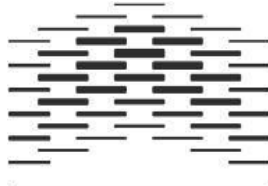TALLINNA ÜLIKOOL

OSLO AND AKERSHUS
UNIVERSITY COLLEGE
OF APPLIED SCIENCES

UNIVERSITÀ DEGLI STUDI DI PARMA

Education and Culture DG
ERASMUS MUNDUS

Rakhmatullaeva Gulchekhra

VIRTUAL STORYTIMES:

IMPLEMENTING DIALOGIC READING INTO CHILDREN'S DIGITAL LIBRARIES

ABSTRACT

Early literacy skills in children are an important factor for later academic success. In particular, preschool years is profound in providing children reading skills that serve as a bridge to formal learning in school. Today many parents, educators, teachers, librarians are using digital reading along with the traditional book reading. The purpose of this research is to asses the impact of a virtual storytime in a real-time with a librarian on preschool children's (aged 3-6) oral language development. The study revealed that there was an increase in younger children's vocabulary, however, it is difficult to keep them focused in virtual storytime. For older group of children the results showed an increase in elaboration of ideas and syntax. In addition, older children found this method of learning enjoyable.

Table of Contents

List of Figures and Tables

Acknowledgements

I express my deep gratitude to my supervisor, Professor Anna Maria Tammaro, for providing me with guidance, encouragement, and useful critiques for this research. I would also like to thank Amina Ahmed for her advice and assistance.

I am also sincerely grateful to my parents for their continuous encouragement and support. My grateful thanks are also extended to my family for providing me with support throughout this work.

Finally, I wish to thank my son who was an inspiration for this research and kept inspiring me with his smile.

Declaration and Plagiarism Disclaimer

"The opinions expressed in this dissertation are solely those of the author and acceptance of the dissertation as a contribution to the award of a degree cannot be regarded as constituting approval of all of its contents by the Division of Information & Communication Studies".

I certify that all material in this dissertation which is not my own work has been identified and properly attributed.

Signed:

Date: 6/17/2015

I.   Introduction

Developing literacy skills in early childhood is essential for later academic success (Committee on the Prevention of Reading Difficulties in Young Children, 1998; Leseman & De Jong, 1999; Parish - Morris, Mahajan, Hirsh - Pasek, Golinkoff, & Collins, 2014). In particular, preschool years are profound in providing early literacy skills that is a bridge to formal learning in school (Dickinson, De Temple, Hirschler, & Smith, 1992). Also, research with preschoolers and first-graders (Brown, Cromer & Weinberg, 1986; Peitelson, Kita, & Goldstein, 1986, cited in Dickinson, De Temple, Hirschler, & Smith, 1992) revealed that listening to stories have positive effects on children's literacy development. But statistics for the past few years show that one third of children in the United States were unprepared to learn when they enter school and there is a downfall in children's reading scores (Rich, 2008; "Dialogic Reading," n.d.). Some people argue that there is an association between this outcome and an introduction of the Internet. They believe that today many young people are spending more time on the Internet, replacing the art of reading traditional books with a *digital reading*. Some people are claiming that the Internet is taking place of a traditional reading - 'diminishing literacy and destroying reading culture' (Rich, 2008). However, other people believe that digital text has a capability of developing new skills that 'foster literacy' (Rowsell & Burke, 2009). They claim that digital reading involves the different practices that develop '*multimodality*' - using different modes of communication such as visual, acoustic, and spatial at a time (Rowsell & Burke, 2009; Rich, 2008).

Taking into account of child development and education experts' advice on reading to children from as early as from birth, and the results of studies about linguistic, verbal, and social benefits of early reading, the industry began to release electronic devices with reading programs, and apps for digital reading aimed at infants, toddlers and preschoolers (Quenqua, 2014; Vandewater et al., 2007; Ronimus, Kujala, Tolvanen, & Lyytinen, 2014). Electronic books became more popular than ever before and more parents are turning to digital reading even for storytimes ("Study finds downfall of digital readers during storytime," 2014). 'Story time is now often on a tablet', says Jessica Kourkounis to The New York Times (Quenqua, 2014). But parents, pediatricians, caregivers,

educators, and researchers are trying to find out about transferring to a digital reading and whether this is a healthy storytime or just a 'screen time' for children (Quenqua, 2014).

On the other hand, there is a need to be technologically literate for tomorrow's children in order to be compatible with technological society in today's global economy. The National Educational Technology Standards (NETS) Projects (International Society for Technology in Education, 2002) stressed the need to use technology during school years. They even recommended that by the end of a second grade, students should be able to use multimedia resources that support learning. They argued that technology should be used in functional and meaningful way and be 'developmentally appropriate'. Labbo and Reinking (1999, cited in Lefever-Davis and Pearman, 2005) argue that there is a difference between learning *from* the computer and *with* the computer. They suggested a need for research to investigate the impact of technology on students' approaches to learn, stating that technology has the potential to transform literacy instruction.

Interestingly, studies found the importance and value of the storytime is the interaction between parent and child (Boog, 2014; Quenqua, 2014; Lever & Sénéchal, 2011; Zevenbergen, Whitehurst, & Zevenbergen, 2003; Zevenbergen & Whitehurst, 2003). They suggest that early narrative skills are important in children's later literacy development and later reading comprehension. In fact, a '*dialogic reading*' method of reading was developed by Dr. G. Whitehurst to prepare lower-income children for formal school. In dialogic reading, the adult prompts the child to become the teller of the story while he is becoming the listener, the questioner, the audience for the child. As Whitehurst (n.d.) notes, 'no one can learn to play the piano just by listening to someone else play. Likewise, no one can learn to read just by listening to someone else read. Children learn most from books when they are actively involved.' His study (Zevenbergen, Whitehurst, & Zevenbergen, 2003) revealed that those children who had been read to in an interactive way had higher literacy skills and were eight month ahead from their peers.

In United States, non-English speaking families may face a barrier in storytimes for their children due to limited language proficiency and lack of parental assistance in reading. The National Center for Education Statistics (NCES) found that, in United States, 39 percent of non-English families fell in "Below basic prose literacy" category ("National Assessment of Adult Literacy (NAAL)", 2013).

Here rises a question, whether audio books or CD-ROM books with a narration from fluent native reader can help in developing reading skills in children from non-English speaking families.

Thus, debate among parents, educators, experts, pediatricians, and researchers on *digital reading* is still ongoing and yet needs to be investigated (Boog, 2014; Quenqua, 2014; Rich, 2013; Rowsell & Burke, 2009). There is relatively few research on *digital reading* with young children and how parents, caregivers, educators, librarians use it as they started to engage with these new medium recently (Kim, Anderson, & Anderson, 2008). Rowsell & Burke (2009) argue that in order to understand the complexities of a *digital reading*, we need to understand how the reading of a digital text differs from the reading of a linear print text.

There is a need for research on whether CD-ROM storybooks could be a good assistant in developing reading habits in children, especially, in non-English speaking children, who lack parental support in acquiring language. CD-ROM storybooks are also one example of how teachers and parents can use technology in teaching second language. CD-ROM storybooks have text, illustration, along with audio, graphic animations. Additional features of CD-ROM storybooks enable students to learn proper pronunciation and one-click-vocabulary (Lefever-Davis and Pearman, 2005). On the other hand, child development experts claim that electronic books with interactive games and multimedia are preventing children from focusing on learning. They worry that storytime is becoming more like playtime (Quenqua, 2014). In this research, we want to investigate what impact does virtual storytime in a *'dialogic reading'* style of reading in children's digital libraries have on children's literacy skills, in particular, their oral language development. We hope that our research will serve as any help in improving children's digital libraries' services and navigating children's interest in using technology meaningfully.

II. Research Question

The following research question was formulated:

What is the impact of the virtual storytime in a dialogic reading style on children's oral language development?

III. Aims & Objectives

The research aims to assess the impact of the virtual storytimes in a real-time in order to determine ways forward to improve children's digital library services by providing literacy-stimulating services. To guide and focus the study a framework of following aims and objectives were established.

Aims:

- Assess the impact of virtual real-time storytime in a dialogic style on children's oral language development

Objectives:

- Compare children's oral language skills before and after they have been read to in virtual storytime sessions in a dialogic style
- Compare children's behavioral and cognitive engagement at the first and last sessions

IV. Literature Review

4.1. Introduction

We reviewed the most recently conducted research on children's literacy, book reading, shared book reading, computer use, digital reading, dialogic style reading published on peer reviewed journals. Our review also includes books and website pages that are relevant to our research.

4.2. Discussion

4.2.1 Digital reading vs. traditional reading

Previous studies showed that reading an electronic book containing audio and visual features differ from reading from a traditional book that contain only static text (Unsworth, 2006; Kim, Anderson, & Anderson, 2008). Kress (2003, p. 152) differs digital text and print text as 'showing' and 'telling'. He argues that digital reading involves multimodality that is understanding of different modes of communication and requires multiliteracy skills to understand a digital text such as critical awareness of a digital text. Kress and Van Leeuwen (2001, cited in Rowsell & Burke, 2009)

discussed four steps to understand multimodal text: *discourse, design, production,* and *distribution* that are linguistic, visual, acoustic, aural, spatial modes of communication incorporated into interface of electronic reader devices that designed to convey a message to the reader.

In their study (2009), Rowsell & Burke equates the practice of a digital reading to the practice of playing computer games claiming that playing computer games also involve the Kress and Van Leeuwen's (2001, cited in Rowsell & Burke, 2009) layers of multimodality such as 'complex visuals, the dynamism of the storyline and the related texts and supporting genres that accompany the story'. They conclude that the practice of playing computer games may develop literacy skills and even may become literacy centres. However, in a real life, their very the same participant was a special education student who receives supplementary writing and reading help and his reading scores were down at school.

4.2.2 Advantages of digital reading

Studies found that different format of text impact on children's cognitive and literacy development differently. Some studies found CD-ROM storybooks to be beneficial for children's literacy development while others proposed its disadvantages. These electronic books can provide 'self-select' (Lefever-Davis and Pearman, 2005) and 'immediate assistance' (Doty et al., 2002) to its readers by asking help when they need it. For example, if the young reader doesn't know how to decode the particular word he can click on it to make the e-book to read it aloud for him. By this, he can confirm his guess and learn correct pronunciation for fluent reading. Moreover, animated e-books are more likely to enhance reading comprehension (Matthew, 1996, 1997; Doty et al., 2002). The study (Matthew, 1996, 1997) showed that students who read the interactive CD-ROM books scored higher on story retelling than students who read the print book. In addition, Doty et al. (2002) conducted related research with second graders studying the effect of CD-ROM storybooks on children's retelling and comprehension skills. The results showed higher oral retelling and comprehension skills after reading the interactive e-storybooks.

4.2.3 Disadvantages of digital reading

However, not all researches are consistent with above mentioned results. The other line of research do not agree that CD-ROM storybooks are beneficial for children's literacy development. Lewin

(1996, cited in Lefever-Davis and Pearman, 2005) argued that e-books containing narrative text or decoding feature can disable children's own ability to decode the word or read the story. As the result, they may become dependent on those features and are not willing to make their own attempts to decode words. Over time, relying heavily on these electronic text features may hinder literacy development (McKenna, 1998, cited in Lefever-Davis and Pearman, 2005). Similarly, in their study, Lefever-Davis and Pearman (2005) proposed that reliance on the digital pronunciation became almost habitual for some 6-7-years-old readers, 'diminishing the use of their own skills at decoding, ... to the point where he [reader] made no attempts to decode and selected the option to have the entire page read aloud for him.' In addition, Parish - Morris et al. (2014) revealed that children who have been read to from an electronic book had lower reading comprehension than children whose parents used the traditional books.

The other line of studies showed that there was no difference on children's literacy skills when technology was used. In the study of Boeglin-Quintana and Donovan (2013), kindergarten children spent time reading or listening to a recorded story on an iPod Shuffle in a daily silent reading time. The results showed that there was no impact of the iPod Shuffle use on children's reading fluency, however, they showed more motivation on reading e-books. Needless to say, this study have been conducted during short period of time (6 weeks) and no improvements on vocabulary have been observed. In addition, researchers led by a neuroscientist at the University of Washington in Seattle, Patricia Kuhl, studied nine-month-old infants' language acquisition (Bhattacharjee, 2015). In their study, researchers exposed infants from English-speaking families to Mandarin. The first group were talked and read to by native Chinese-speaking tutors while the second group watched and listened to the same speech through a video presentation and the other group heard only the audio. The results showed that language delivered by animated video, audio book, Internet, or other technology could not encourage learning, even they were educational. The children exposed to the language through human interaction could recognize the language differences. But children from the the other two groups represented no learning at all. Kuhl concluded that social experience is a bridge that leads to linguistic development.

4.2.4 Is digital storytime playtime?

In addition, some studies argue that readers of e-books approach the reading activity as a game. In Lefever-Davis and Pearman's (2005) study, the first grader readers' focus was more on animated graphics and sound effects. One of the participants commented the CD-ROM storybook reading activity as he likes that *game* after clicking on every graphic on the page to see whether it has an animation feature.

Boog (2014) claims that children do not learn by only soaking up information. The study (Protzko, Aronson, & Blair, 2013) found that reading to children in an interactive manner raise the intelligence of young children. In their study the control group's IQ rose by more than six points when they have been interactively read to.

4.2.5 Interaction during digital and traditional reading

Also, studies (Unsworth, 2006; Kim, Anderson, & Anderson, 2008) proposed that parent-child interactions differ according to use of a medium. For example, when using an audio book parent's mediation may be less needed because the child can comprehend the text by the narration (Doty, Popplewell, & Byers, 2002). However, according to Sigel's (1984, cited in Kim, Anderson, & Anderson, 2008) distancing theory these are parents who mediate the gap in children's cognitive (Doty et al., 2002; Wells, 1985, cited in Kim, Anderson, & Anderson, 2008; Whitehurst et al., 1988), and literacy development (Davidson and Snow, 1995, cited in Kim, Anderson, & Anderson, 2008) by encouraging them to think beyond child's present physical world. Doty et al., (2002) predicted that electronic books with narrative text have a potential use as a listening material rather than a reading material. Wells (1985, cited in Kim et al., 2008) proposed that decontextualized talk during shared book reading may develop literacy skills. The study (Smith, 2001, cited in Kim et al., 2008) revealed that when sharing the print book parent and child talked more about the meaning and story flow while CD-ROM books discouraged to focus on letter-sound and punctuation. When using an electronic device children focused more on the device itself than on the story. 'Parents were literally putting their hands over the kids' hands and saying, 'Wait, don't press the button yet. Finish this up first,' ' said Dr. Julia Parish-Morris, a developmental psychologist at Children's Hospital of Philadelphia (Quenqua, 2014).

The other line of research revealed that print books encourage more interaction in a storytime. The study (Anderson, Anderson, Lynch, & Shapiro, 2004) found that in a shared book reading with non-narrative texts parent-child interactions occurred more compared to reading with the narrative text. However, the study (Kim, Anderson, & Anderson, 2008) of a mother-child shared reading with print and digital book found that the electronic books may promote higher levels of mediation that encourages language, literacy and cognitive development. In their study, although more mother-child interaction occurred in the print book reading, more cognitively demanding talk occurred when a mother read from an electronic book to her 7-years-old child. 'There's a lot of interaction when you're reading a book with your child,' said Dr. High to The New York Times. 'You're turning pages, pointing at pictures, talking about the story. Those things are lost somewhat when you're using an e-book.' (Quenqua, 2014). Parents who used traditional books were more likely to experience a 'dialogic reading' with their children in a storytime (Quenqua, 2014).

Dialogic reading, that involves detailed questioning during the storytime and interactive reading between a child and parent, teacher, or librarian is believed to enhance young children's language and literacy skills (Boog, 2014; Lever & Sénéchal, 2011; Zevenbergen, Whitehurst, & Zevenbergen, 2003; Zevenbergen & Whitehurst, 2003). In their study (2011), Lever & Sénéchal studied 40 English-speaking 5- and 6-years old children on how a dialogic reading reading intervention improves kindergarteners' oral narrative construction. The results revealed that children's narratives and expressive vocabulary rose significantly compared to alternative treatment children.

4.3 Conclusion

There are number of researches have been conducted about impact of technology use in education on children's literacy skills and how *digital reading* affect children's learning activity. Also, studies found the benefits of storytimes, and proved the positive impact of '*dialogic reading*' style reading on children's literacy skills, especially on oral language development. No study has been found on virtual storytimes in a children's digital library in a real-time and how it affects children's literacy skills. This research aims to investigate what impact does the virtual storytimes in a digital library in a '*dialogic reading*' style have on children's literacy skills, in particular, on oral language development.

V. Theoretical Framework

Since we will use computers and the Internet for our study, our research falls into *Computer-supported collaborative learning* (CSCL) category of education psychology whereas learning takes place through social interaction using a technology. In this approach children use a technology as means of learning (Stahl, G., Koschmann, T., & Suthers, D., 2006). Of particular importance to CSCL Vygotsky's *Socialcultural theory*, Stephen Krashen's *input hypothesis,* and Sigel's *distancing theory* are overarching this study (Figure 1).

Figure 1.

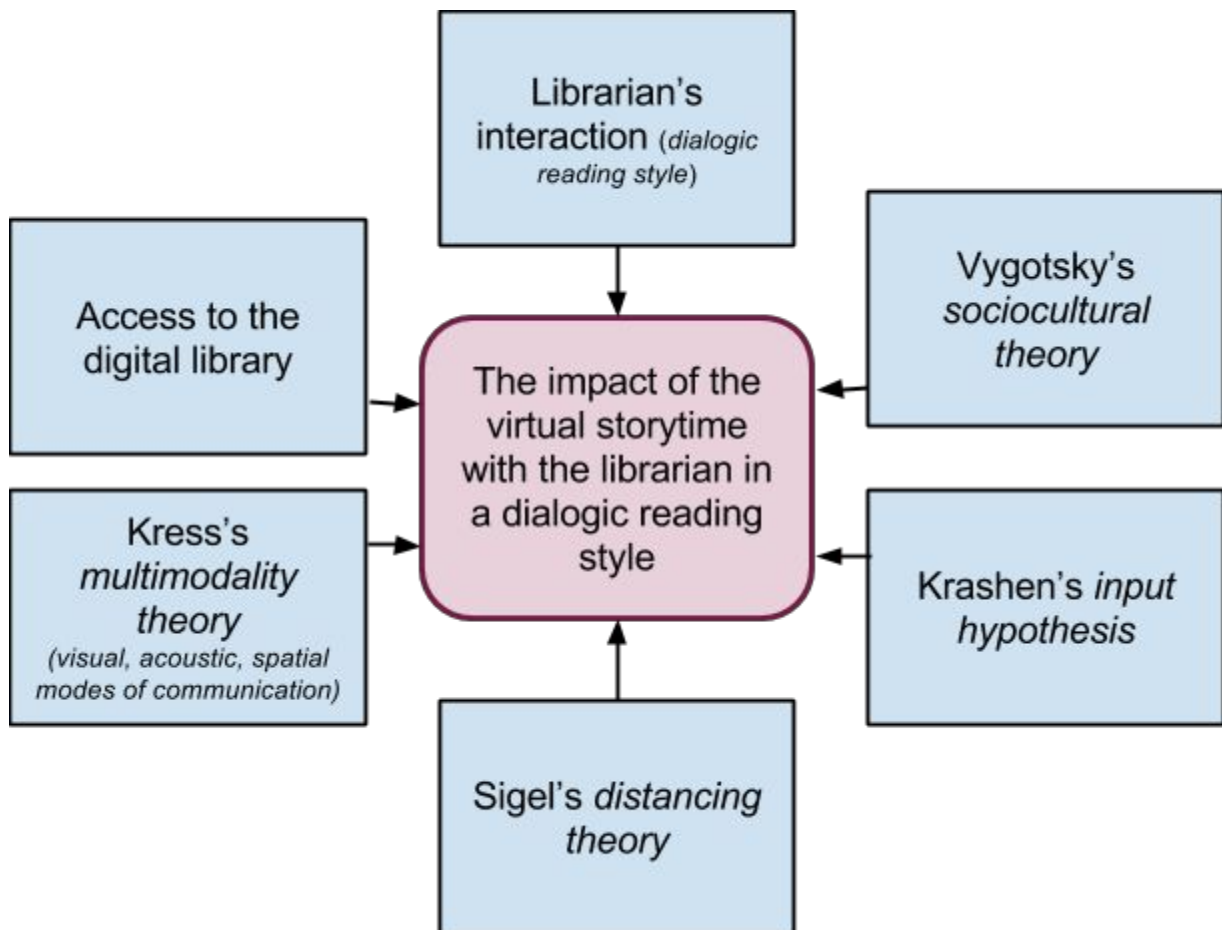*Vygotsky's socialcultural theory* argues that social interaction plays a fundamental role in cognitive development of a child and is a key factor in learning (Lantolf, 1994; "Learning Theories and Models Summaries", 2015). He invokes that cognitive development in children occurs in two levels. The first level is the *social* or *interpersonal*; the second level is the *individual* or *psychological* stage

(Bentzen, 2000). Vygotsky further claims that children's cognitive development stems from social interaction and appears first, on the social level through the interaction before it occurs in on the individual level as an internal thought (Vygotsky, 1978). 'The more opportunities for social interaction the child has, the more private speech that occurs. … the primary goal of private speech is not communication with others but *communication with the self* for the purpose of *self-regulation*, or guiding one's own thought process and actions' (Berk & Winsler, 1995, p. 35; italics original, cited in Bentzen, 2000). For example, in the learning of language, the first utterances with people are made for the purpose of communication and not result of inner thoughts. Once the language is learned well those utterances become internalized and 'allow inner speech' (Culatta, 2013). To sum up, 'language is first used for social communication. It then turns inward, becoming a tool of the mind for speaking to the self and guiding behavior' (Berk & Winsler, 1995, p. 37, cited in Bentzen, 2000).

In order to understand of Vygotsky's theory one must have an understanding of the two main principles of his social development theory that are *Zone of Proximal Development* (ZPD) and the *More Knowledgeable Other* (MKO). According to ZPD much important learning occurs when one is guided and encouraged from a skillful tutor and experience cooperative or collaborative dialogue. 'The child seeks to understand the actions or instructions provided by the tutor (often the parent or teacher) then internalizes the information, using it to guide or regulate their own performance.' (McLeod, 2015). The concept of the *More Knowledgeable Other* is the second important principle of Vygotsky's work and refers to someone who has more knowledge on a particular task or concept than the learner. In fact, the MKO is not always a person; electronic tutors may also be a MKO to guide students through the learning process (McLeod, 2015).

Using storytelling in teaching foreign languages bases on the second language acquisition theory of Stephen Krashen, i.e. *input hypothesis*. Dr. Krashen argues that the best way to help students develop fluency in a language is through *input hypothesis* (Ray, 1998). This refers to when learners comprehend language input that is slightly more advanced than their current level.

Another important theory is Sigel's *distancing theory* that is consistent with a social development theory of Vygotsky. Sigel argues that there is a distance between a person's cognition and the

immediate physical environment. (Kim, Anderson, & Anderson, 2008). He states that *distancing* can be removed by *representational competence.. Representation* refers to the concept that stands for something else. For example, the word 'house' in the text may represent the physical house. 'Representation in this context refers to *external representations*—something outside of ourselves in the physical world' (Ellsworth & Sindt, 1994). Sigel further argues that representation has a second meaning i.e. *internal representations;* it refers to images or words that stand for something and shaped in our mind (Ellsworth & Sindt, 1994). For example, if we imagine traveling between two cities we can map our route in our mind.

Since our research involves technologies that have not been present back days we also examine Gunther Kress's *multimodality* theory that influence on learning in the digital age. According to Kress, literacy, instead of referring only to reading and alphabetic writing, now includes multiple modes of communication to understand a digital text, that are visual, acoustic, spatial, and aural modes incorporated into interface of electronic devices that designed to convey a message to the reader (Gunther R. Kress, 2003).

VI. Research Design

6.1. Method

Today, in the digitized age, there is an increasing pressure to deliver better services and Information and Library professionals have to operate in a global, diverse, and complex environment efficiently, swift, and meaningfully (Gorman & Clayton, 1997). This means that the Library professionals must be aware, understand, analyze the occurrences in a more deep way to maintain a competence. In our case, to have better, deeper, and richer understanding of children's behavior in the digital libraries we will apply a qualitative research method. As Sandler notes, qualitative research methods, in Library and Information science, 'contribute to the in-depth description and understanding of experiences and interactions occurring within libraries' (1992, cited in Gorman & Clayton, 1997). It provides complex descriptions of people's experiences under the study and able to identify 'intangible factors, such as social norms, socioeconomic status, ethnicity, and religion, which is not readily apparent' during the study (Mack, Woodsong, MacQueen, Guest, & Namey, 2005). It gathers data in a natural setting rather than researcher-manipulated setting to describe occurrences

by entering the context personally (Gorman & Clayton, 1997). In addition, qualitative research method provides more interaction between the researcher and the study participant. 'Participants have the opportunity to respond more elaborately and in greater detail than is typically the case with quantitative methods' (Mack, Woodsong, MacQueen, Guest, & Namey, 2005). As Greig and Taylor note (1999, cited in Mckechnie, 2006), 'the younger the child, the less likely the child is to be heard in research'. We can 'hear' the child only by using qualitative research method, and analyze what is 'heard' verbally rather than statistically. This method enables us to understand the meaning behind children's looks, smiles, gestures which would not be apparent in a quantitative research. Indeed, the qualitative method, 'with its interpretivist focus, permits a more flexible understanding of complex and evolving social constructs' (Gorman & Clayton, 1997).

6.2. Research instrument

6.2.1 Human

In our study the researcher is a research instrument. It is the researcher who interacts with the research community, gathers information, interprets that information, analyses all data, and presents the research.

> 'When human experience and situations are the subject of the research, then the human as instrument is the only instrument which is flexible enough to capture the complexity, subtlety, and constantly changing situation which is the human experience. These complexities … cannot be figured out, cannot be understood by one-dimensional, reductionist approaches; they demand the human-as-instrument. If a person is to be understood as a person and not as a thing, then the relationship between the researcher and the other person must be a dynamic and mutual relationship' (Maykut & Morehouse, 1994)

In fact, human instrument 'is a most sensitive and perceptive data gathering tool' (Fetterman, 1989) when studying humans with its ability to feel, sense, and think.

Google Hangouts were used for online meeting in the virtual storytime. Google Hangouts is a free web conferencing and webinar service providing platform available on the Internet. It has features such as video conferencing, audio conferencing, screen sharing, webinar scheduling, and more. It operates on Android phones and in all modern browsers including Internet Explorer, Mozilla Firefox, Google Chrome or Safari. The researcher has been sending an invitation to the mothers with the link to join the online meeting and other details one day ahead of the storytime (Figure 1).
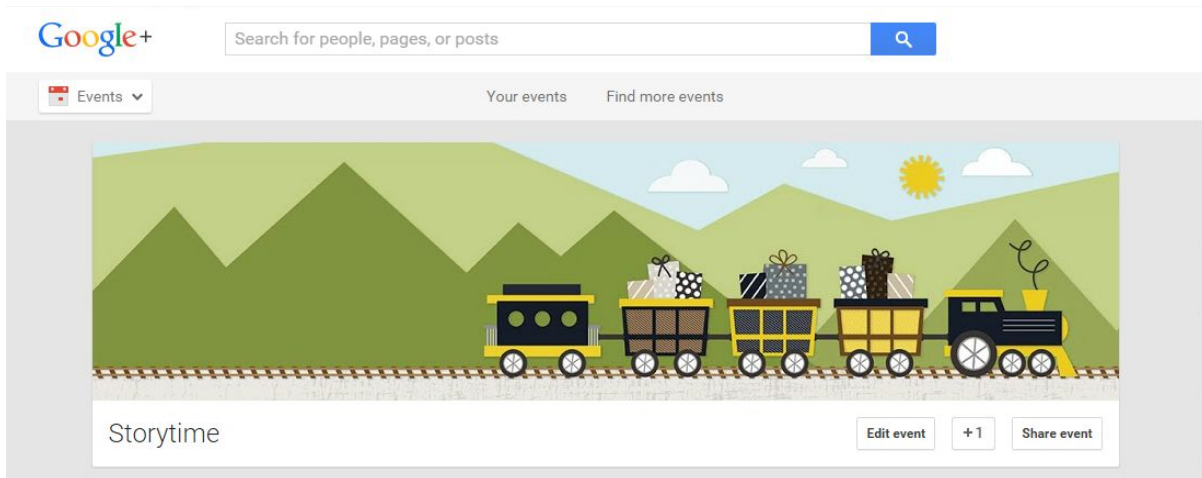
Figure 2. Google Hangouts event invitation

6.3. Methodology

Today there are almost no areas of our life that remained 'untouched' by information technology (Lee, 2000). This trend requires researchers to deal with problems beyond the traditional scope and seek solutions within virtual settings too. Natural experiments (Hammersley & Atkinson, 2007, p. 23) is needed to study occurrences when factors start to constrain social life in order to have better understanding of the context. Since the *digital reading* is becoming more popular and in the center of a debate among educators, caretakers, experts, pedagogs and librarians (Boog, 2014; Quenqua, 2014; Rich, 2013; Rowsell & Burke, 2009) there is a need for deeper research on children's use of this new medium. In our research, we used the action research along with the virtual ethnography in order to gain richer and fuller understanding by naturally experimenting and observing those experiences.

6.3.1 Action Research

As Stringer (1996) notes, Library and Information professionals must change their vision from librarian/technician to the 'creative investigator and problem solver'. Traditional research provides helpful theoretical perspectives, however, it can not be equated to experienced reality of a change. To provide better and compatible services in the children's digital libraries the researches need to be 'complemented by the creative action' (Ernest T. Stringer, 1996). In this process, action research may help provide effective and meaningful solutions to problems. It gives an ability to *visualize* the change rather than just giving general explanations on issue under investigation. We conducted the virtual storytime in a real-time using Google Hangouts with the examiner and participants twice a week to study what impact does it have on children's literacy.

6.3.2 Ethnography

The strength of an ethnographic study is its ability to learn the people that have been studying from their perspective in a natural setting rather than researcher-developed setting. Hammersley & Atkinson (2007, p. 8) note, that the value of an ethnography lies on presence of different variations in cultural patterns 'across and within' societies and requires participant observation to understand people's feelings, thoughts, and behaviors. 'Human behavior is continually constructed, and reconstructed, on the basis of people's interpretations of the situations they are in' (Hammersley & Atkinson, 2007, p. 8). As Mehan (1974, p. 249, cited in Hammersley & Atkinson, 2007) described this experience as:

> A question from [a] language development test instructs the child to choose 'the animal that can fly' from a bird, an elephant, and a dog. The correct answer (obviously) is the bird. Many first grade children, though, chose the elephant along with the bird as a response to that question. When I later asked them why they chose that answer they replied: 'That's Dumbo'. Dumbo (of course) is Walt Disney's flying elephant, well known to children who watch television and read children's books as an animal that flies.
>
> (Mehan 1974, p. 249)

We can understand those experiences only by immersing into the field and observing. These indeterminacies in human behavior cannot be evaluated by causal analysis and manipulation of

variables that are the case in quantitative research (Hammersley & Atkinson, 2007, p. 8). They require an approach that accommodates access to the meaning of those behaviors. An ethnography has a capacity to give us that access. As an observer we can learn what are people doing and interpret why are they doing from their perspective.

6.3.2.1 Virtual ethnography

We must take into account of technology since we are using computers for our virtual storytimes in order to achieve 'a useful understanding of its consequences' (Hine, 2000). A virtual ethnography therefore should be used to develop deeper understanding of technology impact and experiences that are enabled by it. As Hine (2000) notes, conducting a virtual ethnography 'opens up the possibility of gaining a reflexive understanding of what it is to be a part of the Internet'. We have been observing children while they were participating in the virtual storytime on Google Hangouts to study the impact of the virtual storytime on children's oral language development.

6.3.2.2 Access to the field

In ethnography, gaining access to the field could be a serious problem as it involves 'drawing on the intra- and inter-personal resources', and the researcher needs to be treated as very own and people have concerns about privacy (Hammersley & Atkinson, 2007, p. 40). Working with young children makes access both 'philosophical and pragmatic challenge' because of limitations in terms of their age and ability to understand the research process (Mckechnie, 2006). In our research, the access was negotiated with parents and even though, we make sure that children will not experience any harm both emotionally and physically during the research by always looking for signs of distress or discomfort. If we were faced one, we would stop the observation immediately.

6.3.2.3 Field relations

In ethnography, the researcher must put himself into the position of insider whenever possible (Lofland, 1971, cited in Hammersley & Atkinson, 2007), p. 79) and be aware of some factors that influence on access to young children. Those factors include *gender* (Pattman & Kehily, 2004; Holmes, 1998, cited in Mckechnie, 2006; Hammersley & Atkinson, 2007, p. 73), *age* (Hammersley & Atkinson, 2007, p. 77-78), *appearance* (Hammersley & Atkinson, 2007, p. 66), *differences in*

power (Robinson & Kellett, 2004, cited in Mckechnie, 2006) and *differences in ethnicity* (Holmes, 1998, cited in Mckechnie, 2006). In our research, these factors would be maintained by following ways:

- The researcher would took a mother role during the storytime. While listening to the story online, the researcher joined to storytime with her young child and the grandmother in order to not distract children as a researcher and accommodate a natural setting to minimize observer-effect. The grandmother took care of the child during the storytime giving the researcher the opportunity to observe.

- There is always the power effect between children and adults (Fine & Sandstrom, 1988, cited in Mckechnie, 2006). The researches tries her best to be warm and welcoming if any interactions occur with other children during the storytime.

- The researcher participates in storytimes and familiar with a setting. In addition, as being a mother and having a young child, she has an experience on working with children and how to deal with them. She tries to act like a mother or a child when it is needed to minimize age-effect.

- As Hammersley (2007, p. 66) notes, personal appearance can be a salient consideration. The researcher would dress up like a mother, that is similar to the people to be studied.

6.4. Data Collection

The research aims to describe how children involve in virtual storytimes in a real-time in a natural setting without disturbance from researcher. Therefore, in my research I used the following data collection techniques to keep the natural state of the study:

- Unobtrusive observation
- Field notes
- Videorecording
- Participant diaries

6.4.1 Unobtrusive observation

Traditionally, research on children's lives, experiences have studied through the views of their parents, teachers, caretakers, librarians by interviewing them (Christensen & James, 2000).

Although this type of data collection is helpful, *participant observation* is one of the most effective and appropriate data collection techniques in studying children. It enables to explore them from their own perspective rather than interviewing adults about children's experiences (Mckechnie, 2006). 'The younger the child, the less likely the child is to be heard in research', says Greig and Taylor (1999, cited in Mckechnie, 2006). Children communicate with people through smiles, eyes, facial gestures (Cohen & Stern, 1958). These expressions could be studied only through unobtrusive observation. The strength of the unobtrusive observation 'lies in the methodological weaknesses of interviews and questionnaires' (Lee, 2000) especially is the case with studying children. Also, unobtrusive observation helps, as Lee (2000) notes, 'minimize the problems of reactivity' that may occur when the participants realize that they are being observed or when self-report method is used. I have been observing children virtually when they were participating in the virtual storytime.

6.4.2 Videorecording

The screen has been recorded during the virtual storytime in order to capture facial expressions of children better. The strength of videorecording is that it 'captures and retains [data] for analysis' (Lee, 2000). As Hammersley & Atkinson, 2007, p. 39) note, *context* is an important factor of sampling. 'Taking account of variations in context is as important as sampling across time and people.' People may behave differently in different contexts. For example, the behaviors of teachers differ between in-class and out-of-class contexts (Woods, 1979). In order to avoid false generalizations the researcher makes sure that she samples within a context. Children were observed not only during the storytime but through contextual variability, i.e., conversations with parents about the storytime in a natural setting.

6.4.3 Field notes

The data were collected in the form of observation field notes using *descriptive narrative* method. This method of observation can provide what Warren R. Bentzen (2000) describes as 'a complete account of what has occurred during the time you were in a child's behavior stream.' It describes children's behaviour along with setting and situation they are in 'under naturalistic conditions, without the artificial influences of experiments in a laboratory.' (Warren R. Bentzen, 2000).

I also asked mothers to use diaries. Participant diaries are essentially a way of obtaining information specific to the individual and a way of recording events when the researcher cannot be present (Pickard, 2013). After each storytime and one more time after all sessions are over mothers shared their opinions about the storytime and its effects via emails.

6.5. Sampling

It may well be much more informative to study the entire population but this would almost always be impossible based on cost and time (Pickard, 2013). In our research we will use a priori criteria sampling approach of the purposive sampling. The logic of purposeful sampling lies in selecting information-rich cases for study in depth. (Patton, 2002). Our sample is pre-established group of children that already attend storytimes together where the researcher was a part of this group. This sample provides more natural setting and minimizes the observer-effect.

Our priori sample is the two families who live in urban cities of United States. Our sample includes two children from both families who are 3, 5 and 3, 6 respectively. They use English as an instructional language for their home-school. The oldest child from the first family, Honey (pseudonym), is 5 years old. Her mother describes her as '*she loves reading of any kinds of books, let it be encyclopedias, fiction, novel, and science books*'. Her favorite books are *Little house in the big woods, Little house in the prairie* and *Aesop's Fables.* Honey has her book corner at their home where she picks out her books and reads independently. Sometimes she reads to her little brother too. According to her mother, Honey listens to audiobooks and reads on her e-reader independently. Her younger brother, Aziz, is 3. Aziz loves when books are read to him. He is able to pick out the books from the shelves when his mother tells the title of the book. Aziz loves books with pictures. His favorite books are *Never say a mean word again, The empty pot,* and *Something from nothing.* According to his mother, he never refuses to go to the library. He owns a book container at home. Aziz also likes listening to audio books, however, he cannot use electronic devices independently yet. The person who interacts with children is a mother. She attends the traditional library with her children whenever the father is available. They read print books along with audiobooks. Neither child had any formal school experience.

The oldest child from the second family, Faith, is 6 years old. Her mother describes her as she loves to read books from a young age. She is now able to read simple books herself and is enjoying choosing easy readers from the library. They attend a library once a week. Faith is very anxious to read books with her mother when they get home from the library. Her brother, Joseph, is 3 years old. According to his mother, he also loves reading books. Joseph also attends the library with his mother and older sister once a week and looks forward to finding books on the shelves by himself. His favorite books are about trucks or construction vehicles, both fiction and non-fiction. Neither child have ever used an electronic device for reading. In this family, the person who interacts with children is also a mother.

VII. Ethics in Research

7.1 Informed Consent

Working with young children makes obtaining informed consent both philosophical and pragmatic challenge because of limitations in terms of their age and ability to understand the research process (Mckechnie, 2006). But studying people without their permission violates ethical principles of the research (Lee, 2000). In our research, the informed consent is obtained from their parents and even though, we make sure that children will not experience any harm both emotionally and physically during the research by always looking for signs of distress or discomfort. If I would face one, I stop the observation immediately. In fact, I maximize the possible benefits of study to both children and their parents where possible.

7.2 Privacy and confidentiality

I used pseudonyms for referring the children instead of their actual names in order to provide privacy and confidentiality. Their personal information would not be shared or published and used only for analysis.

7.3. Field role

There is always the power effect between children and adults (Fine & Sandstrom, 1988, cited in Mckechnie, 2006). The researches tries her best to be warm and welcoming if any interactions

would occur with other children during the storytime. In fact, the researcher participates in storytimes and familiar with the setting.

VIII. Tasks

Before conducting the virtual storytimes we pre-tested children's oral language development. Parents were asked to have a conversation on dolphins with their children. They were encouraged to ask them in a way that they usually have a talk with them about books. In other words, they were asked to choose the most natural setting for them whether it to be before they put children to sleep, are taking a walk or while snuggling their children. The gathered data were used for analysis of children's oral language. For an assessment we used the expert approved Michigan Literacy Progress Profile's Oral Language Assessment which is available online at http://www.misd.net/mlpp/assessments/oralLanguage/Oral-Language-A.pdf. The assessment is appropriate for preschoolers and designed to assess children's ability to demonstrate syntax and complexity of sentences, vocabulary, and identification and elaboration of ideas using picture prompt or free recall.

6 books were provided for the study based on our participants' suggestions and discussions with experts of reading and taking into account preference from the interview with the mothers. The examiner were trained on dialogic reading style of reading. We pre-tested and post-tested our participants oral language skills using wordless picture. The examiner has been reading one storybook in a dialogic reading style twice a week for about 15-20 minutes during 3 weeks of a time while children are following her online in real-time using Google Hangouts App. The researcher has been sending the email with the invitation and link to the online meeting. After the storytime sessions are over the same picture is showed to children and asked to tell what they know about dolphins now. This served to evaluate children's oral language development.

IX. Procedures for Data processing and Analysis

9.1. Data processing

Time is one of the important dimensions in ethnography and attempts to study the people round the clock may undermine the credibility of the research. Long engagement with a fieldwork without spending time on data analysis is not only discouraged but hard to sustain (Hammersley &

Atkinson, 2007, p. 36). Therefore, I have been writing memoranda and reflexive field notes during the observation and transcribed the video-recordings as soon as possible after the virtual storytime. 'The longer the time between observation and recording, the more troublesome will be the recall… Long bursts of observation, interrupted by periods of reflexive recording, will thus tend to result in data of poor quality' (Hammersley & Atkinson, 2007, p. 37). Transcribing the data enabled me to listen to, watch and experience the the virtual storytime one more time and offered another opportunity to reflect on them. Moreover, it helps strengthen the data (G. E. Gorman & Clayton, 1997).

9.2. Analysis

'A primary analytical tool for the information professional/ethnographer is the ability to confront enormous amounts of information and to make sense of it' (G. E. Gorman & Clayton, 1997). In our research we will use qualitative analysis applying 'constant comparative analysis' method developed by Strauss (Strauss & Corbin, 1998). This strategy provides the soundest framework for working with descriptive data (Pickard, 2007). One of major elements of constant comparative analysis is coding. In our study we will process the data in three following phases:

- *Open coding.* This is the initial phase of the analytic process and involves identifying categories from the data. 'Data' here is a word, a sentence, a paragraph from the field notes or interview and recording transcripts. The purpose of this stage of analysis is to identify discrete concepts (Strauss & Corbin, 1998). I used The Ethnograph 6.0 software for coding data that is available at http://www.qualisresearch.com. This software enables to visualize the coded data. At this stage we had hundreds of codes (The code tree file is enclosed).

- *Axial coding.* This process involves determining links between categories and subcategories. At this stage we have emerging patterns and relationships between categories (Pickard, 2007); the categories and variations are verified. At this stage we had five parent categories that are *Comprehension, Engagement, Interest, Disinterest,* and *Technical Problem* (Table 1).

Parent Code	Definition
Comprehension	Whether a child is responding to language, whether (s)he is having different

	facial expressions when (s)he is asked a question or listened to some interesting episode; whether (s)he is asking questions when (s)he didn't understand a story for clarification; whether (s)he is elaborating his/her ideas; whether (s)he is explaining the piece of a story to others in his/her own words; whether (s)he is summarizing the ideas; whether someone is scaffolding to make him/her to understand the new concept
Engagement	Whether a child displaying eye contact, happy face; giving smiles when a piece of a story is read or interacted with the examiner; feeling shy, uncertain
Interest	A child is letting know that (s)he cares; listening to attentively; staying focused; toys, pictures or colors causing an interest; staying focused; familiarity with book causing interest, paying attention
Disinterest	Whether a child is getting distracted easily; whether (s)he lacks attention; whether (s)he is not emotionally engaged; making bored facial expression; walk away; cannot stay focused; playing with things around him/her
Technical problem	Microphone is not working; echo in a background; the screen is freezing; the shown book page is not visible enough; delays

<center>Table 1. Code book</center>

- *Selective coding.* This is the final stage of analytic process and involves integrating and refining the theory generated by the data. At this stage our category has been established. This is our conceptual framework.

In addition, trustworthiness is maintained through member checking with parents and the examiner for complementation and confirmation.

X. Results

10.1. Cognitive and behavioral engagement

Honey's story

Honey is 5 years old girl. She loves reading books. She started reading at very early ages when her mother was teaching her older sister how to read. Honey has a good memory; she catches new words, phrases very fast even she is not focused and busy playing. She likes both reading books and being read to. Honey likes encyclopedias, fiction, novel, science books. Her favorite books are: *Little house in the big woods*, *Little house on the Prairie* by Laura Ingalls Wilder and Garth Williams and *Aesop's fables*. She loves books that teach manners and has a moral.

Honey loves to go to the library but she has to wait her dad to be available to drive them to the library. She does have a book corner at home. Sometimes Honey picks up books from the shelves and reads to her younger brother. Interestingly, Honey loves audio books too. She can listen to 2 hours long audiobooks without taking a brake. She also reads some books on e-reader and uses them very well independently. She learns new phrases by heart and wonders her mom.

Honey was very excited about a virtual storytime. When the virtual time is started Honey gave a pleasant smile. At the first session, she felt little shy but when the examiner asked her some basic questions Honey started to engage more comfortably. When Honey was asked what did she do today her older sister said that "We questioned Aziz about dolphins. When we asked what do dolphins eat, he said lamb". The examiner laughed. This made Honey laugh too. She gave a smile when the examiner presented them the book about dolphins. This made her feel happy.

The examiner asked what Honey does know about dolphins. She gave a smile and kept silence. Honey was feeling shy and not engaging behaviorally and emotionally. The examiner asked to raise a hand if they are a mammal. Honey was looking at screen but didn't raise her hand. Probably, she didn't understood what was said. Honey was not responding to language much. Then the examiner told that all humans are mammals and asked her question once again. Honey's older sister held Honey's hand up. Then Honey rose it high with a smile. This falls under Vygotsky's ZPD theory

where *scaffolding* comes in through mediation of older people like Honey's older sister and the examiner to assist Honey in mastering new concepts.

Honey sat closer to screen to see when the examiner showed how dolphins swim with her hands moving up and down. Honey smiled and repeated the actions. Motion prompt also may cause an interest in Honey. When the examiner's microphone stopped to work she signed out to try to fix it. Honey was waiting with boring face. When the examiner could fix her microphone and was back she read that dolphins live in a warm water and then asked Honey where do dolphins live. Honey said "In the ocean". When the examiner repeated that dolphins live in a warm water and asked Honey once again; she responded correctly. She was not responding to language and cognitively engaged.

However, towards end of the virtual storytime sessions Honey got engaged both behaviorally and emotionally. At pre-last session the examiner showed the *Jam & Honey* book by Melita Morales and Laura J. Bryant and asked what they think it's going to be about. The examiner even didn't call the names yet and Honey told "About making jam and honey" with a happy voice and smile. Jam and Honey book is Honey's brother's favorite book and they read it before several times. Familiar topics cause more interest in Honey.

When the examiner started to read the book Honey was very interested and participating. The examiner asked whether they picked the berries before. Honey didn't wait even her turn and hurried to answer: "*No. And she is not knowing that her mom is gonna come. And she is like "Oh, I'll go by myself"*", she said it like she was pretending to be a girl in the story. Honey started to elaborate her ideas which was not observed at initial sessions. When the examiner was reading the book Honey told all of a sudden "Some of girl's berries are falling". The examiner evaluated her statement and elaborated that she was eating some berries on her way home. Honey told that "It's not good". The examiner wondered and asked her "Why it's not good? Because she didn't wash them?". She said "We have to seat and then eat" with happy face.

Some personal questions may make Honey happy and feel more comfortable. Pictures also make Honey happy. She got excited when she saw the book about her favorite topic. Motion prompt also

may cause an interest like when she displayed more interest when she was shown how dolphins swim. Familiar topics also cause more interest in Honey. However, technical problems may cause disinterest.

At the last sessions, Honey started to elaborate her ideas which was not observed at initial sessions. Honey also displayed both cognitive and emotional engagement at the last sessions. She also started to respond to language by answering all questions correctly compared to demonstrating lack of cognitive and emotional engagement at initial sessions. This falls under Krashen's *input hypothesis* where students develop fluency in a language through speech that is more advanced than their current level.

In fact, Honey's mom noticed that she started to use more complex sentences after she has been participating in virtual storytimes. When she tested her prior to storytime Honey used more simple sentence structure compared to more complex sentences after the storytime sessions even though the sentences had the same meaning. The mother also commented that she was surprised by hearing long sentences without any mistakes.

During the sessions there were sound problems and it influenced to her engagement since she was not heard. Moreover, they could not see the book page well as it was difficult for the examiner to hold the book for a long time.

Overall, Honey liked the virtual storytime and wants to attend it again. After the storytime sessions were over, Honey asked her mother "Why we are not having a storytime anymore?"

Aziz's story

Aziz is 3 years old. He does not use whole sentences yet when speaking; he can label pictures saying car, house, however, he can express his ideas by telling single words and using sign language. Aziz cannot read books yet but loves being read to. His mother tells that she does not know how much he comprehends when he is read to but he responds to his mother's questions regarding the book. His mother uses both English and their native language in reading time. Aziz can pick out the book from the bookshelf when he is said a title. He likes books with pictures,

particularly truck books. His favourite ones are *Never say a mean word again, The empty pot, Something from nothing, Peter rabbit tales, Tracks in the snow, Blueberries for Sal, Jam & Honey*.

Aziz never refuses to go to the library. Aziz has his separate book container where he keeps his books. Sometimes he listens to an audiobook in English.

At the first session, Aziz refused to participate in a storytime and wanted to walk with his mom. He was not interested in virtual storytime. At the second session he was refusing to participate again. The examiner said that they will have a truck book today and showed a truck toy to children. Seeing the truck toy Aziz appeared on screen. Toys may cause an interest in younger children. Anwar was listening to attentively when the book is presented. He gave a smile when the picture of a truck appeared on their screen. Aziz responds well to pictures and toys.

The examiner showed the pictures of different trucks on screen and asked Aziz which one he liked more. Aziz was looking at screen with a smile and following the pictures with an interest. Then his mother translated him the question in their own language. Aziz said "Oqi', which means the white one. Aziz was not responding to language and his mother assisted him to understand the question which involves Vygotsky's ZPD theory where older people assist to learn new concepts. Interestingly, even Aziz was not responding to language he was comprehending the visual mode of the digital reading by responding well to pictures and toys which involves Kress's *multimodality* theory incorporated into interface of electronic devices that designed to convey a message to the reader (Gunther R. Kress, 2003).

After the storytime was over Aziz picked up his dumping truck toy and said "To'kadi", which means "It dumps". According to his mother he uttered this word for the first time for the trucks. Even that Aziz was not responding to language much the pictures and toys caught his attention and helped to utter a new word. Aziz demonstrated a good example of Vygotsky's sociocultural theory by uttering a new word after being exposed to social interaction even he was not cognitively engaged in virtual storytime.

Aziz did not show an interest in participating in other virtual storytime sessions. Younger kids may not show an interest in virtual storytimes, in particular, if they didn't master the language yet. However, Aziz responded well to pictures and toys.

Faith's story

Faith is 6 years old. She loves reading books from a young age. She can read simple books herself. Faith loves to go to the library and choose easy readers for herself to read at home. She is very anxious to read them when they get home. Faith does not use electronic devices for reading.

At the first session, Faith was online with her younger brother on time. The examiner greeted them, however, we could not hear them. Their microphone was not working. Her mom tried to fix it but she failed. Children were waiting for a storytime. Their mother typed that she will be typing their response. When the book was presented Faith was happy seeing it. The examiner started to read. Faith was listening to attentively. When the examiner asked who are the mammals here she first raised her hand with a smile while other did not. Faith was responding to language well. When children understand the language it causes an interest. When the examiner asked children to show how dolphins and fish swim Faith did it with a happy face. Motions also cause an interest in Faith. Then the examiner asked how dolphins different from fish. Faith responded "Their tail move up and down". When there was a hearing difficulty Faith asked the examiner whether "They are gonna put it in a tank of water?" for clarification. Faith was being attentive and empathetic listener during the storytime. She smiles when pictures are shown letting know that she is caring. When her younger brother distracted her by poking and jumping behind her she didn't get distracted and kept focused. Faith summarizes the story on her own words. When she was asked what she learned from the story she responded "They [dolphins] live near equator". She also shared "That even if you have a fake tail it doesn't mean that you don't have to be friends with the other dolphins".

At the last session Faith was shy and not emotionally engaged on the contrary to the first session. According to her mom it was difficult to hear the examiner. When the examiner asked Faith's brother whether nests are a comfy place for the birds his response was not heard due to technical problem. Then Faith repeated her brother's response saying "He said it, it is not a comfy place because it doesn't have any blanket." When the examiner asked her what was wrong with the

ducklings she said that "They were scared". Then the examiner prompted her to talk more by asking why they were scared. Faith was looking at screen but she didn't responded. Then the examiner elaborated saying that "Ducklings were scared to go to the water, right?". Faith nodded her head with a smile. Then the examiner asked her whether her mother tells her to do things that she is scared of. Faith smiled and said "Yeah". The examiner: "Can you give some examples?" Faith did not respond. Probably she did not hear what the examiner said. Then the examiner asked "What does your mom encourage you to do?". Faith looked at her mom. Probably there was hearing difficulty. Then her mom repeated the question. Faith said "Reading". The examiner asked her what did she learn from the story. Faith was swinging on her chair looking at screen with a smile, then she said "The little quack was brave when he ran into water". Even there was hearing difficulties and freezing screen Faith demonstrated an interest and stayed focused. She responds well to language, pictures and motions.

Joseph's story

Joseph loves reading books. He attends the library with his mom and two older sisters once a week and looks forward to finding books on the shelves by himself. He likes books about trucks or construction vehicles, both fiction and nonfiction. He has never used an electronic device for reading.

At the first session Joseph and his sister were online on time for the storytime. But their microphone was not working and their mother tried to fix it. Also, the examiner decided to wait for the other two kids. This delay caused loss of attention in Joseph; he got distracted with things around the computer desk. Finally, when the examiner demonstrated the cover of the book Joseph gave a quick look and smiled. Pictures cause interest in Joseph, too. When the examiner asked Joseph what swims in water but is not fish he was playing with things around him. Then his mother prompted him to answer. Joseph looked at screen and said "Dolphin". When the examiner started to read the book Joseph turned back to play. When children were asked "Who are mammals here, raise your hand", Joseph didn't pay attention and kept playing. When the examiner repeated the question he looked at his sister who was holding her hand up. This caught Joseph's attention and he rose his hand, too. When the examiner started to read Joseph wanted to pick up some stuff from the shelves. His mother made him to sit in front of the computer. The examiner showed how does a dolphin

swim by waving her hand up and down. Joseph stopped playing and looked at screen. He is interested when there is a motion. He showed the same movements and came closer to see the pictures. When the examiner started to read Joseph also started playing. At the first session, Joseph was not emotionally and behaviorally engaged. He lost his attention and focus fairly soon. He got distracted often times and kept playing with things around him.

In the contrary, at the last session he demonstrated more interest, engagement, eye contact and focus. When the examiner presented the *Little Quack* book Joseph commented her saying "Quack!" with a happy face. The examiner supported him and asked him "What are baby ducks called?". Joseph said: "Ducklings" with a smile. The examiner asked "Where do ducks live?". Joseph responded "In the nest" even though he was not asked yet. The examiner evaluated his response and prompted him to talk more by saying "In the nest! Very good! Do you think it's comfy place to live?" Joseph was listening with a smile and said "No". The examiner still prompting him to say more "Why not, Joseph?". He said "Coz it has no any blankets". There was a sound problem and the examiner could not hear him. Then she said "It's because of what?" Joseph was looking at the ground with a smile and not saying anything. Then the examiner asked his sister to repeat his response "Faith, you can tell us if he is not saying it again". She said "He said it.. it is not a comfy place because it doesn't have any blanket." The examiner explained them that "It is a comfy place for ducklings because they all can meet together in their nest." When she showed them the rubber duck Joseph came closer and looked with an open mouth. He shows an interest when there are pictures and toys are presented. When the examiner was asking questions from other kids Joseph turned his back and started playing with the chair. The examiner said: "Look at the little quack!"; she showed the picture. Joseph turned to the screen and gave a smile. The examiner asked him "Joseph, make me a scared face." He turned to his side and pretending that he is thinking. Then he told to his mom: "When I am scared I close my eyes" and he closed his eyes with his both hands. The examiner: "The duckling is closing his eyes just like you, Joseph." He looked at screen and gave a smile. Then the examiner questioned his sister and Joseph started playing his chair again. When the examiner said "splash" he looked back at screen. The examiner "How many ducklings are in the nest?" Joseph said "Two" even he was not asked yet. "How many in the water?" Joseph: "Three." "Do you think he is gonna jump into water?" He said "Yes" with a smile.

Joseph catches up new words easily even he was not paying attention. When children were asked what do dolphins eat Joseph's sister responded "Seaweed". When he was post-tested he said that dolphins eat seaweed where his pre-test response was "I don't know".

Joseph gets distracted easily, however, when there are pictures and toys are presented he pays attention. He responds visibly well to sound, color, pictures, and toys. Even Joseph showed little interest at the first session the new words were observed in his vocabulary after the storytime sessions.

10.2. Oral Language development

Honey's pre-test data was lost since her mother informed it got deleted from her device before sending to the researcher. As for comparison, the data that has been gathered by the examiner at the beginning of the storytime by asking each participant about what do they know about dolphins was used. In addition, the data from the participant diaries are also used for the assessment. Before the storytime Honey used very simple, basic language consisting only of one noun and one verb with little use of pronouns on some her sentences (Table 1). She didn't elaborate her ideas with past experiences. However, her scores were higher after the storytime .

Child's name	*Before the storytime*	*After the storytime*
	What do you know about dolphins?	
Honey	They blast air. They breast mommy.	They eat fish. They get out of water to breathe. They live in water. Hmm.. They use flippers to swim. And...They are mammals. This is what I know about dolphins.
Joseph	They swim	They live in the ocean
Faith	They have holes to breathe	They have holes to breathe
	Where does a dolphin live?	

Honey	In water	They live in water
Joseph	In the ocean	They live in the ocean
Faith	Ocean	In the ocean
Do you know how do they breathe?		
Honey	Jumping to the air	Jumping to the air. They get out of water to breathe.
Joseph		No
Faith	They have holes to breathe	They have holes to breathe
What do you think, a dolphin is a fish, bird or mammal?		
Honey	Fish	Mammal
Joseph	Dolphin	I don't know
Faith		Mammal
What sound does a dolphin make?		
Honey		
Joseph		
Faith	Squeaky sound	They make a squeaky sound
How do they eat food? What do they eat?		
Honey	Sardine	Their babies doing milk from their moms. The pod! Male dolphins gather around the little dolphins when danger is coming.
Joseph		No. Seaweed!

Faith	Hmm..	I don't know
How are dolphins different from fish?		
Honey	{lost data}	They are mammals. *[Oh, what do the mammals do?]* They hunt. *[Mammals?]* Yeah, in water. Their babies doing milk from their moms and baby fish don't drink milk.
Joseph		They have one tails
Faith		I don't know
How do dolphins swim?		
Honey	{lost data}	Using flippers
Joseph		They move their tails
Faith		With their flippers
What would you do if you discover the hurt baby dolphin?		
Honey	{lost data}	I would put it in big, big tank of water and
Joseph		Take it to the hospital.
Faith	I don't know	I'll help it. *[How?]* Take it to the animal hospital.

Table 2. Pre- and post-test result comparison

Honey's mom wrote that she started to use more complex sentences after she has been participating in virtual storytimes. When she tested her prior to storytime Honey used more simple sentence structure compared to more complex sentences after the storytime sessions even though the sentences had the same meaning. The mother also commented that she was surprised by hearing long sentences without any mistakes.

There more elaboration of ideas were observed when she was post-tested. She was able to relate elements incorporating past experiences and knowledge. She said:

They are mammals. [Oh, what do the mammals do?] They hunt. [Mammals?] Yeah, in water. Their babies doing milk from their moms and baby fish don't drink milk. The pod! Male dolphins gather around the little dolphins when danger is coming (Table 1)

As for Aziz, his pre-test data was also lost and he participated in only one session; thus he was not post-tested. Even though he uttered the new word for the first time just after the storytime. After the storytime was over Aziz picked up his dumping truck toy and said in his native language "To'kadi", which means "It dumps". According to his mother he uttered this word for the first time for the trucks. This falls under Vygotsky's sociocultural theory where social interaction may cause language development before the cognitive development of a child.

As for Faith, there no significant changes in syntax, vocabulary or elaboration were observed. She elaborated some her ideas after the storytime where she responded "I don't know" when she was pre-tested. When she was asked what would she do if she discovers the hurt baby dolphin she said **"**I'll help it. [*How?*] Take it to the animal hospital."

Though Joseph showed less interest, he participated in all sessions. He mainly stayed unfocused, however, his post-results showed slight increase in his vocabulary and almost no changes in syntax and elaboration. He responded that "They [dolphins] move their tails" moving his hands up and down when they swim. This episode caught his attention in the storytime. He was responding well to motion, pictures and toys rather than text.

Our results are consistent with Doty et al.'s study (2002) that revealed that digital storybooks had a positive effect on children's retelling skills. The current research is also consistent with Kuhl's (2015) findings that concluded that social experience is a bridge to linguistic development. Moreover, there are similarity in results with Lever & Sénéchal's (2011) research that revealed that

children's narratives and expressive vocabulary rose significantly with dialogic reading intervention compared to alternative treatment children.

XI. Conclusion

The study follows four children (aged 3-6) participating in the virtual storytime in a form of the real interaction with the examiner that follows dialogic reading style and how this virtual environment influences on children's oral language development. The results from this study showed that there was an increase in younger children's vocabulary, however, it is difficult to keep them focused in virtual storytime. They can catch new words when they are exposed to new concepts even they were mostly unfocused. For older group of children there was an increase in elaboration of ideas and syntax. In addition, older children found this method of learning enjoyable.

The study also revealed that delays and problems in technology such as freezing screen and hearing difficulty may cause loss of attention in children. Moreover, children could not see the book page when the examiner was reading from it turning it towards herself. Hence, research with more advanced technologies and different formats of the books are necessary. Also, further exploration with a larger sample size and different culture is warranted. Having a deeper understanding of these issues is paramount for young children's literacy development.

XII. Research limitations

This research had several limitations. First and foremost, the pre-test data for the first family was got deleted before the mother was able to send it to the researcher. Thus I missed the pre-test data for comparison and used data that have been gathered during the storytime to study children's cognitive and behavioral engagement. As for the comparison of oral language skills the data from mother's diary were used. Also, the study was limited by small size of sample in terms of numbers and diversity of cultures. The participants represented the narrow range of cultural diversity. Children from different cultures may react other way. The larger sample size with more diversity would benefited the results. Moreover, I had little time for study of children; only 6 virtual storytime sessions were conducted. The prolonged time for study would have increased the accuracy of results.

XIII. Future research

The possible improvements to study the impact of the virtual storytime in a dialogic style on children's literacy development could have been choosing the larger sample size with more cultural diversity. This would benefit the results. Also, setting up more virtual storytime sessions for study would allow to gather more qualitative data and have increased the accuracy of results. Needles to say, research with more advanced technologies and different book formats are necessary.

XIII. References

1. Anderson, J., Anderson, A., Lynch, J., & Shapiro, J. (2004). Examining the effects of gender and genre on interactions in shared book reading. *Reading Research and Instruction*, *43*(4), 1–20. http://doi.org/10.1080/19388070409558414

2. Bhattacharjee, Y. (2015). Baby brains: The first year. National Geographic, Jan. 2015, 70-71.

3. Boog, J. (2014). *Born reading : bringing up bookworms in a digital age--from picture books to ebooks and everything in between*. New York: Touchstone Books.

4. Cohen, D. H., & Stern, V. (1958). *Observing and recording the behavior of young children.* Teachers College Bureau of Publications.

5. Committee on the Prevention of Reading Difficulties in Young Children. (1998). *Preventing reading difficulties in young children*. Washington, DC: National Academy Press.

6. Dickinson, D. K., De Temple, J. M., Hirschler, J. A., & Smith, M. W. (1992). Book reading with preschoolers: Coconstruction of text at home and at school. *Early Childhood Research Quarterly*, *7*(3), 323–346. http://doi.org/10.1016/0885-2006(92)90025-T

7. Doty, D. E., Popplewell, S. R., & Byers, G. O. (2002). Interactive CD-ROM Storybooks and Young Readers' Reading Comprehension. *Journal of Research on Technology in Education*, *33*(4), Vol.33(4).

8. Ellsworth, P. C., & Sindt, V. G. (1994). Helping "AHA" to Happen: The Contributions of Irving Sigel. *Educational Leadership*, *51*(5), 40–44.

9. Fetterman, D. M. (1989) Ethnography: step by step. Newbury Park, Calif: Sage Publications, p. 41.

10. Gorman, G.E. & Clayton, P. (1997). *Qualitative research for the information professional : a practical handbook*. London: Library Association Publishing.

11. Gunther R. Kress. (2003). *Literacy in the new media age*. London: Routledge.

12. Hammersley, M., & Atkinson, P. (2007). *Ethnography : principles in practice* (3rd ed..). London ; New York: Routledge.

13. Hine, C. (2000). *Virtual ethnography*. London ; Thousand Oaks Calif: SAGE.

14. Kim, J. E., Anderson, J., & Anderson, J. (2008). Mother-child shared reading with print and digital texts. *Journal of Early Childhood Literacy*, *8*(2), 213–245. http://doi.org/10.1177/1468798408091855

15. Lantolf, J. P. (1994). Sociocultural Theory and Second Language Learning: Introduction to the Special Issue. *Modern Language Journal*, *78*(4), 418–420. http://doi.org/10.1111/j.1540-4781.1994.tb02058.x

16. Lay-Dopyera, M. (1990). *Becoming a teacher of young children* (4th ed..). New York: McGraw-Hill.

17. Lee, R. M. (2000). *Unobtrusive methods in social research*. Buckingham England: Open University Press ; Philadelphia: Open University Press.

18. Lefever-Davis, S., Pearman, C., (2005). Early Readers and Electronic Texts: CD-ROM Storybook Features That Influence Reading Behaviors. *The Reading Teacher,* 58, 446–454. doi:10.1598/RT.58.5.4

19. Leseman, P. P. M., & De Jong, P. F. (1999). Home Literacy: Opportunity, Instruction, Cooperation and Social-Emotional Quality Predicting Early Reading Achievement. *Reading Research Quarterly*, *33*(3), 294–318.

20. Lever, R., & Sénéchal, M. (2011). Discussing stories: On how a dialogic reading intervention improves kindergartners' oral narrative construction. *Journal of Experimental Child Psychology*, *108*(1), 1–24. http://doi.org/10.1016/j.jecp.2010.07.002

21. Mckechnie, L. (2006). Observations of babies and toddlers in library settings. *Library Trends*, *55*(1), 190–201.

22. McLeod, S. (2015). Lev Vygotsky. Retrieved from http://www.simplypsychology.org/vygotsky.html

23. National Assessment of Adult Literacy (NAAL). (2013). Retrieved March 14, 2015, from http://nces.ed.gov/naal/perf_levels.asp

24. Parish - Morris, J., Mahajan, N., Hirsh - Pasek, K., Golinkoff, R. M., & Collins, M. F. (2014). Once upon a Time: Parent-Child Dialogue and Storybook Reading in the Electronic Era. *Mind, Brain, and Education*, *7*(3), 200–211. doi:10.1111/mbe.12028

25. Pickard, A. J. (2007). *Research methods in information*. London: Facet.

26. Quenqua, D. (2014, October 11). Is E-Reading to Your Toddler Story Time, or Simply Screen Time? *The New York Times*. Retrieved from http://www.nytimes.com/2014/10/12/us/is-e-reading-to-your-toddler-story-time-or-simply-screen-time.html

27. Ray, B. (1998). Fluency through TPR storytelling : achieving real language acquisition in school (2nd ed..). Berkeley, CA: Command Performance Language Institute.

28. Resta, P. & Laferrière, T. (2007). Technology in Support of Collaborative Learning. *Educational Psychology Review*, 19, 65–83. doi:10.1007/s10648-007-9042-7

29. Rich, M. (2008, July 27). Literacy Debate: Online, R U Really Reading? *The New York Times*. Retrieved from http://www.nytimes.com/2008/07/27/books/27reading.html

30. Ronimus, M., Kujala, J., Tolvanen, A., & Lyytinen, H. (2014). Children's engagement during digital game-based learning of reading: The effects of time, rewards, and challenge. *Computers & Education*, *71*, 237–246. doi:10.1016/j.compedu.2013.10.008

31. Rowsell, J., & Burke, A. (2009). Reading by Design: Two Case Studies of Digital Reading Practices. *Journal of Adolescent & Adult Literacy*, *53*(2), 106–118. http://doi.org/10.1598/JAAL.53.2.2

32. Stahl, G., Koschmann, T., & Suthers, D. (2006). Computer-supported collaborative learning: An historical perspective. In R. K. Sawyer (Ed.), Cambridge handbook of the learning sciences (pp. 409-426). Cambridge, UK: Cambridge University Press.

33. Social Development Theory (Vygotsky). (2015). Retrieved from http://www.learning-theories.com/vygotskys-social-learning-theory.html

34. Strauss, A. and Corbin, J. (1998). Basics of Qualitative Research: techniques and procedures for developing grounded theory, London, Sage.

35. Study finds downfall of digital readers during storytime. (2014, October 29). Retrieved March 5, 2015, from http://abc7news.com/372227/

36. Unsworth, L. (2006). *E-literature for children enhancing digital literacy learning*. London ; New York: Routledge.

37. Vandewater, E. A., Rideout, V. J., Wartella, E. A., Huang, X., Lee, J. H., & Shim, M. (2007). Digital Childhood: Electronic Media and Technology Use Among Infants, Toddlers, and Preschoolers. *Pediatrics*, *119*(5), e1006–e1015. doi:10.1542/peds.2006-1804

38. Vygotsky, L.S. (1978). *Mind in Society*. Cambridge, MA: Harvard University Press.

39. Vygotsky, L.S. (1962). *Thought and Language*. Cambridge, MA: MIT Press.

40. Warren R. Bentzen. (2000). *Seeing young children : a guide to observing and recording behavior* (4th ed..). Albany: Delmar.

41. Whitehurst, G. J. (n.d.). Dialogic Reading: An Effective Way to Read to Preschoolers. Retrieved March 22, 2015, from http://www.readingrockets.org/article/dialogic-reading-effective-way-read-preschoolers

42. Whitehurst, G. J., Epstein, J. N., Angell, A. L., Payne, A. C., Crone, D. A., & Fischel, J. E. (1994). Outcomes of an Emergent Literacy Intervention in Head Start. *Journal of Educational Psychology*, *86*(4), 542–555.

43. Zevenbergen, A. A., & Whitehurst, G. J. (2003). Dialogic reading: A shared picture book reading intervention for preschoolers.

44. Zevenbergen, A. A., Whitehurst, G. J., & Zevenbergen, J. A. (2003). Effects of a shared-reading intervention on the inclusion of evaluative devices in narratives of children from low-income families. *Journal of Applied Developmental Psychology*, *24*(1), 1–15. http://doi.org/10.1016/S0193-3973(03)00021-2

PreK - First Grade Oral Language Sample Scoring Rubric

Michigan Literacy Progress Profile

(Available at http://www.misd.net/mlpp/assessments/oralLanguage/Oral-Language-A.pdf)

Syntax

4 - Uses appropriate syntax of the English language with complex sentences. Regular and irregular plurals and past tenses are used correctly.

3 - Uses appropriate syntax of the English language. Regular plurals and past tenses are used correctly. Irregular forms are not.

2 - Uses correct English syntax for very simple sentences and inappropriate use of plurals and past tenses.

1 - Uses very little correct syntax of the English language, and inappropriate use of plurals and past tenses. May use only present tense, even when prompted. No complete sentences used.

Vocabulary

4 - Uses interesting vocabulary some of the time, including use of descriptive adverbs and/or adjectives.

3 - Uses basic language consisting mostly of nouns and verbs with some use of adjectives.

2 - Uses very simple, basic language consisting mostly of nouns and verbs with little use of adjectives.

1 - Unable to name some of the elements of the picture. Lack of vocabulary impedes storytelling.

Elaboration

4 - Relates the elements in the picture while using extensive prior knowledge and past experiences. The narrative is substantive and well organized.

3 - Relates the elements in the picture incorporating past experiences and prior knowledge.

2 - Uses a simple sentence or two while relating the elements in the picture to each other.

1 - Gives labels for elements in the picture; i.e., boy, house, etc.

Oral Language Sample

Preschool - First Grade

Individual Score Sheet

Pre-test

Student: *Joseph*   Grade *Preschool*   Date *4/8/2015*

Enter the number of points given to the student after each task.

No.	Content	Score
1.	Syntax	2
2.	Vocabulary	2
3.	Elaboration	1

Picture Content Suggestions

Check types of pictures used with child.

CS Child selected

TS Teacher selected

CS TS

❏ ❏ School related (children playing with blocks)

❏ ❏ Home related (children getting into car or on bus, a few adults and children in a family)

❏ ❏ Sports related (soccer or basketball game)

❏ ❏ Pet related (child feeding dog)

❏ ❏ Chore related (people picking apples)

❏ ❏ Urban street scene with people of different ages

❏ ❏ Other—describe *Animals*

Oral Language Sample

Preschool - First Grade

Individual Score Sheet

Pre-test

Student: *Faith*   Grade *Preschool*   Date *4/8/2015*

Enter the number of points given to the student after each task.

No.	Content	Score
1.	Syntax	4
2.	Vocabulary	3
3.	Elaboration	3

Picture Content Suggestions

Check types of pictures used with child.

CS Child selected

<u>TS Teacher selected</u>

CS TS

❏ ❏ School related (children playing with blocks)

❏ ❏ Home related (children getting into car or on bus, a few adults and children in a family)

❏ ❏ Sports related (soccer or basketball game)

❏ ❏ Pet related (child feeding dog)

❏ ❏ Chore related (people picking apples)

❏ ❏ Urban street scene with people of different ages

❏ ❏ Other—describe *Animals*

Oral Language Sample

Preschool - First Grade

Individual Score Sheet

Post-test

Student: *Joseph*   Grade *Preschool*   Date *5/25/2015*

Enter the number of points given to the student after each task.

No.	Content	Score
1.	Syntax	2
2.	Vocabulary	3
3.	Elaboration	2

Picture Content Suggestions

Check types of pictures used with child.

CS Child selected

TS Teacher selected

CS TS

❏ ❏ School related (children playing with blocks)

❏ ❏ Home related (children getting into car or on bus, a few adults and children in a family)

❏ ❏ Sports related (soccer or basketball game)

❏ ❏ Pet related (child feeding dog)

❏ ❏ Chore related (people picking apples)

❏ ❏ Urban street scene with people of different ages

❏ ❏ Other—describe *Animals*

Oral Language Sample

Preschool - First Grade

Individual Score Sheet

Post-test

Student: *Faith*   Grade *Preschool*   Date *5/25/2015*

Enter the number of points given to the student after each task.

No.	Content	Score
1.	Syntax	4
2.	Vocabulary	3
3.	Elaboration	2

Picture Content Suggestions

Check types of pictures used with child.

CS Child selected

TS Teacher selected

CS TS

❏ ❏ School related (children playing with blocks)

❏ ❏ Home related (children getting into car or on bus, a few adults and children in a family)

❏ ❏ Sports related (soccer or basketball game)

❏ ❏ Pet related (child feeding dog)

❏ ❏ Chore related (people picking apples)

❏ ❏ Urban street scene with people of different ages

❏ ❏ Other—describe *Animals*

Code Tree: VirtualStorytime

Code Families
Code Word Groups ▲

- COMPREHENSION
  - ASKINGQSTNFORCLARITY
  - DIDNTRESPONDTOLNG
  - ELABORATING
  - EXPLAINSTOOTHERS
  - RESPONDSTOLNG
  - SUMMARIZING
  - ZPD
- DISINTEREST
  - BORED
  - DISTRACTED
  - LACKSATTENTION
  - LOSINGFOCUS
  - NOEMTNLENGAGED
  - NOTENGAGED
  - STATICTXTDISTRACT
  - WALKED AWAY
  - YOUNGERKIDSNOTWANT
- ENGAGEMENT
  - DISPLAYSEYECONTACT
  - ENGAGEDBHVRLEMTNL
  - HAPPY
  - INTERACTION
  - LISTENINGTOATTENTIVE
  - MKO
  - SHY
  - UNCERTAIN
- INTEREST
  - CARING
  - FAMILIARBOOK
  - FAVORITETOPIC
  - FOCUSED
  - FUNYSOUNDN
  - MOTIONPROMPT
  - PAYSATTENTION
  - PICTUREPROMPT
  - RESPONDSTOCOLOR

```
  -RESPONDSTOPCTR
  -RESPONDSTOSOUND
  -SHOWINGINTEREST
  -SHOWINGNOINTEREST
  -STAYSFOCUSED
  -TOYPROMPT
  -VERYINTERESTED
TECHNICAL PROBLEM
  -DELAY
  -ECHO
  -FREEZINGSCREEN
  -MICPROBLEM
```