat withdrawn all the time. Constant prompting and guidance are still needed by children with ASD to be able to engage in a simple social communication interaction.

With a general mean of 2.14 which is interpreted as *sometimes or occasionally exhibited in social participation/avoidance (SPA)*, the findings suggested the need to address the difficulties of students in asking questions about a broad range of topics, interacting with peers during unstructured activities and interacting with group of peers are important factors to be developed in terms of social participation/avoidance (SPA) that can significantly impact on social interaction.

Therefore, the proposed interactive social stories need to focus on the said difficulties to help children with ASD develop their social participation skills.

Table 11

Mean Rating of Difficulties in Detrimental Social Behaviors (DSB) of Children with ASD

Item No.	Descriptor	Student 1	Student 2	Student 3	WM	VI
1.1	<u>Achieving socially accepted behavior:</u>					
	Demonstrate respect for the rights and properties of others					
a.	Maintains an appropriate distance when interacting with peers	3.00	3.00	2.00	2.67	O
1.2	Demonstrate appropriate behavior in public places					
a.	Exhibits poor timing with his/her social initiations	3.00	2.00	3.00	2.67	O
b.	Engages in socially inappropriate behaviors	2.00	2.00	2.00	2.00	S
c.	Experiences negative peer interactions	2.00	2.00	2.00	2.00	S
d.	Experiences positive peer interactions	3.00	2.00	2.00	2.33	S
e.	Ends conversations abruptly	2.00	1.00	1.00	1.33	N
f.	Fails to read cues to terminate conversations	2.00	2.00	2.00	2.00	S
g.	Makes inappropriate comments	2.00	1.00	2.00	1.67	N
h.	Exhibits fear and anxiety regarding social interactions	4.00	3.00	3.00	3.33	VO
1.3	Recognizes personal roles					
a.	Is manipulated by peers	3.00	1.00	2.00	2.00	S
b.	Changes the topic of conversation to fit self-interests	3.00	1.00	2.00	2.00	S
General Mean:					2.12	S

Legend: WM- Weighted Mean, VI- Verbal Interpretation

3.26 – 4.00	Very Often	VO
2.51 – 3.25	Often	O
1.76 – 2.50	Sometimes	S
1.00 – 1.75	Never	N

As shown in Table 11, the data revealed that having general mean of 2.12, the social skills of children with ASD in terms of detrimental social behaviors (DSB) were interpreted as *sometimes or occasionally exhibited*. Specifically, these skills were engaging in socially inappropriate behaviors (item 1.2b), experiencing negative peer interactions (item 1.2c), experiencing positive peer interactions (item 1.2d), failing to read cues to terminate conversations (item 1.2f), is manipulated by peers (item 1.3a) and changing the topics of conversation to fit self-interests (item 1.3b) while the skills ending conversation abruptly (item 1.2e) and making inappropriate comments (item 1.2g) were *never or almost never exhibited* by the students.

It can be noticed that the respondents were exhibiting, at some point, socially appropriate behaviors and behaviors that could contribute to positive peer experiences. Again, this phenomenon can be related with what the SPED teacher said during the interview that in the majority of the time spent inside the classroom, the respondents were always encouraged to engage in self-contained and group activities with peers. It is believed that though social and communication difficulties are hallmark characteristic of individuals with Autism Spectrum Disorder (ASD) (Christensen, Baio, & Van Naarden Braun, 2016) and have been

linked to underlying social cognitive impairments, still research suggests that exposure to and engagement in, conversations about mental states influence children's social development. (Ruffman, Slade & Crowe, 2002).

Then again, the respondents still showed some difficulties in terms of exhibiting fear and anxiety regarding social interaction (item 1.2h) as it is interpreted as a skill that is very often or always exhibited by the students while maintaining an appropriate distance when interacting with peers (item 1.1a) and exhibiting poor timing with his/her social initiations (item 1.2a) are the skills which are often or typically exhibited by the students.

These findings can be linked to deficits in Theory of the Mind (ToM) for the respondents had difficulty in terms of proper timing and distance with social initiations since they have trouble in considering the viewpoints of other people in a social context. The feeling of fear and anxiety with social interaction could be the result of problems with reward processing of social stimuli leading to diminished social orienting, seeking and liking of social interaction and social maintaining behaviors. The findings also suggested the need to address these deficits of students as they are important foundation social skills in detrimental social behaviors (DSB) that can greatly impact on social interaction. Hence, this should be included in the proposed interactive social stories.

3. What activities can help to improve the social skills of children with ASD?

In relation to the third objective of the study, the results of the data gathered from Table 8, 9, 10 and 11 served as the guide in developing the activities to improve the social skills of children with ASD. The researcher adopted the list of activities designed by Meleen (2017) to find out which activities are helpful for the students to develop their social skills.

The following scale and verbal interpretation were used in establishing the activities in developing social skills of children with ASD. The scale of four (4) (ranged from 3.26 to 4.00) was interpreted as *fully evident* revealing that the social skill activity for children with ASD should be very strongly noticeable in the proposed interactive social story application; as to the scale of 3 (as suitable ranged 2.51 to 3.25) it was interpreted as *highly evident* indicating that the social skill activity should be much noticeable in the application, while the scale of 2 (extending from 1.76 to 2.50) was interpreted as *slightly evident* indicating an observed feature of the application and the scale of 1 (ranging from 1.00 – 1.75) was interpreted as *not evident* showing that the social skill activity should not be that noticeable in the proposed application.

Table 12

Mean Rating of Activities in Developing Social Skills of children with ASD

Item No.	Descriptor	Student 1	Student 2	Student 3	WM	VI
1.	Facial Expression Decoder	1.00	1.00	1.00	1.00	NE
2.	Conversation Starter Card	4.00	3.00	3.00	3.33	FE
3.	Keep it on topic	4.00	4.00	2.00	3.33	FE
4.	Act it out	4.00	3.00	3.00	3.33	FE

Legend: WM- Weighted Mean, VI- Verbal Interpretation

3.26 – 4.00	Fully Evident	FE
2.51 – 3.25	Highly Evident	HE
1.76 – 2.50	Slightly Evident	SE
1 .00 – 1.75	Not Evident	NE

Table 12 reveal that both parents and SPED teachers agreed that among the 4 given activities in developing social skills, majority wanted to integrate activities such as the *Conversation Starter Card*, *Keep it on Topic* and *Act it Out*, leaving *Facial Expression Decoder* the least chosen activity.

This is consistent with the result in terms of the social difficulties of the respondents since it was stated that deficit in social communication, social reciprocity and social interaction should be thoroughly developed to them. The respective goal of *Conversation Starter Card*, *Keep it on Topic* and *Act it Out* are somehow related to one another. The *Conversation Starter Card* is used to provide the children with opening lines to start a conversation. Meanwhile, the *Keep it on Topic* activity encourages the respondents to engage turn-taking in a conversation that must only be about the given topic. And lastly, *Act it Out* will motivate the children to act out the new acquired social skill to other people. All activities focus in using scenarios related to social interaction and emotions.

Thus, all need to be integrated in the development of the different social tasks in the proposed interactive social story application since all three social skills activities got a

weighted mean of 3.33 with a verbal interpretation of *fully evident* which means that these activities are the most liked activities of children with ASD.

Meanwhile, the *Facial Decoder* got only a weighted mean of 1 and was interpreted as *not evident*. With this the researcher agreed with the results of the survey and interview with both parents and SPED teachers. According to them the said activity was not that needed to be indicated in the proposed interactive social story application since the respondents did not have any difficulty in terms of identifying and recognizing the facial expressions of others.

Utilization of the Findings in Developing the Interactive Social Story Application

Following the Research and Development Cycle (R&D Cycle) by Borg (1991) in the development of the proposed interactive social story application, the researcher tried to describe present conditions of reading readiness skills of children with ASD based on their responses, impressions or reactions as monitored and assessed by the teacher.

The answer to problem number one, which was the *identification of reading readiness skills of children with ASD*, served as the basis for the construction of the social stories to be used in the application. Findings revealed that recognizing the key story vocabulary was often observed among respondents; likewise, the identification of story elements such as the characters, settings and feelings of the characters. However, making prediction and the ability to connect the story to own life were never observed among respondents. The findings were used by the researcher in the construction of the social stories with developmentally suited words and story elements that are usual or common to the respondents. With that, it will be easier for the respondents to relate to the given social stories.

Answer to problem number two, which was the *difficulties in social skills of children with ASD*, provided helpful findings to the researcher to address the identified difficulties through the proposed interactive social story application. Findings showed that the respondents had difficulties in initiating greetings with others, inviting and joining peers in games or activities and engaging in one-on-one social interactions with peers. To help them to adapt to these skills, the researcher constructed three social stories and developmentally sequenced activities such as reading comprehension test, social tasks and games that will make learning social skills interactive and fun for the students which are better options for improving their social interaction.

Answer to problem number three, which was the *activities that can help in developing the social skills of children with ASD*, delivered useful findings on what activities can be helpful for the students to develop their social skills that were included in the proposed interactive social skills application. Findings revealed that acting out or doing the skill first hand by the students will be a big help in learning the skill; Likewise with the idea of *conversation starter cards* where in ideas or opening lines in conversations are given to students to motivate them in starting conversation with other people. The activity *keep it on topic* aims to encourage turn-taking in a conversation that must only be about a given topic. It was also chosen by both teachers and parents as desired activities to be integrated in the construction of social tasks for the proposed interactive social story application.

4. What social story can be proposed to address the difficulties in social skills of children with ASD?

To address the fourth purpose of the study, the researcher sought two Special Education experts in drafting construction of the social stories and the format of the proposed interactive social story application. After the consultation with them the researcher drafted a format for the proposed interactive social story application following these salient features: a) the pupils will be introduced to the social story through interactive narration, b) it will indicate technology and performance based activities and c) it will bear the principles in the acquisition of social skills such as social and emotional reciprocity (SER), social participation/avoidance (SPA) and detrimental social behaviors (DSB).

The researcher constructed Filipino/Tagalog social stories, since social stories will be more effective if they are properly comprehended by the respondents and that they would be helpful if the language used in narrating the stories is familiar to the listeners (Kokina and Kern's 2010).

The social stories included in the application were submitted to Mr. Jonathan Galicia for language evaluation. Mr. Galicia specialized in Filipino Language and the current language coordinator at St. Joseph College, Inc. at Olongapo City. He is also a speaker in Filipino at Private Education Assistance Committee (PEAC). Mr. Galicia focused his evaluation on the following criteria namely; clarity, organization, coherence and cohesion.

Nonetheless, his knowledge and expertise in Filipino language helped the researcher a lot in the formulation of the social stories for the interactive application.

The following are the social stories in the proposed interactive social stories application.

Table 13

Social Story # 1 - Pagbati sa bagong kakilala (Part 1)

Title: Pagbati sa bagong kakilala	
Social Story # 1	
Objective: Responding to the greetings of others	
Preventing exhibiting fear and anxiety regarding social interaction	
Social Story	Sentence Type
1. Madalas, nakakakilala ako ng mga bagong tao.	Descriptive
2. Tuwing nakakakilala ako ng bagong tao kasama ang nanay, tatay o guro ko, magandang magsabi ng “Hello” sa mga bagong kakilala.	Directive
3. Maraming pamamaraan ang pagsasabi ng “Hello”.	Descriptive
4. Maaari kong sabihin ang “Hello”.	Directive
5. Maaari ko rin sabihin ang “Hi”.	Directive
6. Pwede ko rin naman sabihin ang “Hi, kamusta ka?”	Directive
7. Pwede rin naman na kumaway lamang ako sa taong bagong kilala.	Directive
8. Maaaring makaramdam ako ng hiya sa tuwing nagsasabi ako ng “Hello” sa mga tao.	Descriptive
9. Pero hindi ako dapat mangamba dahil sa tulong ng aking nanay, tatay o guro mababawasan ang aking hiya.	Affirmative
10. Nakadarama ng saya ang mga tao kapag nagsabi ka sa kanila ng “Hello”.	Perspective
11. Ako ay natutuo magsabi ng “Hello” sa ibang tao.	Descriptive
12. Tayo’y magsanay na magsabi ng “Hello” sa ibang tao.	Directive

Table 14

Social Story # 2-Pagbati sa bagong kakilala (Part 2)

Social Story #2	
Objective: Engaging in one-on-one social interaction with peers	
Social Story	Sentence Type
1. Ako ay nakadarama ng saya kapag binabati ako ng bagong kakilala.	Descriptive
2. Makadarama rin ng saya ang bagong kakilala kapag binati ko sila pabalik.	Perspective
3. Ang bagong kakilala ay maaaring ngumiti sa akin at magsabi ng “Hello”.	Descriptive
4. Maaari ko siyang sagutin ng “Hi, kamusta ka?”	Directive
5. Kapag binati ko pabalik ang bagong kakilala dapat ay nakangiti ako at nakatingin sa kaniyang mga mata.	Directive
6. Maaari ko ring sabihhin ang aking pangalan kapag tinanong ng bagong kakilala.	Directive
7. At maaari ko ring tanungin ang pangalan ng bagong kakilala upang ito ay malaman ko.	Directive
8. Ang pagtatanong ng pangalan ng bagong kakilala ay makakatulong upang kami ay lalong magkakilanlan at maging magkaibigan.	Affirmative

Table 15

Social Story # 3-Maari akong maging tunay na kaibigan (Part 1)

Title: Maaari ako maging tunay na kaibigan	
Social Story #3	
Objectives: Takes turns during games and activities Sympathy for others when they are hurt or upset Compromising during disagreements with others	
Social Story	Sentence Type
1. Gusto kong nakikipagusap at nakikipaglaro sa aking mga kaibigan sa paaralan.	Descriptive
2. Minsan dahil sa kagustuhan kong laruin ang laruang nilalaro ng aking mga kaibigan, pakiramdam ko gusto kong kunin ito bigla o di kaya ay magsalita ng di maganda sa kanila o kaya naman ay manakit upang makuha ang laruan nila.	Descriptive
3. Nalulungkot ang aking mga kaibigan tuwing ako ay nakakapanakit o di kaya ay masama ang mga sinabi sa kanila o kaya naman ay nanguha ng laruan.	Perspective
4. Tama ba na iyon ang aking gawin?	Perspective
5. Kung gusto kong sumali sa laro ng iba, dapat ay maayos at mabait akong magpaalam na sasali sa laro nila.	Directive

6.	Minsan sa paaralan, kailangan naming maghintay ng mga kaibigan ko upang malaro ang mga laruan na gusto namin.	Descriptive
7.	Kapag nilalaro ng aking kaibigan ang isang laruan kailangan kong hintayin ang aking oras upang malaro ang laruan.	Directive
8.	Kung nais kong laruin ang laruan ng aking kaibigan maaari ko siyang tanungin kung pwede ko ba itong mahiram.	Directive
9.	Matapos kong tanungin ang aking kaibigan kung pwede ko bang hiram ang kanyang laruan, minsan maaaring paghintayin niya ako sandali bago palaruin ng kanyang laruan pero hindi ako dapat mag-alala dahil malalaro ko din ang laruan kapag binigay na niya.	Descriptive
10.	Malulungkot ang mga kaibigan ko kapag ako ay nagsabi ng masasakit na salita sa kanila o kaya naman ay manakit o kunin bigla ang laruan nila.	Perspective
11.	Kailangan ko rin making sa mga kaibigan ko kapag kinakausap nila ako habang naglalaro kami.	Directive
12.	Magiging masaya ang lahat ng kaibigan ko kung ako ay isang mabait at mabuting kaibigan sa kanila tuwing naglalaro kami.	Affirmative
13.	Ako ay natututo kung paano maging isang mabuting kaibigan.	Descriptive
14.	Tayo'y magsanay na maging isang mabuting kaibigan.	Directive

Table 16

Social Story # 4-Maari akong maging tunay na kaibigan (Part 2)

Social Story #4

Objectives: Invites peers to join him/ her in activities

Joins in activities with peers

	Social Story	Sentence Type
1.	Gusto kong nakikipagusap at nakikipaglaro sa aking mga kaibigan.	Descriptive
2.	Kapag may nakita akong mga kaibigang naglalaro at nais kong sumali sa kanila maaari ko silang tanungin ng "Pwede ba akong sumali sa inyo?"	Directive
3.	Kapag pumayag sila na isali ako sa kanilang laro dapat ay magsabi ako ng, "Salamat"	Directive
4.	Kapag hindi naman sila pumayag na sumali ako sa kanilang laro ay maaari pa rin naman akong humanap ng ibang kalaro.	Descriptive
5.	Iba-iba ang hilig ng bawat bata kaya hindi ako dapat malungkot kapag ayaw nila makipaglaro sa akin.	Perspective
6.	Minsan may mga araw na sila naman ang gustong makipaglaro sa akin.	Descriptive

7. Kapag tinanong nila ako kung maaari ba silang sumali sa aking paglalaro ay pwede ko silang sagutin ng “Sige sali kayo sa akin”, kapag gusto ko silang sumali sa aking paglalaro.	Directive
8. Maaari ko rin namang sabihin ang “Sa susunod na lang tayo maglaro” kapag ayaw kong makipaglaro sa aking mga kaibigan sa araw na iyon.	Directive
9. Pwede rin naman kasi akong maglaro mag-isa gamit ang aking mga laruan.	Descriptive
10. Ako ay natututo kung paano maging isang mabuting kaibigan.	Descriptive
11. Tayo’y magsanay na maging isang mabuting kaibigan.	Directive

Table 17

Social Story # 5-Pakikipag-usap sa ibang tao (Part 1)

Title: Pakikipag – usap sa ibang tao

Social Story #5

Objective: Introducing self to others

Asking questions to request information about a person

Social Story	Sentence Type
1. Makakakilala ako ng mga bagong tao sa maraming pagkakataon.	Descriptive
2. Maari akong makakilala ng mga bagong kaibigan, kaklase, guro at iba pang tao.	Descriptive
3. Kapag may bagong tao akong gustong makilala, maaari akong magpakilala sa kanya at tanugin kung ano ang pangalan niya.	Directive
4. Kapag sinabi ng bagong kakilala ang kanyang pangalan, maaari kong sabihin na ikinagagalak ko siyang makilala.	Directive
5. Matutuwa ang aking kausap kapag sinabi ko iyon.	Perspective
6. At makakatulong din iyon upang magkaroon ako ng bagong kaibigan.	Affirmative
7. Pwede ko ring tanungin ang aking bagong kaibigan ng mga bagay na nais kong malaman tungkol sa kanya upang lalo kami mapalapit sa isa’t isa.	Directive
8. Kagaya ng: “Kamusta ka ngayon?”	Directive
9. “Ano ang paborito mong pagkain?”	Directive
10. “Ano-ano ang mga hilig mong pagkaabalahan?”	Directive
11. “Ano ang paborito mong tugtugin?”	Directive
12. At kapag kami ay maghihiwalay na ng aking bagong kaibigan, maari kong sabihin na ikinagagalak ko siyang makilala at sana ay magkita kaming muli.	Directive
13. Ako ay natututo kung paano makipagusap sa ibang tao.	Descriptive
14. Tayo’y magsanay na makipagusap sa ibang tao.	Directive

Table 18

Social Story # 6 -Pakikipag-usap sa ibang tao (Part 2)

Social Story #6	
Objective: Engages in one-on-one social interactions with peers	
Social Story	Sentence Type
1. Kapag ako ay nasa paaralan, gusto kong nakikipagusap sa aking mga guro at kaklase.	Descriptive
2. Minsan kapag may kinakausap na ibang kaklase ang aking guro ay nais kong biglang magsalita rin habang sila ay nag-uusap.	Descriptive
3. Hindi maganda na ako ay biglang magsasalita habang may dalawang taong nag-uusap.	Affirmative
4. Kailangan kong tumahimik habang sila ay nag-uusap at hintayin na sila ay matapos mag-usap bago ako magsalita.	Directive
5. Kapag naman may gusto akong sabihin habang nagtuturo ang aking guro ay maaari kong itaas ang aking kamay upang malaman niya na mayroon akong gusting sabihin.	Directive
6. Kapag mayroon naman akong kausap dapat ay nakikinig ako sa sinasabi nila.	Directive
7. Hihintayin kong matapos sila magsalita bago ko sabihin ang mga nais kong iparating sa kanila.	Directive
8. Hindi kami magkakaintindihan kapag sabay kaming nagsasalita ng aking kausap.	Perspective
9. Dapat kong tandaan na kapag malapit lamang sa akin ang aking kausap ay mahinang boses lang ang dapat kong gamitin, iyong tamang tama lang para ako ay kanyang marinig.	Directive
10. Kapag ako naman ay nagsasalita sa harap ng maraming tao dapat ay malakas ang aking boses upang marinig nila akong lahat.	Directive
11. Magiging masaya ang aking mga guro at kaibigan kapag alam ko ang tamang pakikipag-usap sa kanila.	Perspective
12. Ako ay natututo kung paano maging isang mabuting tagapakinig at tagapagsalita sa harap ng ibang tao.	Descriptive
13. Tayo ay magsanay na maging isang mabuting tagapakinig at tagapagsalita sa harap ng ibang tao.	Directive

A copy of the *apk* file of the interactive social story application was available in the Dean's office or one can download the application from one's tablet or mobile phone (Android OS) at kathangsalaysay.com.

5. How do the teacher-respondents and IT experts evaluate the proposed interactive social story app?

After developing the first draft of the proposed interactive social story app, it was validated by four (4) experts. In this study, the teacher-respondents from the Sinag SPED Center with five-year teaching the curriculum experience evaluated the interactive social story application with respect to objectives, content, time allotment, assessment and effectiveness. Each teacher-respondent was provided with a copy of the interactive social story application into his/her mobile phone and an instrument for evaluation.

The instrument for evaluation of the proposed interactive social story application was the adapted and modified version of the Intervention Rating Profile-15 (IRP-15) by Elliott and Treuting and the evaluation questionnaire from the thesis of Parrocha (2018), which was used as a local literature of this study. It assessed if the application took consideration of the objectives, content, time allotment, assessment and effectiveness for instructional material standards. Teacher-Respondents evaluations of the interactive social story application are presented in Tables 3.6-3.12.

Table 19

Teacher-Respondents' Evaluation of the Interactive Social Story Application as to Objectives

Item No.	Descriptor	Teacher 1	Teacher 2	Teacher 3	WM	VI
1	Objectives are written in terms of student behavior	4.00	4.00	4.00	4.00	FE
2	Objectives are clear and specific.	4.00	4.00	4.00	4.00	FE
3	Objectives are measurable/ observable.	3.00	4.00	4.00	3.67	FE
4	Objectives are attainable.	4.00	3.00	4.00	3.67	FE
5	Objectives are in line with the curriculum.	4.00	4.00	4.00	4.00	FE
General Mean:					3.87	FE

Legend: WM- Weighted Mean, VI- Verbal Interpretation

3.26 – 4.00	Fully Evident	FE
2.51 – 3.25	Highly Evident	HE
1.76 – 2.50	Slightly Evident	SE
1.00 – 1.75	Not Evident	NE

Table 19 shows the evaluation of the teacher-respondents from the sampled school divisions of the interactive social story application in terms of objectives. Based on their responses, objectives were written in terms of student behavior (item no. 1), clear and specific (item no. 2) and were in line with the curriculum (item 5) and got an average weighted mean of 4.00 with the interpretation as *fully evident*. This means that the objective being evaluated was 95-100 percent evident. Other objectives which were also interpreted as *highly evident* were measurable/ observable (item no. 3) and attainable (item no.4) both with an average weighted mean of 3.67. The overall evaluation of the objectives had an average weighted mean of 3.87 or *fully evident*.

The results and findings on objectives were reviewed by the researcher particularly that of the notable comments made by the teacher-respondents. Objectives stated in the

interactive social story application together with its instructional materials were fused in the competencies stipulated in the Philippine Transition Program Model mandated by the Department of Education specifically, the teacher-respondents found the objectives to be attainable, measurable and observable and written in terms of student behavior.

Table 20

Teacher-Respondents' Evaluation of the Interactive Social Story Application as to Contents

Item No.	Descriptor	Teacher 1	Teacher 2	Teacher 3	WM	VI
1	Contents are within the comprehension level of the students	4.00	4.00	4.00	4.00	FE
2	Contents cover all the desired competencies in the subject	4.00	4.00	4.00	4.00	FE
3	Content is capable of developing advance writing skills	4.00	4.00	4.00	4.00	FE
4	Content used variety of strategies and techniques.	4.00	4.00	4.00	4.00	FE
General Mean:					4.00	FE

Legend: WM- Weighted Mean, VI- Verbal Interpretation

3.26 – 4.00	Fully Evident	FE
2.51 – 3.25	Highly Evident	HE
1.76 – 2.50	Slightly Evident	SE
1.00 – 1.75	Not Evident	NE

Table 20 shows the evaluation of the interactive social story application for children with ASD in terms of content. Item (1) content within the comprehension level of the students, item (2) contents cover all the desired competencies in the subject, Item (3) content is capable of developing advance social skills and Item (4) content used variety of strategies and techniques all had an average weighted mean of 4.00 or *fully evident*. The overall evaluation

as to content was 4.00 or *fully evident*. This means that all items in terms of content were evaluated as 95-100 percent evident.

Results and findings in content moved the researcher to revisit the Philippine Transition Program Model mandated by the Department of Education and checked if the content of the material clearly depicts the developmental tasks and milestones of 5 to 10 year-olds in terms of social skills. As per the results, the teacher-respondents said that the contents of the material were improved with desired competencies in socialization and communication depicting the developmental milestones and comprehension level of the students.

Table 21

Teacher-Respondents' Evaluation of the Interactive Social Story Application as to Time Allotment

Item No.	Descriptor	Teacher 1	Teacher 2	Teacher 3	WM	VI
1	Social stories included can be covered within the academic year	3.00	4.00	3.00	3.33	FE
2	Exercises can be completed within the class schedule	4.00	3.00	4.00	3.67	FE
3	Time allotment is adequate	4.00	4.00	4.00	4.00	FE
General Mean:					3.67	FE

Legend: WM- Weighted Mean, VI- Verbal Interpretation

3.26 – 4.00	Fully Evident	FE
2.51 – 3.25	Highly Evident	HE
1.76 – 2.50	Slightly Evident	SE
1.00 – 1.75	Not Evident	NE

Table 21 indicates the average weighted mean of each item as to time allotment. Item (1) social stories included can be covered within the academic year had an average weighted mean of 3.33. Item (2) exercises can be completed within the class schedule had an average weighted mean of 3.67. Item (3) Time allotment is adequate had an average weighted mean of 4.00. Overall weighted mean of the evaluation of the interactive social story application in terms of time allotment was 3.67 which qualitatively described the characteristics as *fully evident* in the interactive social story application.

The results and findings on time allotment were reviewed by the researcher particularly that of the notable comments made by the teacher-respondents on time allotment such as it was adequate and time allotment is the same with other subjects. The time allotted for each lesson was checked and verified using the class schedule of SINAG- SPED Center. Refinement was made on the time allotted by the researcher in each lesson matching it with the time allotted for other subjects/activities.

Table 22

Teacher-Respondents' Evaluation of the Interactive Social Story Application as to Assessment

Item No.	Descriptor	Teacher 1	Teacher 2	Teacher 3	WM	VI
1	Assessment is congruent with the objectives.	3.00	4.00	4.00	3.67	FE
2	Assessment is suitable to the level of the students.	4.00	4.00	4.00	4.00	FE
3	Assessment involves real events that students can relate.	4.00	4.00	4.00	4.00	FE
4	Assessment is varied.	4.00	4.00	4.00	4.00	FE
5	Assessment employs innovative approaches.	4.00	4.00	4.00	4.00	FE
General Mean:					3.93	FE

Legend: WM- Weighted Mean, VI- Verbal Interpretation

3.26 – 4.00	Fully Evident	FE
2.51 – 3.25	Highly Evident	HE
1.76 – 2.50	Slightly Evident	SE
1.00 – 1.75	Not Evident	NE

Table 22 shows Teacher-Respondents' Evaluation of the Interactive Social Story Application as to Assessment. Teacher-respondents evaluated the characteristics; it involved real events that students can relate with, employed innovative approaches, varied, suitable to the level of the students. Results revealed that it was congruent with the objectives with an average mean of *highly evident* ranging from 3.67 to 4.00. With overall weighted mean of 3.93, the teacher-respondents agreed that the interactive social story application possesses the characteristics in terms of assessment and are fully evident.

Results of the findings in the assessment moved the researcher to further research on innovative approaches through literary sources and the internet. Some innovative approaches included in the application were *Conversation Starter Card*, *Keep it on Topic* and *Act it Out*.

The goals of *Conversation Starter Card*, *Keep it on Topic* and *Act it Out* were somehow related to one another. The *Conversation Starter Card* is used to provide the children with opening lines to start a conversation. Meanwhile, the *Keep it on Topic* activity encourages the respondents to engage turn-taking in a conversation that must only be about the given topic. Lastly, *Act it Out* motivates the children to act out the new acquired social skill to other people. All activities focus in using scenarios related to social interaction and communication.

Table 23

Teacher-Respondents' Evaluation of the Interactive Social Story Application as to Effectiveness

Item No.	Descriptor	Teacher 1	Teacher 2	Teacher 3	WM	VI
1	This would be an acceptable e-learning tool for the child's needs	4.00	3.00	4.00	3.67	FE
2	Most teachers would find this e-learning tool appropriate for children with similar needs	4.00	4.00	4.00	4.00	FE
3	This e-learning tool should prove effective in supporting the child's needs	3.00	4.00	3.00	3.33	FE
4	I would be willing to use this e-learning tool in the classroom setting	4.00	4.00	4.00	4.00	FE
5	I would suggest the use of this e-learning tool to other teachers	4.00	4.00	4.00	4.00	FE
6	This e-learning tool would not result in negative side effects for the child	4.00	4.00	4.00	4.00	FE
7	I like the procedures used in this e-learning tool	4.00	3.00	4.00	3.67	FE
8	Overall, this e-learning tool would be beneficial for the child	4.00	3.00	4.00	3.33	FE
General Mean:					3.75	FE

Legend: WM- Weighted Mean, VI- Verbal Interpretation

3.26 – 4.00	Fully Evident	FE
2.51 – 3.25	Highly Evident	HE
1.76 – 2.50	Slightly Evident	SE
1.00 – 1.75	Not Evident	NE

Table 23 shows the evaluation of the interactive social story application in terms of effectiveness. Based on their responses, the application is appropriate for children with similar needs (item 2), will be a useful tool in the classroom setting (item 4), will be suggested to be used to other teachers (item 5) and would not result in negative side effects for the child (item 6) got an average weighted mean of 4.00 with the interpretation as *fully evident*. This means that the effectiveness being evaluated was 95-100 percent evident. Other indicators of

effectiveness which were also interpreted as *fully evident* were acceptable e-learning tool for a child's needs (item no.1) and appropriate procedures used in this e-learning tool having both a mean of 3.67. While the characteristics such as the e-learning tool should prove effective in supporting the child's needs (item 3) and that it would be beneficial for the child (item 8) both with an average weighted mean of 3.33. The overall evaluation of the effectiveness had an average weighted mean of 3.75 or *fully evident*.

The results and findings on effectiveness were reviewed by the researcher particularly that of the notable comments made by the teacher-respondents. Over-all it was believed by the teacher-respondents that the interactive social story application would be useful and beneficial to children with ASD.

Table 24

IT Experts' Evaluation of the Interactive Social Story Application as to Technical Appearance

Item No.	Descriptor	IT Expert 1	IT Expert 2	WM	VI
1	The graphics are clear, organized, and appealing	4.00	4.00	4.00	FE
2	The images and texts used are accurate	4.00	3.00	3.50	FE
3	The color, size and font style choice are relatively appropriate	4.00	4.00	4.00	FE
4	Touch screen gestures work properly	3.00	4.00	3.50	FE
5	Sound used is pleasant to hear	4.00	4.00	4.00	FE
General Mean:				3.80	FE

Legend: WM- Weighted Mean, VI- Verbal Interpretation

3.26 – 4	Fully Evident	FE
2.51 – 3.25	Highly Evident	HE
1.76 – 2.5	Slightly Evident	SE
1 – 1.75	Not Evident	NE

In the results shown on Table 24, the IT experts gave an over-all rating of 3.80 to the technical appearance of the interactive social story application. The indicators such as the graphics are clear, organized and appealing (item 1), the color, size and font style choice are relatively appropriate (item 3) and sound used is pleasant to hear (item 5) were given a rating of 4.00 interpreted as *fully evident*. Other indicators also interpreted as *fully evident* were images and texts used are accurate (item 2) and touch screen gestures work properly (item 4) got a rating of 3.50 interpreted as *fully evident*. Over-all the result implied that the mobile application software is appropriate for children with ASD as said by the IT experts.

Table 25

IT Experts' Evaluation of the Interactive Social Story Application as to Flexibility

Item No.	Descriptor	IT Expert 1	IT Expert 2	WM	VI
1	The app is child-friendly, simple and clear	4.00	4.00	4.00	FE
2	The app lay out is consistent	4.00	4.00	4.00	FE
3	The app encourages independent learning	4.00	4.00	4.00	FE
General Mean:				4.00	FE

Legend: WM- Weighted Mean, VI- Verbal Interpretation

3.26 – 4.00	Fully Evident	FE
2.51 – 3.25	Highly Evident	HE
1.76 – 2.50	Slightly Evident	SE
1.00 – 1.75	Not Evident	NE

Table 25 shows the evaluation of the interactive social story application for children with ASD in terms of flexibility. Item (1) the app is child-friendly, simple and clear, item (2) the app lay out is consistent and Item (3) the app encourages independent learning all had an average weighted mean of 4.00 or *fully evident*. The overall evaluation as to flexibility was

4.00 or *fully evident*. This means that all items in terms of flexibility were evaluated as 95-100 percent *evident* making the mobile application software appropriate for children with ASD. Thus, the IT experts said the application in terms of flexibility was recommended as all the given descriptors were fully evident.

Evaluation of the Interactive Social Story Application as to Effectiveness to the Children with ASD

The validated and improved interactive social story application was tried out to three (3) children with ASD who were composed of two (2) boys and one (1) girl only because it was done on a one-on-one instruction. During the try-out, the presence of the special education teachers, parents and researcher were encouraged at the locale of the study. A prepared environment was set up to make the place conducive for learning for the participants. The participants showed interest in working on the activities and they displayed a long attention span and patience because they were interested to manipulate the device.

Table 26

Summary of the Activities Completed by the Children with ASD During the Try-out of the Application

Participant	Social Story 1	Reading Comprehension 1	Social Task 1	Game 1	Social Story 2	Reading Comprehension 2	Social Task 2	Game 2	Social Story 3	Reading Comprehension 3	Social Task 3	Game 3
Student 1	/	/	/	/	/	/	/	/	/	/	/	/
Student 2	/	/	/	/	/	/	/	/	/	/	/	/
Student 3	/	/	/	/	/	/	/	/	/	/	/	/

Table 26 shows that all of the participants completed all the activities of the application from reading the Social Stories 1-3, answering the comprehension tests 1-3, completing the social tasks 1-3 and playing the interactive games 1-3. These implied that the participants completed the program of “Kathang Salaysay” and it also confirmed that the goal of the interactive social story application – to create a motivating context equipped with social narrative, digital interactive storytelling and fun-learning concept that will contribute to the learning among children with ASD when they use the application, was met. The application was appropriate and can be beneficial in improving the social skills of children with ASD.

Table 27

Weighted Mean on Behavior of Children with ASD on Handling the Device

Behavior on Handling the Device									
Item	1	2	3	4	5	6	7	Weighted Mean	Verbal Interpretation
Participant	The child was motivated to use the interactive social story application.	The child was appeared to initiate to start using the interactive social story application.	The child manipulated the application and read the social stories.	The child acted with joy when hearing sounds from the interactive social story application.	The child answered the comprehension tests after reading the social story.	The child act out all the social tasks given.	The child was motivated to do all the tasks given so that he/she can play the game at the end of every story.		
1	4.00	4.00	3.00	4.00	4.00	4.00	4.00	3.86	FE
2	4.00	4.00	3.00	4.00	4.00	4.00	4.00	3.86	FE
3	4.00	3.00	3.00	4.00	4.00	4.00	3.00	3.57	FE

Legend: WM- Weighted Mean, VI- Verbal Interpretation

3.26 – 4.00	Fully Evident	FE
2.51 – 3.25	Highly Evident	HE
1.76 – 2.50	Slightly Evident	SE
1.00 – 1.75	Not Evident	NE

Table 27 revealed that both participants 1 and 2 got a rating of 4.00 for all items except for item 3 where they got a rating of 3.00. Their performances were strongly observed with an overall rating of 3.86. Whereas an overall rating of 3.57 interpreted as *strongly observed* was given to participant 3 in performing the activities for all the social stories of the application. He got a rating of 4.00 for items 1, 4, 5 and 6 while 3.00 for items 2, 3 and 7. These implied that all participants were motivated and initiated to start using the application and acted with joy when hearing sounds from it. It also showed that they enjoyed using the application and that they manipulated the application and read the social stories very well for they completed the tasks given to them such as the comprehension tests, social tasks and interactive games.

Table 28

Weighted Mean on Gestures Performance of Children with ASD on Handling the Device

Gestures Performance on Handling the Device					
Item	1	2	3		
Participant	Press the power on/off button of the device	Glance/browse the screen of the device	Single tap the screen of the device to manipulate the social stories, activities and games	Weighted Mean	Verbal Interpretation
1	4.00	4.00	4.00	4.00	FE
2	4.00	4.00	3.00	3.67	FE
3	4.00	3.00	3.00	3.33	FE

Legend: WM- Weighted Mean, VI- Verbal Interpretation

3.26 – 4.00	Fully Evident	FE
2.51 – 3.25	Highly Evident	HE
1.76 – 2.50	Slightly Evident	SE
1.00 – 1.75	Not Evident	NE

Table 28 shows that Participant 1 got a rating of 4.00 in each item in pressing the power on/off button of the device, glance the screen of the device and single tap the screen of the device to manipulate the social stories, activities and games. An overall rating of 4.00 was bestowed to Participant 1, interpreted as *strongly observed*. It implied that he acquired the skills of gesturing the screen of the device.

The performance of Participant 2 in items 1 and 2 got a rating of 4.00 each to press the power on/off button of the device and glance/browse the screen of the device, which is interpreted as strongly observed. Item 3, single tap the screen of the device to manipulate the social stories, activities and games, Participant 2 was rated 3.00, interpreted as *very much observed*. The overall rating of Participant 2 is 3.67 with a verbal interpretation of *strongly observed*. It implied that Participant 2 has shown a strong performance in the gesture skills in manipulating the device.

Participant 3 got an overall rating of 3.33, interpreted as *strongly observed*. He got a rating of 4.00 for item 1, press the power on/off button of the device. While for both item 2 and 3 which are glance/browse the screen of the device and single tap the screen of the device to manipulate the social stories, activities and games, respectively, he got a rating of 3.00 with

a verbal interpretation of *very much observed*. Overall, Participant 3 showed that he strongly performed in all the skills for manipulating the device.

In terms of social skills, the participants during the try-out exhibited development in responding to the greetings of others, inhibits from exhibiting fear and anxiety as they interact, engage in one on one social interaction with their peers, take turns during the try-out activities, show sympathy with their peers who were hurt, invite others to join the activities, able to introduce and ask information to others.

Following the basic principles of the theory of the mind, the social stories are particularly became a powerful tool to help children with ASD understand difficult social concepts in simple words, description of views, perspectives, and feeling of other persons. While the theory of weak central coherence help children with ASD to generalized meaning from the context while having preference for detail-focused processing. Likewise, the theory of social motivation helps the children with ASD develop social orienting, seeking and liking social interactions and social maintaining behaviors through the interactive games that serves as social reward.

To recap, the results of the try-out of the interactive social story application were appropriate and they were suited well to develop the social skills of children with ASD. It had enhanced their perspective towards communication and social interaction. Hence, the goal of the study had been attained. It can also be recognized that the goal of this study had been

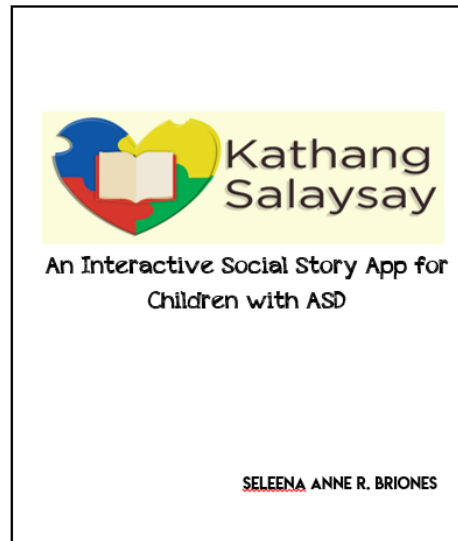
productively implemented through the use of the application in motivating the participants to read the social stories and complete the given tasks.

Motivating context equipped with social narrative, digital interactive storytelling and fun-learning concept made the participants enjoy using the device as it is a tool that can be used for enhancing communication skills as well as socialization skills. The participants' strongly observed behavior in working on the activities of the interactive social story application was a proof that a teaching material like "Kathang Salaysay" will contribute in the development of communication and social skills of children with ASD.

The results of the evaluation and validation procedures were done and analyzed. The proposed social stories app for ASD was revised based on the feedbacks given by the experts.

The final form of the developed Social Stories App for ASD contains the following section: 1) The cover page shows the title of the Social Stories Apps for Children with Autism, 2) Foreword presents the researcher's idea and endeavor in developing the apps 3) Introduction shows the development of the social stories for ASD and the principle of using it in teaching children with autism to improve their social skills, 4) Rationale discusses the purpose of the social stories app specifically to the user, 5) goals intended to enrich the social skills of ASD, 6) Preparing Thematic Instructional Plan contains the steps in preparing the

apps , 7) user's guide includes the procedures in using the apps, and 8) the lesson plans for the users in implementing the apps in teaching children with autism. (see Appendix R)



Chapter 4

Summary, Conclusion and Recommendations

Summary of the Results:

1. The reading readiness skills of children with autism in terms of identifying the key story vocabulary and classifying the story elements appeared highly evident across all the respondents.
2. The difficulties in social skills of children with autism showed that there were problems in taking turns during games and activities, asking questions to request information about a person, initiating greetings with others, inviting peers to join him/her in activities, joining in activities with peers, introducing self to others and engaging in one-on-one social interactions with peers.
3. According to both teacher and parent respondents of this study the activities that can help in developing the social skills of children with autism in terms of social communication, social reciprocity and social interaction are the *Conversation Starter Card, Keep it on Topic and Act it Out*.
4. The social stories described by SPED experts and teachers as *very effective* shows to have a greater proportion of directive sentences and to a lesser extent a greater number of descriptive sentences. Interestingly, there was also evidence that as the proportion of perspective sentences increased, reported efficacy decreased.
5. The result of the try-out of the interactive social story application to the participants showed that it was appropriate and it suited well to develop the social skills of children

with autism. It has enhanced their perspective towards communication and social interaction.

Limitation of the Study

The study was limited on the development and validation of an interactive social story app for children with ASD during the academic year 2018-2019.

The respondents of the study were limited to the SPED teachers and students from Sinag SPED Center at Kalalake Elementary School in Olongapo City. From ten (10) sample students, only three (3) students with high functioning autism were the subjects of the study.

Conclusion

In the light of foregoing findings, the following conclusions were drawn:

1. The reading readiness skills of children with ASD in terms of comprehension, understanding and vocabulary are generally esoteric. Little is known about identifying the key story vocabulary and classifying the story elements among all the respondents. In terms of making predictions and text to self/text to text, the children with ASD have little opportunity to develop the aforementioned reading readiness as they were highly evident in making reasonable predictions as well as in connecting the story and characters to own life.

2. The difficulties in social skills in terms of Social/Emotional Reciprocity (SER) of children with ASD showed that there were difficulties in considering the viewpoints of others in social situations. In terms of Social Participation/Avoidance (SPA), children with ASD have little opportunity to develop their interpersonal skills in asking questions about a broad range of topics and in interacting with group of/ with peers during unstructured activities. While in terms of Detrimental Social Behaviors (DSB) children with ASD showed difficulties in socially accepted behavior. This is evident by ending conversations abruptly and making inappropriate comments during social interactions.
3. Activities that can help in improving the social skills of children with ASD are conversation starter card, keep it on topic and act it out. All activities focus in using real life scenarios related to social interaction and emotions and were all integrated in the development of the social tasks and games used in the interactive social story application, helping children with autism to be motivated to interact and socialize to other people.
4. The core feature of the developed e-learning tool is the use of social story in teaching social skills to children with autism since the need for explicit instruction for them has been extensively described in many literatures. Situational analysis is imperative in proposing social stories app.
5. The general term in which the teacher-respondents attempted to state about the evaluation of the proposed social stories app for children with ASD indicated that the

social stories app has fully evident characteristics with respect to objectives, content, time allotment, assessment and effectiveness to students and teachers. The social stories app is commendable and recommended for utilization by the IT experts with respects to material's technical appearance and flexibility.

Recommendations

Based on the conclusion of this study, the following are hereby recommended:

1. Teachers are encouraged to use the proposed interactive social story application of the researcher, to develop social skills of children with autism the extent to which it is of value in the SPED schools and the best means by which to teach social interaction and communication.
2. Students are reminded to be exposed to activities and instructional materials that may help them develop their social skills better.
3. IT Experts are initiated to take into consideration situational analysis when proposing any social story or instructional material for students' advantages.
4. Schools Administrators can consider procuring affordable, quality research-based instructional material commended by the experts in the area of special education.
5. The Future Researchers can conduct a much deeper study which could support these findings of the study, to propose related or similar instructional materials to ease the inadequacy of quality research-based instructional materials.

6. The Department of Education should provide more seminars and training that actively involve SPED teachers in writing social stories with the use of technology and where the focus is on student's learning. This study can help provide additional information to the Department of Education and future researchers.

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Appendix A

LETTER TO EXPERT FOR QUESTIONNAIRE VALIDATION

DR. MICHELLE L. SEVILLA
SPED Teacher
Lagro Elementary School
Quezon City

Dear Dr. Sevilla,

Greetings!

The undersigned is a Master of Arts in Special Education with Specialization in Teaching Children with Intellectual Disability student of Philippine Normal University – Manila undertaking a research entitled **KATHANG SALAYSAY (KatSay): AN INTERACTIVE SOCIAL STORY APPLICATION IN DEVELOPING SOCIAL SKILLS FOR CHILDREN WITH ASD.**

With your expertise, I am humbly asking your permission to validate if the attached ASD Social Skills Profile (ASSP) is in line with the Philippine Transition Program Model mandated by the Department of Education, for the study using the attached rating tool.

I am looking forward that my request would merit your positive response.

Thank you and more power.

Respectfully Yours,

SELEENA ANNE R. BRIONES
Researcher

Appendix B**VALIDATOR'S QUESTIONNAIRE ASSESSMENT****KATHANG SALAYSAY (KatSay): AN INTERACTIVE SOCIAL STORY APPLICATION IN DEVELOPING SOCIAL SKILLS FOR CHILDREN WITH ASD**

Direction: this tool asks for your evaluation of the questionnaire to be used in the data gathering for the investigation stated above, to establish its validity. You are requested to give your honest assessment using the criteria stated below; please check (✓) only one from the selection.

Scale	Interpretation	Description
5	Very high valid	The questionnaire is valid and can provide unbiased data for the investigation, allowing 0-5% error
4	High valid	The questionnaire is valid and can provide unbiased data for the investigation, allowing 8-10% error
3	Valid	The questionnaire is valid and can provide unbiased data for the investigation, allowing 11-15% error
2	Less valid	The questionnaire is valid and can provide unbiased data for the investigation, allowing 16-20% error
1	Not valid at all	The questionnaire is valid and can provide unbiased data for the investigation, allowing 21-25% error

Indicators	Rating				
	5	4	3	2	1
The indicators in the questionnaire are anchored on the Curricular Framework for The Philippine Transition Program Model					
The indicators in the questionnaire are aligned with the target competency.					
The indicators in the questionnaire are developmentally sequenced to suit the needs of students with ASD.					
The difficulty level of the indicators in the questionnaire are aligned with the intended use.					
The indicators in the questionnaire are able to produce the social skills processes intended,					
The questionnaire has the ability to gather factual data, eliminating biases and subjectivity.					
The questionnaire is framed in a clear, simple, in order to avoid risk of error.					
The questionnaire is capable of generating data that will be of value and practical use to the sectors concerned in the investigation.					

Comments and Suggestions:

THE PHILIPPINE TRANSITION PROGRAM MODEL LIST OF COMPETENCIES

1. Achieving Self-Awareness
1.1 Identify physical and psychological needs
1.2 Identify interests and abilities
1.3 Identify emotions
1.4 Demonstrate knowledge of physical self
2. Acquiring Self-Confidence
2.1 Express feeling of self-worth
2.2 Describe others perception of self
2.3 Accept/give praises
2.4 Accept/give criticisms
2.5 Develop confidence in oneself
3. Achieving Socially Acceptable Behavior
3.1 Demonstrate respect for the rights and properties of others
3.2 Recognize authority and follow instructions
3.3 Demonstrate appropriate behavior in public places
3.4 Identify important character traits
3.5 Recognize personal roles
4. Maintaining Good Interpersonal Skills
4.1 Demonstrate listening and responding skills
4.2 Establish close relationship
4.3 Maintain friendship
5. Achieving Independence
5.1 Strive toward self-actualization
5.2 Demonstrate self-actualization
5.3 Demonstrate awareness on how one's behavior affects others
5.4 Set personal goals
6. Making Fair, Just and Honest Decisions
6.1 Identify problems/conflicts
6.2 Use appropriate resources to assist in problem solving
6.3 Select best solutions to problems/conflicts
7. Communicating With Others
7.1 Identify subtleness of communication
7.2 Communicate with understanding
7.3 Respond to emergency situations

Appendix C

SURVEY QUESTIONNAIRE (PART I)

This questionnaire pertains to the study on “An Interactive Social Story in Developing Social Skills of Children with ASD”.

All items are provided with options for you to check your answer. Please answer all items as honestly as possible.

Part I: Personal Information

Direction: Kindly fill out the needed information.

A. Personal Profile of the Student

1. Name: _____

Student Code Number:

1.1 Disability : _____

1.2 Date of Birth : _____
month day year

1.3 Age : _____

1.4 Sex: ☐ Male

☐ Female

1.5 Grade Level: _____

1.6 Relationship to child: ☐ Father
☐ Mother
☐ Guardian
☐ Teacher
☐ Others: _____

1.7 Can the child read on his/her own: ☐ Yes
☐ No

1.8 What is being assessed: ☐ Listening Comprehension
☐ Reading Comprehension

Part II: Reading Readiness Skills of the Student

Reading Comprehension Worksheet:

Story # 1

Skill to be learned: Saying Thank You

Ang Aking Guro

Sa paaralan ako'y may pangalawang ina. Siya'y ang guro kong si Bb. Belinda. Kaming mga bata ay tinuturuan niya sumulat, bumilang, at bumasa. Maging mabait at mabuti sa kapwa. Kaya bilang pasasalamat sa kanya, binigyan ko siya ng bulaklak na maganda.

Sagutin ang sumusunod na tanong.

1. Sino ang guro ng bata sa kwento? Sino naman ang guro mo?
2. Ano-ano ang itinuturo ng guro sa mga bata?
3. Paano ipinakita ng bata ang pasasalamat sa guro? Paano mo naman maipapakita ang pasasalamat mo sa iyong guro?

Story # 2

Skill to be learned: Sharing with Others

Ang Paborito kong Pagkain

Ako si Edna, isang batang anim na taong gulang. Ang paborito kong pagkain ay ensaymada. Niluluto ito ng aking Nanay Eva. Ito rin ang baon ko sa paaralan. Minsan ay binigyan ko ng baon kong ensaymada ang kaklase kong si Edwin dahil wala siyang baon.

Natuwa si Edwin at nagpasalamat sa akin. Masarap sa pakiramdam ang makatulong sa ibang taong nangangailangan.

Sagutin ang sumusunod na tanong.

1. Ano ang paboritong pagkain ng bata sa kuwento? Ano naman ang paborito mong pagkain?
2. Masustansiya ba ang paborito mong pagkain?
3. Bakit dapat kumain ng masustansyang pagkain ang bata?
4. Nagbibigay ka rin ba sa iba? Bakit mabuti ang magbigay sa nangangailangan?

Direction: listed below are reading readiness skills. Please rate the reading development of the child in each skill or behavior independently, without assistance from others (i.e., without reminders, cueing and/or prompting). You should base your judgment on the child's behavior over the last 3 months. Please use the following guidelines to rate the child's behavior:

Scale	Interpretation	Description
4	Fully Evident	The child mastered the skill or behavior.
3	Highly Evident	The child is often successful in exhibiting the skill or behavior.
2	Slightly Evident	The child struggles in exhibiting the skill or behavior.
1	Not Evident	The child never or almost never exhibits the skill or behavior.

Please do not skip any items. If you are unsure of an item, please provide your best estimate.

Indicators	Rating			
	4	3	2	1
<u>Vocabulary:</u> Identifies key story vocabulary.				
<u>Prediction</u> Makes reasonable predictions and backs them up.				
<u>Story Elements</u> 1. Can remember important story characters.				
2. Can describe story characters, and connect descriptions to book pages				
3. Can identify story settings, and show where they are in the book				
4. Can identify feelings of main character throughout the books and refer to the book to support answer				
<u>Text to Self / Text to Text</u> Can connect own life to that of characters				

Part III. Difficulties in Social Skills

Direction: the following phrases describe skills or behaviors that the child might exhibit during social interactions or in social situations. Please rate how often the child exhibits each skill or behavior independently, without assistance from others (i.e., without reminders, cueing and/or prompting). You should base your judgment on the child's behavior over the last 3 months. Please use the following guidelines to rate the child's behavior:

Scale	Interpretation	Description
4	Very Often	The child very often or always exhibits the skill or behavior.
3	Often	The child often or typically exhibits the skill or behavior.
2	Sometimes	The child sometimes or occasionally exhibits the skill or behavior.
1	Never	The child never or almost never exhibits the skill or behavior.

Please do not skip any items. If you are unsure of an item, please provide your best estimate. You may use the “Brief Description” section to provide additional information on the particular skill or behavior. For instance, if the child will exhibit a particular skill or behavior more frequently when cueing or prompting is provided, or when interacting with adults rather than peers, please make note of this in the “Brief Description” section.

Social/Emotional Reciprocity (SER)

This subscale involves skills that are necessary to maintain a successful reciprocal social interaction. The items cover both explicit reciprocal behaviors and behaviors that indicate a child’s ability to consider the thoughts, feelings, and interests of others or to take another person’s perspective.

Indicators	Rating			
	4	3	2	1
<u>Acquiring Self Confidence:</u>				
1. Describe others perception of self a. Considers the viewpoints of others in social situations				
b. Expresses sympathy for others when they are hurt or upset				

2. Accept/give praises/greetings				
a. Says “sorry” or apologizes for mistakes				
b. Responds to the greetings of others				
c. Says “excuse me” or politely asks others to move out of his/her way				
3. Accept/give criticisms				
a. Provides compliments to others				
b. Acknowledges the compliments directed at him/her by others				
4. Develop confidence in oneself				
a. Verbally expresses how he/she is feeling				
b. Introduces self to others				
c. Offers assistance to others				
<u>Achieving Self Awareness:</u>				
1. Identifying emotions				
a. Recognizes the facial expressions of others				
b. Recognizes the non-verbal cues, or “body language” of others				
<u>Communicating with Others:</u>				
1. Identify subtleness of communication				
a. Asks questions to request information about a person				
b. Talks about or acknowledges the interests of others				
c. Responds to questions directed at him/her by others				
2. Communicate with others				
a. Takes turns during games and activities				
b. Maintains the “give and take” of conversations				
c. Adjusts voice volume based on the needs of the listener				
d. Joins a group conversation by politely interrupting or waiting for a pause/break in conversation				

e. Compromises during disagreements with others				
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Social Participation/Avoidance (SPA)

This subscale contains items related to social engagement and withdrawal from social participation. Items represent less active maintenance of reciprocal social interactions.

Indicators	Rating			
	4	3	2	1
<u>Maintaining good interpersonal skills:</u>				
1. Demonstrate listening and responding skills				
a. Engages in one-on-one social interactions with peers				
b. Asks questions about a broad range of topics				
c. Uses gestures or eye contact to direct the attention of others to objects, persons or situations				
d. Makes eye contact when initiating interactions with others				
e. Maintains appropriate levels of eye contact during conversations				
2. Establish close relationship				
a. Invites peers to join him/her in activities				
b. Allows peers to join him/her in activities				
3. Maintain friendship				
a. Joins in activities with peers				
b. Interacts with peers during unstructured activities				
c. Interacts with groups of peers				
d. Responds to the invitations of peers to join them in activities				

e. Engages in solitary activities in the presence of peers				
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Detrimental Social Behaviors (DSB)

This subscale includes items that represent socially inappropriate behaviors and behaviors that could contribute to negative peer experiences. Problems on this subscale may lead directly to adverse social interactions.

Indicators	Rating			
	4	3	2	1
<u>Achieving Socially Acceptable Behavior:</u>				
1. Demonstrate respect for the rights and properties of others				
a. Maintains an appropriate distance when interacting with peers				
2. Demonstrate appropriate behavior in public places				
a. Exhibits poor timing with his/her social initiations				
b. Engages in socially inappropriate behaviors				
c. Experiences negative peer interactions				
d. Experiences positive peer interactions				
e. Ends conversations abruptly				
f. Fails to read cues to terminate conversations				
g. Makes inappropriate comments				
h. Exhibits fear and anxiety regarding social interactions				
3. Recognizes personal roles				
a. Is manipulated by peers				
b. Changes the topic of conversation to fit self-interests				

Part IV: Activities in Developing Social Skills

Direction: listed below are activities in developing social skills. What activities do you think will help the student in developing his/her social skills. Please put a check on the desired activity to be integrated in the interactive social story.

Scale	Interpretation	Description
4	Fully Evident	The activity should be fully evident in the application
3	Highly Evident	The activity should be highly evident in the application
2	Slightly Evident	The activity should be slightly evident in the application
1	Not Evident	The activity should not be evident in the application

Indicators	Rating			
	4	3	2	1
1. <u>Facial Expression Decoder</u> Non-verbal communication, especially facial expressions, can be a challenge for children with ASD because they spend less time than others scanning someone else's face during interactions. Instead of focusing on the facial expression as a whole, it may be easier for kids to systematize the parts of the face that make the expression. In addition, practicing their own facial expressions can help them communicate effectively with peers. This activity works well for verbal or non-verbal kids of any age.				
2. <u>Conversation Starter Card</u> Initiating a conversation can be tricky, especially for children with ASD. These kids may have trouble communicating in social situations because they aren't equipped with conversation strategies like opening lines, miss nonverbal cues to engage, and have trouble with empathy among other reasons. Conversation starter cards make a great in-				

class or at- home activity because they provide children with opening lines to start a conversation. Kids can practice with teachers and parents to perfect their skills. This activity is best for verbal and elementary school kids.				
3. <u>Keep it on topic</u> Keeping the conversation on topic can be especially challenging for children with ASD because they have limited interests and the ability to focus only on those interests or get completely distracted by other stimuli says the American Speech-Language-Hearing Association. The goal in this game is to encourage turn-taking in a conversation that must only be about the given topic. It's best for elementary school requires kids to be verbal.				
4. <u>Act it Out</u> The goal of this activity is for the student to act out his new acquired social skill to other people. This activity focuses in using scenarios related to social interactions and emotions.				

Appendix D

LESSON PLANS

Lesson Plan 1

Social Story 1: Pagsasabi ng “Hello” sa bagong kakilala

Objectives:

- Identify words of greetings in everyday activities.
- Respond to greetings expressed by others
- Appreciate one’s effort through giving greetings

Subject Matter:

Topic: Initiating Greetings with others

Skills to be learned:

- Responding to the greetings of others
- Not exhibiting fear and anxiety regarding social interaction

Material: Kathang Salaysay (KatSay): An Interactive Social Story Application, mobile phone/tablet

Activities:

- Opening of the mobile phone/tablet
- Opening of the application (Kathang Salaysay)
- Tapping the start button
- Choosing a social story
- Reading the social story
- Answering the reading comprehension test
- Demonstrating the social tasks
- Playing the game as a reward

Enrichment Activities:

The teacher can use the following activities/strategies after the students used the app and read the social stories to strengthen the social skill learned by the students.

OBJECTIVES	ACTIVITIES/STRATEGIES
1. Identify words of greetings in everyday activities.	• Tell and discuss stories with emphasis on acts of greeting. • Read stories to identify words of greeting. • Post pictures in the bulletin board which manifest greeting expressions. • Express utterances of words of greetings as needed.
2. Respond to greetings expressed by others	• Create situation to elicit greeting expression. • Show gestures of appreciation of greetings expressed by others. • Express appreciation of greetings received through hugs, handshakes etc. • Model greeting words.
3. Appreciate one's effort through giving greetings	• Assign tasks to be performed then utter greeting words to people • Model appropriate greeting words • Act-out • Encourage conversation for self-expression.

Lesson Plan 2**Social Story 1: Pagsasabi ng "Hello" sa bagong kakilala****Objectives:**

- List down ways in which behavior affects others
- List down appropriate behaviors for a variety of situations
- List different cues showing inappropriate behaviors
- Give ways to correct inappropriate behaviors

Subject Matter:

Topic: Joining in Activities With Peers

Skill to be learned: Engaging in one-on-one social interaction with peers

Material: Kathang Salaysay (KatSay): An Interactive Social Story Application, mobile phone/tablet

Activities:

- Opening of the mobile phone/tablet
- Opening of the application (Kathang Salaysay)
- Tapping the start button
- Choosing a social story
- Reading the social story
- Answering the reading comprehension test
- Demonstrating the social tasks
- Playing the game as a reward

Enrichment Activities:

The teacher can use the following activities/strategies after the students used the app and read the social stories to strengthen the social skill learned by the students.

OBJECTIVES	ACTIVITIES/STRATEGIES
1. List down ways in which behavior affects others	• Present a social story to students and give the different behaviors shown in the story. Ask how these behaviors affect others • Ask the students some of their activities in school, home and play situations. Ask how they should act or behave when doing such activities in different settings and situations • Evaluate how the students behave/react while doing such activities and how it affected their classmates

2. List down appropriate behaviors for a variety of situations	• Observe different behaviors of people at home, in school and in the community • List down some of the appropriate behaviors observed • Role play situation/situations depicting appropriate behavior in a given situation
3. List different cues showing inappropriate behaviors	• Let students portray some nonverbal cues and let them identify the inappropriate behavior depicted • Show pictures depicting inappropriate behavior for identification • Ask how inappropriate behaviors affect others
4. Give ways to correct inappropriate behaviors	• Give concrete examples of inappropriate behavior • Ask how inappropriate behaviors can be corrected

Lesson Plan 3

Social Story 2: Maaari ako maging tunay na kaibigan

Objectives

- List down personal considerations in choosing a friend
- Identify necessary components of friendship

Subject Matter

Topic: Inviting peers to join him/her activities

Skill to be learned: Responding to the invitations of peers to join them in activities

Material: Kathang Salaysay (KatSay): An Interactive Social Story Application, mobile phone/tablet

Activities:

- Opening of the mobile phone/tablet

- Opening of the application (Kathang Salaysay)
- Tapping the start button
- Choosing a social story
- Reading the social story
- Answering the reading comprehension test
- Demonstrating the social tasks
- Playing the game as a reward

Enrichment Lesson Plan

The teacher can use the following activities/strategies after the students used the app and read the social stories to strengthen the social skill learned by the students.

OBJECTIVES	ACTIVITIES/STRATEGIES
1. List down personal considerations in choosing a friend	• Identify and describe their friends at various times in their lives • Discuss choosing a friend based on person's qualities • Discuss the qualities of friends so that no person is superior in relationships
2. Identify necessary components of friendship	• Describe interpretation of friendship • Discuss the behavioral aspects of friendship • Role play a friendly relationship • List down behavioral/attitudinal characteristics involve in friendship • Draw people in a situation doing friendly activities

Lesson Plan 4

Social Story 2: Maaari ako maging tunay na kaibigan

Objectives

- List different types of close relationships
- Identify characteristics of close relationships
- List activities that are appropriate for a game with friends

- Identify persons with whom one could establish close relationships

Subject Matter

Topic: Joining in activities with peers

Skill to be learned: Allowing peers to join him/her in activities

Material: Kathang Salaysay (KatSay): An Interactive Social Story Application, mobile phone/tablet

Activities:

- Opening of the mobile phone/tablet
- Opening of the application (Kathang Salaysay)
- Tapping the start button
- Choosing a social story
- Reading the social story
- Answering the reading comprehension test
- Demonstrating the social tasks
- Playing the game as a reward

Enrichment Lesson Plan

The teacher can use the following activities/strategies after the students used the app and read the social stories to strengthen the social skill learned by the students.

OBJECTIVES	ACTIVITIES/STRATEGIES
1. List different types of close relationships	• Identify different types of close relationships with family, friends etc. • Role-play possible effects of having close relationships • Discuss the advantages and disadvantages of having close relationships
2. Identify characteristics of close relationships	• Show social story of close relationships • Share experiences with the class • Role play various components of close relationships

	Describe several characteristics of close relationships: Voice tone Facial expression Feelings
3. List activities that are appropriate for a game with friends	- Identify different attributes in a game - Discuss activities and experiences during a game - Role play a game with friends - Discuss the positive and negative effects of playing games with friends
4. Identify persons with whom one could establish close relationships	- List down persons to tap for assistance when necessary - Role play on proper ways to approach a person

Lesson Plan 5

Social Story 2: Maaari ako maging tunay na kaibigan

Objectives

- List potential reactions of others to one self
- Construct a personal view of how others see one self
- Describe the relationship between one's own behavior and others reactions
- Demonstrate awareness of individual differences

Subject Matter

Topic: Taking turns during games and activities

Skills to be learned: Expressing sympathy for others when they are hurt or upset

Considering the viewpoints of others in social situations

Material: Kathang Salaysay (KatSay): An Interactive Social Story Application, mobile phone/tablet

Activities:

- Opening of the mobile phone/tablet

- Opening of the application (Kathang Salaysay)
- Tapping the start button
- Choosing a social story
- Reading the social story
- Answering the reading comprehension test
- Demonstrating the social tasks
- Playing the game as a reward

Enrichment Lesson Plan

The teacher can use the following activities/strategies after the students used the app and read the social stories to strengthen the social skill learned by the students.

OBJECTIVES	ACTIVITIES/STRATEGIES
1. List potential reactions of others to one self	• Cite situations showing prejudice • Discuss the concepts and effects of prejudice • Give observations on individual differences • Give suggestions on how to deal with people's reactions • Role play positive and negative reactions to different situations
2. Construct a personal view of how others see one self	• List others perception of oneself and receive feedbacks
3. Describe the relationship between one's own behavior and others reactions	• Present situation that will elicit certain reactions from others • Discuss one's behaviors and get reactions from the students • Discuss the importance of accepting responsibilities and its consequences • Compare responsible and irresponsible acts of individuals
4. Demonstrate awareness of individual differences	• Discuss and list down the differences in individuals as regards to emotions, personality, interests and hobbies

Lesson Plan 6

Social Story 2: Maaari ako maging tunay na kaibigan

Objectives

- Identify and demonstrate appropriate ways of speaking in a social conversation

Subject Matter

Topic: Take turns during games and activities

Skills to be learned: Compromising during disagreements with others

Material: Kathang Salaysay (KatSay): An Interactive Social Story Application, mobile phone/tablet

Activities:

- Opening of the mobile phone/tablet
- Opening of the application (Kathang Salaysay)
- Tapping the start button
- Choosing a social story
- Reading the social story
- Answering the reading comprehension test
- Demonstrating the social tasks
- Playing the game as a reward

Enrichment Lesson Plan

The teacher can use the following activities/strategies after the students used the app and read the social stories to strengthen the social skill learned by the students.

OBJECTIVES	ACTIVITIES/STRATEGIES
1. Identify and demonstrate appropriate ways of speaking in a social conversation	• Discuss important elements in communication • Observe speaking appropriately in a social conversation • Discuss proper practices in speaking courteously with others

	• Practice courtesies such as speaking in turn, using appropriate language, proper tone, etc. • Practice simple discussion skills in small groups with courtesy • Perform a play showing appropriate way of communicating socially
--	--

Lesson Plan 7

Social Story 3: Pakikipag – usap sa ibang tao

Objectives

- Identify and introduce oneself
- List appropriate ways to introduce self with confidence
- Make positive statements about oneself

Subject Matter

Topic: Introducing Self

Skills to be learned: Introducing self to others

Material: Kathang Salaysay (KatSay): An Interactive Social Story Application, mobile phone/tablet

Activities:

- Opening of the mobile phone/tablet
- Opening of the application (Kathang Salaysay)
- Tapping the start button
- Choosing a social story
- Reading the social story
- Answering the reading comprehension test
- Demonstrating the social tasks
- Playing the game as a reward

Enrichment Lesson Plan

The teacher can use the following activities/strategies after the students used the app and read the social stories to strengthen the social skill learned by the students.

OBJECTIVES	ACTIVITIES/STRATEGIES
1. Identify and introduce oneself	• Introduce oneself to other people by giving the following information: ✓ Name ✓ Interests ✓ Hobbies
2. List appropriate ways to introduce self with confidence	• Act out activities to show confidence • Read the social story which tell about introducing oneself to other people with confidence • Assign individual task to elicit self-confidence
3. Make positive statements about oneself	• Give positive statements about oneself • Tell/write about oneself • Introduce oneself to a group/an individual • Describe oneself through drawings

Lesson Plan 8

Social Story 3: Pakikipag – usap sa ibang tao

Objectives

- Identify interests common to most people
- Identify proper listening and responding techniques
- Identify positive outcomes of listening and responding appropriately
- Identify negative effects of listening and responding inappropriately

Subject Matter

Topic: Asking question to request information about a person

Skills to be learned:

- Talking about or acknowledging the interests of others
- Asking questions about a broad range of topics

Material: Kathang Salaysay (KatSay): An Interactive Social Story Application, mobile phone/tablet

Activities:

- Opening of the mobile phone/tablet
- Opening of the application (Kathang Salaysay)
- Tapping the start button
- Choosing a social story
- Reading the social story
- Answering the reading comprehension test
- Demonstrating the social tasks
- Playing the game as a reward

Enrichment Lesson Plan

The teacher can use the following activities/strategies after the students used the app and read the social stories to strengthen the social skill learned by the students.

OBJECTIVES	ACTIVITIES/STRETEGIES
1. Identify interests common to most people	• Ask the students to bring pictures of their hobbies and interests and share them with the class • List hobbies and interests and decide which of these are common to most people • Talk about the hobbies and interests of other people especially their classmates and friends
2. Identify proper listening and responding techniques	• Cite the Do's and Don'ts of a good listener (patience, allowing the speaker a chance to express himself/herself) • Read age-appropriate social stories. Summarize and answer questions about the story read. • Evaluate each student's performance as a listener

	• Ask students to role-play situations requiring listening and responding techniques
3. Identify positive outcomes of listening and responding appropriately	• Model a particular behavior from the social story read • Identify classmates who display good listening and responding skills • Identify the advantages of listening and responding correctly
4. Identify negative effects of listening and responding inappropriately	• Cite consequences of not listening (missing information/instruction, rejection etc.) • Role play situation depicting the consequences for not listening

Lesson Plan 9

Social Story 3: Pakikipag – usap sa ibang tao

Objectives

- Identify and demonstrate appropriate ways of speaking in a social conversation
- Demonstrate appropriate volume of voice in a conversation
- Demonstrate appropriate communication skills in specific situations

Subject Matter

Topic: Engaging in One-On-One Social Interactions With Peers

Skills to be learned:

- Maintaining the “give and take” of conversations
- Adjusting voice volume based on the needs of the listener
- Interacting with peers during unstructured activities
- Interacting with groups of peers

Material: Kathang Salaysay (KatSay): An Interactive Social Story Application, mobile phone/tablet

Activities:

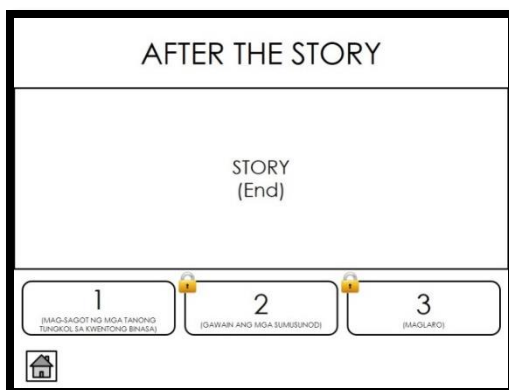
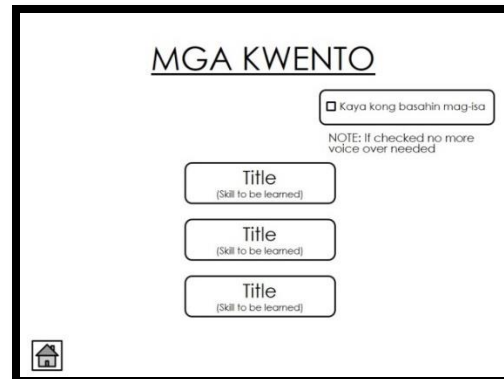
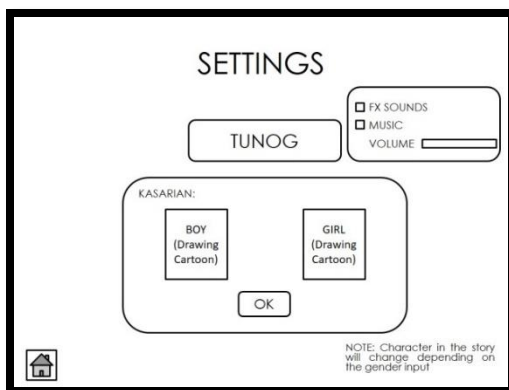
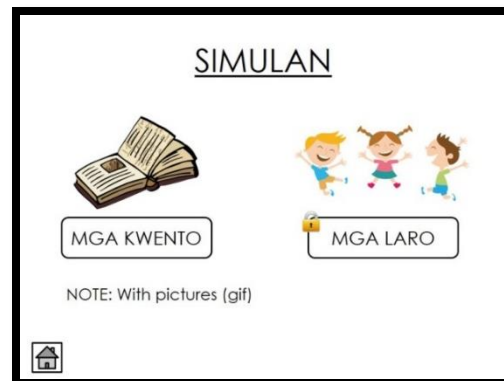
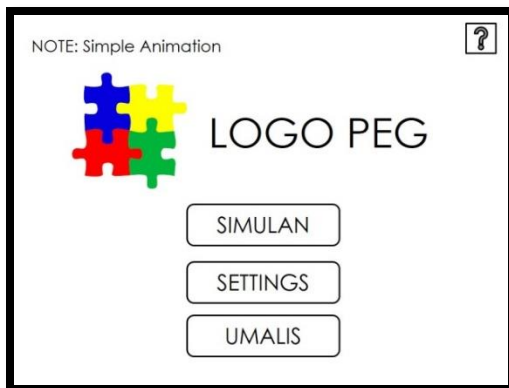
- Opening of the mobile phone/tablet

- Opening of the application (Kathang Salaysay)
- Tapping the start button
- Choosing a social story
- Reading the social story
- Answering the reading comprehension test
- Demonstrating the social tasks
- Playing the game as a reward

Enrichment Lesson Plan

The teacher can use the following activities/strategies after the students used the app and read the social stories to strengthen the social skill learned by the students.

OBJECTIVES	ACTIVITIES/STRETEGIES
1. Identify and demonstrate appropriate ways of speaking in a social conversation	• Read a social story on speaking appropriately in a social conversation • Discuss proper practices in speaking courteously with others • Practice courtesies such as speaking in turn, using appropriate language, proper tone etc. • Practice simple discussion skills in small groups with courtesy • Practice showing appropriate way of communicating socially
2. Demonstrate appropriate volume of voice in a conversation	• Evaluate volume of the voices with the teacher • Demonstrate when to use high and low volume of voice
3. Demonstrate appropriate communication skills in specific situations	• Discuss different types of communications appropriate to certain situations • Role-play appropriate attitude such as at home, in school and community activities



Appendix F

SAMPLE STORY BOARD

1 Pagsasabi ng "Hello" sa bagong kakilala Skill: Initiates Greetings With Others	2 Madalas, nakakakilala ako ng mga bagong tao. 	3 Tuwling nakakakilala ako ng bagong tao kasama ang nanay, tatay o guro ko, magandang magsabi ng "Hello" sa mga bagong kakilala. Hello 
4 Maraming pamamaraan ang pagsasabi ng "Hello". Hello! HELLO hello! hello 	5 Maaari kong sabihin ang "Hello". Hello 	6 Maaari ko rin sabihin ang "Hi". Hi 
7 Pwede ko rin naman sabihin ang "Hi, kamusta ka?" Hi, Kamusta ka? 	8 Pwede rin naman na kumaway lamang ako sa taong bagong kilala. 	9 Maaaring makaramdam ako ng hiya sa tuwing nagsasabi ako ng "Hello" sa mga tao. Pero hindi ako dapat mangamba dahil sa tulong ng aking nanay, tatay o guro mababawasan ang aking hiya. Hello 
10 Nakadarama ng saya ang mga tao kapag nagsabi ka sa kanila ng "Hello". 	11 Ako ay natuto na magsabi ng "Hello" sa ibang tao. 	12 Tayo'y magsanay na magsabi ng "Hello" sa ibang tao. 

Appendix G

LETTER TO SUPERINTENDENT

DR. BERNADETTE F. TAMAYO, CESO VI
Officer-in-Charge
Office of the Schools Division Superintendent
Division of Olongapo

Madam:

Greetings!

The undersigned is undertaking her Thesis Writing entitled: **AN INTERACTIVE SOCIAL STORY APPLICATION IN DEVELOPING SOCIAL SKILLS FOR CHILDREN WITH ASD**. This study shall find out the difficulties in social skills of pupils with ASD at SINAG- SPED CENTER located in Kalalake Elementary School. As an output of this, the researcher will propose an interactive social story application for pupils with Autism.

In context to this, may I have the honor to request your kind approval and endorsement to conduct a study at SINAG- SPED CENTER in Kalalake Elementary School, in your division.

Rest assured that all data will be treated with utmost confidentiality.

Your kind consideration towards my request is highly appreciated.

Thank you very much for your understanding.

Respectfully yours,

SELEENA ANNE R. BRIONES
Researcher, MAEd Candidate

Noted:


DR. JENINA NALIPAY
Adviser

Appendix H

LETTER TO PRINCIPAL

MR. PASTOR PADUA
Principal IV
Kalalake Elementary School
Olongapo City
(Through Channels)

Sir:

Greetings!

The undersigned is undertaking her Thesis Writing entitled: **AN INTERACTIVE SOCIAL STORY APPLICATION IN DEVELOPING SOCIAL SKILLS FOR CHILDREN WITH ASD**. This study shall find out the difficulties in social skills of pupils with ASD at SINAG- SPED CENTER located in Kalalake Elementary School. As an output of this, the researcher will propose an interactive social story application for pupils with ASD.

In context to this, may I have the honor to request your kind approval and endorsement to conduct a study at SINAG- SPED CENTER in Kalalake Elementary School, in your division.

Rest assured that all data will be treated with utmost confidentiality.

Your kind consideration towards my request is highly appreciated.

Thank you very much for your understanding.

Respectfully yours,

SELEENA ANNE R. BRIONES
Researcher, MAEd Candidate

Noted:


DR. JENINA NALIPAY
Adviser

Appendix I

LETTER TO TEACHER RESPONDENTS

SPED Teachers
Kalalake Elementary School
Olongapo City
(Through Channels)

Ma'am/Sir:

Greetings!

The undersigned is undertaking her Thesis Writing entitled: **AN INTERACTIVE SOCIAL STORY APPLICATION IN DEVELOPING SOCIAL SKILLS FOR CHILDREN WITH ASD**. This study shall find out the difficulties in social skills of pupils with ASD at SINAG- SPED CENTER located in Kalalake Elementary School. As an output of this, the researcher will propose an interactive social story application for pupils with ASD.

In context to this, may I have the honor to request your kind approval and endorsement to conduct a study at SINAG- SPED CENTER in Kalalake Elementary School, in your classroom.

Rest assured that all data will be treated with utmost confidentiality.

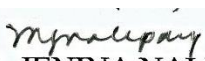
Your kind consideration towards my request is highly appreciated.

Thank you very much for your understanding.

Respectfully yours,

SELEENA ANNE R. BRIONES
Researcher, MAEd Candidate

Noted:


DR. JENINA NALIPAY
Adviser

Parental Permission for Children Participation in Research

Title: Kathang Salaysay (KatSay): An Interactive Social Story Application in Developing Social Skills for Children with ASD

Introduction

The purpose of this form is to provide you (as the parent of a prospective research study participant) information that may affect your decision as to whether or not to let your child participate in this research study. The person performing the research will describe the study to you and answer all your questions. Read the information below and ask any questions you might have before deciding whether or not to give your permission for your child to take part. If you decide to let your child be involved in this study, this form will be used to record your permission.

Purpose of the Study

Your child is being asked to participate in a research study conducted by Seleena Anne R. Briones from Philippine Normal University - Manila. If you agree, your child will be asked to participate in a research study about developing the social skills of children with Autistic Spectrum Disorder (ASD) through the use of an e-learning tool. The purpose of this study is to investigate the effect of Social Story intervention to Filipino children with Autistic Spectrum Disorder (ASD) by designing an interactive social story to create a

motivating context equipped with social narrative, digital interactive storytelling and fun-learning concept that contributes to the learning among children with ASD when they use the application, as this application can be utilized to improve their social skills. This study will contribute to the researcher's completion of her master's thesis.

What is my child going to be asked to do?

If you allow your child to participate in this study, they will be asked to:

- Take a reading comprehension exam and later on the comprehension checklist to be able to assess his/her comprehension, understanding and vocabulary;
- Take the ASD Social Skills Profile (ASSP) to determine his/her characteristics exhibited during social interactions or social situations and his/her difficulties in social skills; and
- Do the activities required by the e-learning tool (interactive social story application), to help improve his/her social skills.

This is a research study and, therefore, not intended to provide a medical or therapeutic diagnosis or treatment. The intervention provided in the course of this study is not necessarily equivalent to the standard method of prevention, diagnosis, or treatment of a health condition. Your child will or may be audio/video recorded.

Time Required and Number of Participants

This study will require 1 hour of your child's time every weekdays for 4 weeks and there will be 2 of other people in this study.

Risks

The investigator does not perceive more than minimal risks from your child's involvement in this study (that is, no risks beyond the risks associated with everyday life).

Benefits

Potential benefit from participation in this study includes the development or if not developing your child's social skills through the use of social narrative, digital interactive storytelling and fun-learning concepts.

Confidentiality

The results of this research will be presented at Philippine Normal University – Manila. Your child will be identified in the research records by a code name or number. The researcher retains the right to use and publish non-identifiable data. When the results of this research are published or discussed in conferences, no information will be included that would reveal your child's identity. All data will be stored in a secure location accessible only to the researcher. Upon completion of the study, all information that matches up individual respondents (including audio/video record, if applicable) with their answers will be destroyed.

There is one exception to confidentiality we need to make you aware of. In certain research studies, it is our ethical responsibility to report situations of child abuse, child neglect, or any life-threatening situation to appropriate authorities. However, we are not seeking this type of information in our study nor will you be asked questions about these issues.

Participation and Withdrawal

Your child's participation in this study is voluntarily. Your child may decline to participate or to withdraw from participation at any time. Withdrawal or refusing to participate will not affect their relationship with Philippine Normal University – Manila in anyway. You can agree to allow your child to be in the study now and change your mind later without any penalty.

This research study will take place during regular classroom activities; however, if you do not want your child to participate, an alternate activity will be available.

In addition to your permission, your child must agree to participate in the study. If your child does not want to participate they will not be included in the study and there will be no penalty. If your child initially agrees to be in the study they can change their mind later without any penalty.

Questions about the Study

If you have questions or concerns during the time of your child's participation in this study, or after its completion or you would like to receive a copy of the final aggregate results of this study, please contact:

Seleena Anne R. Briones
Graduate Student
Philippine Normal University – Manila
seleenabriones22@gmail.com

Giving of Consent

You are making a decision about allowing your child to participate in this study. Your signature below indicates that you have read the information provided above and have decided to allow them to participate in the study.

- ☐ I give my consent for my child to be (audio/video) recorded during the duration of this study.

Name of Child (Printed)

Name of Parent/Guardian (Printed)

Name of Parent/Guardian (Signed)

Date

Name of Researcher (Signed)

Date

Assent for Children Participants

I, _____ know that my parents (mom and dad)/guardian have/has said it's okay for me to take part in a project about developing an interactive social story app for developing social skills of children with ASD done by Seleena Anne R. Briones of the Philippine Normal University – Manila.

I am taking part because I want to. I have be told that I can stop at any time I want to and nothing will happen to me if I want to stop.

Signature

Appendix L

LETTER TO EXPERT

DR. MICHELLE L. SEVILLA
SPED Teacher
Lagro Elementary School
Quezon City

Dear Dr. Sevilla,

Greetings!

The undersigned is a Master of Arts in Special Education with Specialization in Teaching Children with Intellectual Disability student of Philippine Normal University – Manila undertaking a research entitled **KATHANG SALAYSAY (KatSay): AN INTERACTIVE SOCIAL STORY APPLICATION IN DEVELOPING SOCIAL SKILLS FOR CHILDREN WITH ASD.**

With your expertise, I am humbly asking your permission to validate if the attached Social Stories is in line with the result of the respondents' ASD Social Skills Profile (ASSP) and if the skills/competencies are anchored with the Philippine Transition Program Model mandated by the Department of Education, for the study using the attached rating tool.

I am looking forward that my request would merit your positive response.

Thank you and more power.

Respectfully Yours,

SELEENA ANNE R. BRIONES
Researcher

Appendix M**SOCIAL STORY EVALUATION TOOL****KATHANG SALAYSAY (KatSay): AN INTERACTIVE SOCIAL STORY APPLICATION IN DEVELOPING SOCIAL SKILLS FOR CHILDREN WITH ASD**

Direction: this tool asks for your evaluation of the social stories to be used in the data gathering for the investigation stated above, to establish its validity. You are requested to give your honest assessment using the criteria stated below; please check (✓) only one from the selection.

Scale	Interpretation	Description
5	Fully Evident	The indicator is fully evident in the social story and can provide unbiased data for the investigation, allowing 0-5% error
4	Highly Evident	The indicator is highly evident in the social story and can provide unbiased data for the investigation, allowing 8-10% error
3	Moderately Evident	The indicator is moderately evident in the social story and can provide unbiased data for the investigation, allowing 11-15% error
2	Slightly Evident	The indicator is slightly evident in the social story and can provide unbiased data for the investigation, allowing 16-20% error
1	Not Evident	The indicator is not evident in the social story and can provide unbiased data for the investigation, allowing 21-25% error

Indicators	Rating				
	5	4	3	2	1
The social stories are associated with the result of the respondents' ASD Social Skills Profile (ASSP)					
The social stories are anchored on the Curricular Framework for The Philippine Transition Program Model					
The social stories are aligned with the target competency.					

The social stories are developmentally sequenced to suit the needs of students with ASD.					
The difficulty level of the social stories are aligned with the intended use.					
The social stories are able to produce the social skills processes intended,					
The social stories are framed in a clear, simple, in order to avoid risk of error.					

Comments and Suggestions:

Appendix N**SURVEY QUESTIONNAIRE (PART II)****TEACHER-RESPONDENTS' EVALUATION OF THE INTERACTIVE SOCIAL STORY**

Direction: The purpose of this questionnaire is to obtain information that will aid in the selection of future classroom interventions. These interventions will be used by teachers of children with identified needs. Please check the number which best describes your agreement or disagreement with each statement.

Scale	Interpretation	Description
4	Fully Evident	The indicator is fully evident in the application
3	Highly Evident	The indicator is highly evident in the application
2	Slightly Evident	The indicator is slightly evident in the application
1	Not Evident	The indicator is not evident in the application

Indicator	Rating			
	4	3	2	1
<u>Objective:</u>				
1. Objectives are written in terms of student behavior				
2. Objectives are clear and specific				
3. Objectives are measurable/observable				
4. Objectives are attainable				
5. Objectives are in line with the curriculum				
<u>Content:</u>				
1. Content within the comprehension level of the students				
2. Contents cover all the desired competencies in the subject				
3. Content is capable of developing advance social skills				

4. Content used variety of strategies and techniques				
<u>Time Allotment:</u>				
1. Social stories included can be covered within the academic year				
2. Exercises can be completed within the class schedule				
3. Time allotment is adequate				
<u>Assessment:</u>				
1. Assessment is congruent with the objectives				
2. Assessment is suitable to the level of the students				
3. Assessment involves real events that students can relate				
4. Assessment is varied				
5. Assessment employs innovative approaches				
<u>Effectiveness:</u>				
1. This would be an acceptable e-learning tool for the child's needs.				
2. Most teachers would find this e-learning tool appropriate for children with similar needs.				
3. This e-learning tool should prove effective in supporting the child's needs.				
4. I would be willing to use this e-learning tool in the classroom setting.				
5. I would suggest the use of this e-learning tool to other teachers.				
6. This e-learning tool would not result in negative side effects for the child.				
7. I like the procedures used in this e-learning tool.				
8. Overall, this e-learning tool would be beneficial for the child.				

Comments and Suggestions:

Evaluator:

Appendix O**IT EXPERTS' EVALUATION QUESTIONNAIRE**

Direction: The purpose of this questionnaire is to obtain information that will aid in the selection of future classroom interventions. These interventions will be used by teachers of children with identified needs. Please check the number which best describes your agreement or disagreement with each statement.

Scale	Interpretation	Description
4	Fully Evident	The indicator is fully evident in the application
3	Highly Evident	The indicator is highly evident in the application
2	Slightly Evident	The indicator is slightly evident in the application
1	Not Evident	The indicator is not evident in the application

Indicator	Rating			
	4	3	2	1
1. The graphics are clear, organized and appealing				
2. The images and texts used are accurate				
3. The color, size and font style choice are relatively appropriate				
4. Touch screen gestures work properly				
5. Sound used is pleasant to hear				
6. The app is child-friendly, simple and clear				
7. The app lay out is consistent				
8. The app encourages independent learning				

Comments and Suggestions:

Evaluator:

Appendix P**EVALUATION TOOL FOR THE INTERACTIVE SOCIAL STORY AS TO EFFECTIVENESS TO CHILDREN WITH ASD**

Name: _____

Date: _____

Age: _____

Gender: _____

Direction: The following items pertain to the observation of the child while using the interactive social story application. Kindly put a check (/) mark on the column for your corresponding response where:

Scale	Interpretation	Description
4	Fully Evident	The indicator is fully evident in the application
3	Highly Evident	The indicator is highly evident in the application
2	Slightly Evident	The indicator is slightly evident in the application
1	Not Evident	The indicator is not evident in the application

Criteria	4	3	2	1
Part 1: Behavior				
1. The child was motivated to use the interactive social story application.				
2. The child was appeared to initiate to start using the interactive social story application.				
3. The child manipulated the application and read the social stories.				
4. The child acted with joy when hearing sounds from the interactive social story application.				
5. The child answered the comprehension tests after reading the social story.				
6. The child act out all the social tasks given.				
7. The child was motivated to do all the tasks given so that he/she can play the game at the end of every story.				
Part 2: Screen Gestures				
1. Press the power on/off button of the device				
2. Glance/browse the screen of the device				
3. Single tap the screen of the device to manipulate the story, activities and games				

Appendix Q

QUESTIONS FOR THE INTERVIEW

Tell me about the reading readiness of your child/students in terms of their comprehension, understanding and vocabulary?

1. What are the interventions that you used to address their difficulties in this reading skills comprehension?
2. What are the difficulties in their social emotional reciprocity, social participation/avoidance and detrimental social behaviors?
3. How did you address these difficulties?
4. Tell me what activities you used with your child/students to improve their social skills?
5. Are these activities helpful to develop their social skills?



An Interactive Social Story App for
Children with ASD

Seleena Anne R. Briones

Over the years, teaching children with autism is like a battle of thoughts and feelings because these children have difficulties in understanding to social situations and use speech in strange ways. Therefore, it is crucial to help those children with ASD to ease the burden between the child and his/her environment, to interact socially in acceptable manner and to be understood by the people around them.

As technology is becoming more popular today there are ways on how to help these children with ASD to at least initiate social skills using devices that can be both accessible in school and at home.

The researcher came up with an interactive social story app which was shaped with all her effort and resources that offer to increase the child's social skills and display appropriate behavior in a given social context. The parents and SPED teachers have significant roles in executing the skills to be developed in the interactive social story app so that there is a proper orientation for the child on how to use the device purposely for him/her to help develop him/her social skills. To develop the social skills of children with ASD meaningfully, the researcher used the principle of theory of mind, weak central coherence and social motivation theory that are the foundation of Social Story of Carol Gray.

With wisdom and knowledge in preparing instructional material electronically it is the researcher's eagerness to find people who are experts to digitize her concepts and ideas thus, interactive social story app will not be possible without those people who impart their knowledge and skills.

The output of this study, can be used and adopted by special education teachers, parents and school administrators and use it as a model for creating other mobile application materials to deal with the unique needs of children with autism.

Introduction

The interactive social story app was developed for children with ASD. They are my inspiration to conduct a research of this kind to help them develop their social skills through the Social Story principle, that through analyzing a social situation by breaking down and explaining the things to do they can function properly in a given social context.

In developing this material, I consulted experts to make it authentic and applicable to the needs of children with ASD. With the support of my adviser who painstakingly and joyfully guided me in my journey to finish my study and the special education teachers and parents who actively participated in the study, this research paper was reviewed and endorsed positively.

The structure procedures can be easily followed and the teaching strategy used is intended to improve the social skills of children with ASD and with the thematic lesson plans created resulted to the improvement of the social skills of these children.

Rationale

The development of the interactive social story app is based on the basic principles of the theory of the mind, the social stories are particularly became a powerful tool to help children with ASD understand difficult social concepts in simple words, description of views, perspectives, and feeling of other persons. While the theory of weak central coherence help children with ASD to generalized meaning from the context while having preference for detail-focused processing. Likewise, the theory of social motivation helps the children with ASD develop social orienting, seeking and liking social interactions and social maintaining behaviors through the interactive games that serves as social reward.

The interactive social story app is viewed as part of getting a strong advocacy of using and integrating technology in developing the social skills of children with ASD. Researches have been conducted and results revealed that social stories help children with ASD in developing their behavior by explaining a social context through narratives. In preparing teaching materials, the researcher looked for something that will motivate them to socialize by developing an interactive social story app and integrating technology so that it will be more effective.

Goals

1. Motivate and enhance the social skills of children with ASD
2. Inspire special education teachers to teach children with ASD using the interactive social story app
3. Boost the morale of parents that their children with ASD can adopt to social situations and utilize the interactive social story app in teaching them social skills at home and consider themselves as the school partner in educating children with ASD.
4. Encourage school administrators to support their teachers in creating other materials for children with ASD in their schools.
5. Work in partnership with experts to develop other technology based materials for children with educational needs.

Preparing Thematic Instructional Plan

The lessons are organized thematically by having set of activities with a theme. It is short and precise as direct instruction is more effective for children with ASD. The Social Story principle was used to design the activities integrating it with the DepEd prescribed Special Education Curriculum and Transition Program Model. Below are the contents of the thematic lesson plan:

- A. Objectives. This contained the skills expected to be acquired by the children with autism at the end of the training/lesson.
- B. Subject Matter. This contained the topic, skills to be learned and materials used in the lesson presented.
- C. Activities. This contained the engagement activity by the child with autism towards the interactive social story application through initiation.
- D. Enrichment Activities. This contained the steps in executing the lesson with the involvement of activities/strategies to strengthen the social skill being taught to the child with autism. This was a supplementary guide to the interactive social story application (KatSay: Kathang Salaysay)

User Guide When Using the Application

1. Kathang Salaysay Starter

The child can input name for proper recognition.

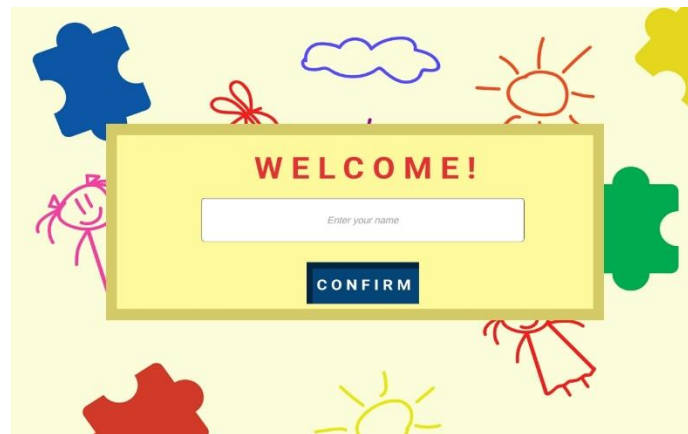


Figure 5: Start-up Screen

The child can start the app by tapping the button *simulan*.



Figure 6: Menu

The child can manipulate the volume by tapping settings then sound.



Figure 7: Settings

2. Choose Story

- Three stories will appear which include the reading comprehension test, social tasks and games.
- The child will have to read the story in sequence for it is developmentally classified as simple to complex social skills.
- The child can check the box *kaya kong basahin mag-isa* if he/she can read on his/her own. If not, it should not be checked and a voice narration will play every story.



Figure 8: Story Selection

3. Social Story 1 – Pagbati sa bagong kakilala

Figure 9: Social Story 1



Figure 10 Reading Comprehension Test

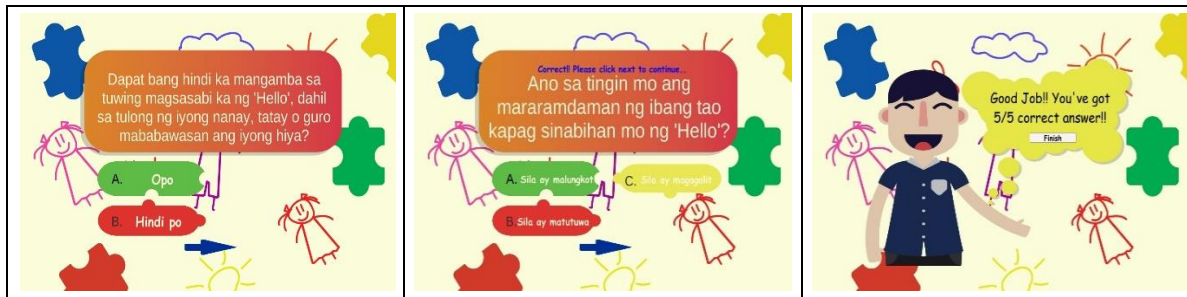
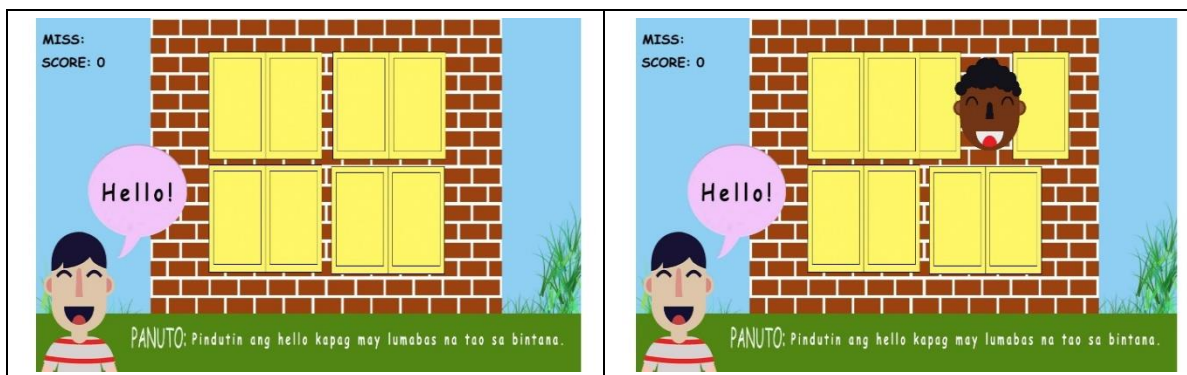


Figure 11 Social Tasks



Figure 12 Social Tasks



CURRICULUM VITAE



13 Graham Street, East Bajac Bajac,
Olongapo City, Philippines

+63 905 593 0475

seleenabriones22@gmail.com

EDUCATION

PHILIPPINE NORMAL UNIVERSITY
Master of Arts in Education
Specialization in Special Education
Intellectual Disabilities Stream
In Progress

PHILIPPINE NORMAL UNIVERSITY
Bachelor of Science in Elementary Education
Class of 2014

QUALIFICATIONS

- Has good interpersonal skills
- Self-oriented and confident towards work
- Enjoy working in a fast-paced work environment
- Computer Literate
- Good communication skills in both oral and written

SELEENA ANNE R. BRIONES, LPT

PROFILE

I am a professional teacher who specializes in special education in teaching students with intellectual disabilities, seeking a part-time position in the field of education, where I can apply my knowledge and skills for continuous improvement.

CORE COMPETENCIES

Student Development	Lesson Plan Development
Classroom Management	Individualized Education
Extracurricular Activities	Program Development

WORK EXPERIENCES

OLONGAPO WESLEY SCHOOL

First Grade Teacher, 2014-2015

- Perform designated tasks in consistency with the mission, vision, goals & objectives of the school.
- Co-designed a lesson plan for a class of thirty diverse students.
- Provided a variety of hands-on learning experiences that include the use of modern teaching methods.
- Created a classroom environment that was supportive, simulative and encouraging for all students.
- Makes periodic reports on the progress of the individual student to the student herself to his guardian with specific suggestions for improvement.
- Assumes responsibility of maintaining and sustaining her personal and professional growth, and observe professionalism at all times.
- Participate as an agent of constructive social, economic, moral, spiritual and intellectual cultural and political change in her school and in the community within the context of national policies and in accordance with the mission, vision, goals and objectives of the school.

LYCEUM OF SUBIC BAY

Elementary Teacher, 2015-present

- Positively interact with all kinds of students.
- Capable of designing lesson plans to meet student needs and cover all the standards
- Design and administer effective assessments for her students – combine formal and informal assessment techniques to monitor student performance incorporated by the use of technology, portfolios and other creative methods to assess students.
- Communicates effectively with parents and other stakeholders related to the education of her students.
- Collaborate with other teachers and school staff to make the school a safe, effective learning environment for all students and to improve the overall image of the school and the instruction that takes place there.
- Improve the quality of education she can provide by furthering her education and taking part in professional development sessions.

ELIGIBILITY

Professional Teacher Certificate

Licensure Exam for Teachers (LET)
August 2014
Manila, Philippines