Meaning making with an iPad: a case study of one child's engagement with iPad applications within her family activity system

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MEANING MAKING WITH AN IPAD:
A CASE STUDY OF ONE CHILD’S ENGAGEMENT
WITH IPAD APPLICATIONS
WITHIN HER FAMILY ACTIVITY SYSTEM

by

Barbara M. Vokatis

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ABSTRACT

As children increasingly use digital technologies in interactions with their parents (Marsh, 2003, 2004, 2011; Robinson & Turnbull, 2005), such possibilities create new ways in which literacy is practiced (Barton, Hamilton, & Ivanič, 2000; Jewitt, 2008; Street, 1998). Yet, what the literacy field knows about interactions between children and parents comes mostly from studies on traditional print (Caspe, 2009; Halliday, 1975; Heath, 1983). The research attending to children’s interactions with technologies suggests that while young children are immersed in a culture of digital media, research on young children’s home literacy practices involving technologies is far from comprehensive.

This single-case study sought to understand the nature of interactions between a five year old child and her parents as they engage with an iPad and its applications. It employed activity theory (Engeström, 1987, 1993; Roth & Lee, 2007) and an innovative approach to grounded theory (Strauss, 1987; Strauss & Corbin, 1998). The purpose was to account for sociocultural conditions that shape such interactions and meaning making in order to theorize the development of meaning making. The guiding question was: What is the nature of meaning making in the iPad practices of our family during the first six months of my daughter Kalina’s iPad use?

As a result of my theoretical framework and data analysis, I found that meaning making on the iPad differed significantly from meaning making in apprenticeships involving traditional literacy texts. Findings from this study highlight the prominent role of tensions around objects of activity, division of labor, tool limitations, tool control, rules, and consumerism and problematize the role of parents as experts and guides. The findings thus illuminate the strikingly different nature of these interactions in comparison
to interactions with print media. When the tool is new, participants bring different perspectives especially on objects. In this process, the child interacts mostly with the tool, and thus dialogic interactions that parents strive to achieve are difficult to realize.

Findings also point to implications for further research, for using activity theory for investigating interactions, and for literacy practice.
DEDICATION

To my parents Ewa and Jan Mieszczak, who love me. Thank you for teaching me persistence and for always allowing me to achieve my dreams.

To my precious daughter Kalina and my husband Richard. Thank you for your love and for being such a crucial part of this endeavor.
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I also would like to thank the members of my dissertation committee: Dr. Peter Johnston, Dr. Kelly Wissman, and Dr. Jianwei Zhang. They provided invaluable feedback that strengthened this study in every step of this process, as well as support and encouragement, which I greatly appreciate.

I am immensely grateful to my daughter and my husband who were the participants of this research. Thanks to them and their participation I believe that I was able to shed the light on the nature of interactions around newer technologies in home settings. Here, I owe special thanks to my husband who not only agreed to being researched, but was enthusiastic and supportive. I greatly appreciate his participation, help with technological aspects of recording data, and calmness and optimism throughout this process and the entire five years of my Ph.D. studies. I also owe special thanks to my daughter. To this day, after this research is completed, I am still amazed with her curiosity and imagination in relation to the iPad that she showed during these interactions. Now, I am curious what she will think about this research when she grows up.
I am also grateful to other members of my family: my parents, my mother-in-law Barbara, my sister Halina, my brother-in-law David, and my sister-in-law Lynne for their wonderful support and love. Without their help I would not have been able to complete such a challenging endeavor.

Lastly, I would not have been able to finish this Ph.D. program without the drive and motivation that I was brought up with by my parents in my native Poland.
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Chapter One: Introduction

Research Question Embedded in My Family Context

This research is a result of my observations, experiences, and recognition that there is not enough research that would describe how young children make meaning with technology.

As Kalina’s mother, I have been observing her early engagement with technology since her birth. Over time, it has been fascinating to see the nature of these interactions and how Kalina uses technology both out of curiosity over a novelty and then to advance her interests. For instance, by watching YouTube videos, on her own laptop or family computer, she developed an interest in space. By the time Kalina was four years old my husband and I began thinking about buying a tablet on which she could read books, beyond reading traditional books. At the same time, I thought about researching these new reading interactions. However, upon investigating various tablets, my husband disliked all of them and said, “If I read books with Kalina on the screen, it better be a good quality device.” His concern led us to the iPad. After purchasing an iPad, we learned that the iPad is not just a tool that can be used as a digital reader, but that it opens possibilities for many types of applications, both educational and for entertainment. Therefore, I expanded my research focus. It became fascinating to think what kinds of applications Kalina would be especially drawn to and why. I intended, still, to study interactions around ebooks, but I would also study Kalina’s interactions around other apps.

As I read literature pertaining to research on young children and literacy interactions, I discovered that, although the literacy field knows a great deal about
children’s meaning making in interactions with parents around traditional print and
everyday conversations, research on interactions with current technologies did not
describe in depth the kinds of opportunities for meaning making and how these processes
develop over time. In particular, I noticed that there was a need for a descriptive,
revelatory, single-case study that would illuminate meaning making processes in depth
and provide directions for further research. The potential to contribute to advancing this
knowledge was a tremendous motivating factor for me as a researcher.

Based on my research interests, the gaps in literature, and activity theory, I arrived
at the following research question: What is the nature of meaning making in the iPad
practices of our family during the first six months of my daughter Kalina’s iPad use?

**Background to the Study**

Recent technological and societal changes in modern societies have impacted
many aspects of communication. These changes influence not only how literacy is
practiced in a range of contexts but also what it means to be literate in societies that
increasingly utilize diverse communicational resources (Jewitt, 2008). New ways of
communicating encourage researchers to conceptualize learning, communication, and
literacy in much broader and complex terms, taking into consideration influential
sociocultural conditions. Kress (2003) highlights:

> It is no longer possible to think about literacy in isolation from a vast array of
social, technological and economic factors. Two distinct yet related factors
deserve to be particularly highlighted. These are, on the one hand, the broad
move from the now centuries long dominance of writing to the new dominance
of the image and, on the other hand, the move from the dominance of the medium
of the book to the dominance of the medium of the screen. These two together
are producing a revolution in the uses and effects of literacy and of associated
means for representing and communicating at every level and in every domain.
(p. 1)
The social context of the family plays an important role in understanding how children make meaning of texts (Kress, 2003). As Kress (2003) notes, today knowledge is represented by a variety of rapidly changing modes, many of which are accessed through technology. These new representations, as reflected in different media, influence children’s experiences with literacy and are changing the social context of the family. This has led to inevitable questions about what currently counts as literacy in early childhood (Razfar & Yang, 2010) and about the nature of interacting and learning with new media. Ultimately, understanding how children make meaning of digital technologies in their homes could have implications for the use of new media in other social settings, including but not limited to school.

Two perspectives: New Literacies Studies (hereafter, NLS) and multiliteracies are the springboard for this study. Each has reconceptualized the ways researchers look at and define literacy. The perspectives have also tremendously influenced recent research on literacy, building on such disciplines as discourse studies, critical literacy (Fairclough, 1985; Lankshear & McLaren, 1993; Luke, 1996; Street, 1995), and genre studies (Cope & Kalantzis, 1993). NLS, a perspective that is central in theorizing literacies as socially, culturally, and historically situated (Barton, Hamilton, & Ivanič, 2000; Jewitt, 2008; Street, 1998), focuses on literacy events and practices in everyday lives as well as on documenting literacy events in many different local contexts. This “marks a shift in focus from the idea of literacy as an autonomous neutral set of skills or competencies that people acquire through schooling and can deploy universally to a view of literacies as local and situated” (Jewitt, 2008, p. 244). NLS also illuminates the ways in which global literacy practices (for instance, popular culture) intertwine with local practices (such as
children’s literacy practices) and how this interaction influences children's development, motivation, and identity (Marsh, 2003). Similar to NLS, another perspective, “multiliteracies” (New London Group, 2006), calls for literacy pedagogy that focuses on increasing multiplicity of communicative channels. A pedagogy of multiliteracies stresses the need to address different representational modes, such as images, and their dynamics.

In this digital age, the social context of family continues to play an important role in understanding how children make meaning of texts; however, Rowe (2010) points out that in current research, the sociocultural influences that are brought to interactions and therefore substantially shape meaning making are often missing from analyses of interactions with children. Rowe cautions:

At present, most of what we currently know about early literacy learning has been shaped by emergent literacy researchers’ questions about children’s print hypotheses. . . . To create a more complex and multifocused view of early literacy learning, our observations need to consider the positioned, local, ideological, material, and spatial nature of children’s participation in literacy events. This shift does not require that we abandon emergent literacy’s insights about sociocognitive and multimodal features of literacy learning but, instead, that we look at them as part of a more complex picture that also reveals how the social and material features of children’s everyday worlds affect literacy learning and use. (pp. 134, 142)

This study takes up Rowe’s (2010) call for new research and will address two gaps in contemporary literacy research. First, there is very little research that explains literacy learning as embedded in cultural and social conditions. Interactional research pertaining to traditional books and conversations around daily activities (Britton, 1972; Caspe, 2009; Doyle & Bramwell, 2006; Halliday, 1975; Heath, 1983; Hindman, Connor, Jewkes, & Morrison, 2008; Reese, Sparks, & Leyva, 2010; Valencia, 1991; Wells, 2009, Wood, Bruner, & Ross, 1976) illuminates apprenticeships into meaning making and also underscores parental influences on children’s early language development. Yet, with the
exception of Heath’s (1983) work, that influential research does not illuminate how social and cultural conditions are embedded in children’s literacy events.

A second gap in research addressed by this study is how little attention is paid to younger children’s meaning making with digital technology over time. Although such studies exist, they are rather sparse (Vasquez & Felderman, 2013; Wang, Jaruszewicz, Rosen, Berson, Bailey, Hartle, Griebling, Buckleitner, Blagojevic, & Robinson, 2008). Most of the research on young children and technology focuses mainly on how technology is present in young children’s lives (Marsh, 2003, 2004, 2011; Robinson & Turnbull, 2005), or how it is reflected in their non-technology activities (Merchant, 2005; Pahl, 2005; Smith, 2005). To address these two gaps identified in literacy research, this study incorporates a sociocultural approach in the study of a child and her family’s interactions around technology over six months.

While not initially setting out to do so, this study illuminates the complexity of apprenticeship for meaning making. Apprenticeship is a learning model that derived from research on the situated nature of learning (Brown, Collins, & Duguid, 1989; Collings, Brown, & Newman, 1987). The roles of expert and novice within the apprenticeship model have played centrally in learning theory and literacy development (e.g. Juel, 1996; Rogoff, 1990; Saracho, 2002). The manner in which I designed this research revealed the complexity of the sociocultural components of apprenticeship. Specifically, by combining grounded theory and activity theory, I was able to account for the larger sociocultural processes (those Rowe argued are missing in current research) that played in one family’s literacy practices on an iPad over six months. Activity theory, as I will explain in depth in Chapter 3, utilizes “activity” as a unit of analysis. Activity is theorized
as cultural production; therefore, it is inclusive of cultural elements: participants, the object of their activity, and artifacts. In examining these elements of an activity, further cultural activity elements are revealed: labor distribution, inclusivity of close and tangential community ties, and culturally and historically embedded rules operating in the activity. Because activity as a unit of analysis includes these complex workings of culture, one can expect that findings resulting from activity research will reveal the complexities of culture that Rowe (2010) argues are missing in early literacy studies.

This study delivers on that count, and more. The close, cultural examination of my husband’s and my interactions with our five year old daughter Kalina on the iPad reveals an aspect of learning that, heretofore, has not been theorized in apprenticeship studies: the role that tension plays in learning. Chapters 5 and 6 detail the tensions that our family experienced as part of our cultural activity system. Much interaction research with children (Britton, 1972; Caspe, 2009; Doyle & Bramwell, 2006; Halliday, 1975; Heath, 1983; Hindman et al., 2008; Reese et al., 2010; Valencia, 1991; Wells, 2009; Wood et al., 1976) assumes an expert and novice relationship, whereby the expert gradually brings the novice along to understanding, or expertise in the activity. For our family, interactional tensions occurred on the iPad, and these significantly revealed that the expert-novice apprenticeship relationship is culturally complex, and significantly affects learning.

This study aims to contribute to a field currently open to new visions and frameworks for investigating technology and learning by combining grounded theory and activity theory to understand children’s meaning making on new digital media. This
innovative approach accounts for larger sociocultural processes that shape interactions over time and thus problematizes assumptions about apprenticeship and meaning making.
Chapter Two: Literature Review

Introduction

In this chapter, I review literature on children’s meaning making in interactions. I argue that more research is necessary in order to explain young children’s literacy practices and their implications for meaning making development in the context of the increasing role of digital technologies in children’s lives.

I draw from several strands of research to show that investigating children’s engagement with technology, with attention to meaning making and sociocultural influences, is needed. First, I introduce work that substantially advanced the state of knowledge about children’s traditional literacy development, its nature, and the role of parental involvement, in both interactions around print books and other types of conversations. This large body of literature describes apprenticeships into meaning making and literacy development in which parents, as experts, have tremendous influence on children’s learning. Thus, theories drawn from this research result in certain conclusions about the types of interactions that parents and teachers can promote in order to advance children’s literacy development. These works come from such traditions as ethnomethodology (Heath, 1983), sociocultural perspectives (Wells, 2009), and sociolinguistics (Halliday, 1975). Some of these studies are based on studying single cases of children, in many cases, researchers’ own children (Halliday, 1975). Although based on single cases, such intense investigations have been influential in advancing theory pertaining to literacy development. In addition, I present findings from studies in which researchers specifically investigated interactions around books in home settings (Caspe, 2009; Doyle & Bramwell, 2006; Hindman et al., 2008; Reese et al., 2010;
Valencia, 1991). These studies also illuminate a model of a traditional apprenticeship into literacy learning. What characterizes this vast body of literature is that it rarely includes larger sociocultural conditions that influence interactions.

Next, in order to present research on home interactions around technologies, I discuss two prominent perspectives—New Literacy Studies (Scribner & Cole, 1981; Street, 1998) and multiliteracies (New London Group, 2006) — that drive current research on literacy as social practice. These are crucial for investigating literacy in connection with new technologies. I then discuss research on older children and their meaning making with technologies, and posit that research on younger children and their interactions with technologies has yet not illuminated meaning making and its development.

Altogether, the research attending to children’s interactions with technologies suggests that while young children are immersed in digital media, research on young children’s home literacy practices involving these technologies is far from comprehensive. The educational field lacks detailed case studies of children and their families engaged with technologies over a period of time. Such case studies would more comprehensively illuminate the nature of such interactions and meaning making, using tools (both theoretical and methodological) that are capable of capturing the complexity of engagement with technology. In addition, existing studies that do mention technology focus on computers. The purpose of this research is to fill this gap, especially in the context of the latest multi-functional devices. This study will look at my daughter Kalina’s engagement with new technology (an iPad), as embedded in the conditions created for her by her parents.
In summary, this research addresses two gaps evident in the current body of literature. The first is the paucity of research that explains literacy learning as embedded in cultural and social conditions. The second pertains to inadequate attention paid to how children’s meaning making with technology develops over time and across multiple technological platforms.

**Apprenticeship into Meaning Making in Interactional Research**

While research on interaction around traditional print greatly contributes to knowledge about how young children learn how to make meaning, research on young children’s interaction around technology has not yet provided a detailed description of the development of interactions and meaning making. The accomplishments of research on interactions around literacies not related to the computer (Britton, 1972; Caspe, 2009; Doyle & Bramwell, 2006; Halliday, 1975; Heath, 1983; Hindman et al., 2008; Reese et al., 2010; Valencia, 1991; Wells, 2009; Wood et al., 1976) can inform research on interactions around technologies as well as stress the importance of studying single cases of children (Halliday, 1975). First of all, findings from research on traditional literacy practices underscore that interaction is paramount in children’s early literacy development; therefore, focusing on it is crucial. Findings also foreground parents’ roles as experts when apprenticing children in meaning making. Through apprenticeship, parents can establish opportunities for dialogic interaction with children and use language that will enhance and extend children’s meaning making. However, this line of research rarely illuminates larger social conditions involved in these processes.

I organized this section around three subheadings: interactions from a psychological perspective, interactions from a sociocultural perspective, and interactions
specifically around books in order to showcase the scope of research that has been already done around meaning making interactions.

**Interactions from a psychological perspective.** James Britton’s (1972) observations of children were influenced by psychological theories (e.g., Kelly, 1963; Piaget, 1932; Bruner, 1967; and Vygotsky, 1962) and linguistics (Sapir, 1961). He explained that life experiences leave expectations, predictions, and desires in children’s minds and that learners modify them when they encounter new experiences. According to Britton, language is an organizing principle that children use to construct a world representation in order to make sense of past and present experiences. As such, language learning begins from listening. By the time children are about two years old, most become prolific talkers. Britton stressed that it is through conversations with parents and other household members that children can experience language before they start to participate in conversations. He also underscored that these conversations are tightly connected to concrete activities and that transcription of such exchanges can be meaningless without access to the context of these conversations. For example, in the contextual commentary about talk that occurred between a 2½-year-old and a 4-year-old, Britton was able to showcase that children used talk in order to initiate activity, carry action in make-believe scenes, comment upon action, and cooperate with others.

In further conversations that Britton (1972) presented, one can see that action and language come together when children play and that, to a certain extent, language regulates their play (Vygotsky, 1962). Britton saw that one function of play is to maintain a sense of cohesion in our worlds. For Britton, play allows children to “cease operating in the actual world *via* the representation and begin instead to operate directly upon the
representation itself” (p. 118). Applied to reading, this means that when a reader evokes representations of experiences in book situations, such re-interpretation and modification involves feelings and evaluation of experiences. Britton also stressed that learning in school must build on what and how the child learned before the beginning of formal education. In this process, talking is a major contributor to learning because, as he eloquently conveyed, “learning in the most general sense, that is, making sense of the world, and learning to talk - are so closely enmeshed” (p. 130).

David Wood et al. (1976) drew attention to the importance of interaction in making meaning and learning. They stressed the role of interaction particularly in the area of skill acquisition and problem solving. They defined skill acquisition (drawing on Jerome Bruner, 1967) as “a hierarchical program in which component skills are combined into ‘higher skills’ by appropriate orchestration to meet new, more complex task requirements” (p. 89) and solving problems defined as matching means to ends while facing challenges.

In their experimental study, Wood et al. (1976) examined tutorial situations between children and parents in order to see how children responded to parental assistance. For this investigation, the researchers designed a task for every dyad to ensure it was fun, interesting, within reach of each child’s skills, and “continuous in its yield of knowledge” (p. 91). Upon the child’s arrival in the experimental room, she or he was encouraged to play with blocks that were spread on the table. After five minutes of playing, the parent-tutor would show the child how to join two blocks and if the child joined blocks together, she or he would be encouraged to continue. The researchers gave tutors a repertoire of responses to use for a variety of behaviors. They also employed a
system of scoring for the types of block manipulations, such as assisted or unassisted manipulations, and noted cases when children disassembled pieces and then either reassembled or not, as well as cases of interventions from the tutor.

In terms of tutorial assistance, Wood et al. (1976) suggested the difference in the kinds of assistance that parent-tutors gave. Tutors of 4-year-olds mostly helped children recognize discrepancies between what they attempted and what was required, and in the case of 5-year-olds, the tutorial role was assisting in difficulties. They found that tutors followed pre-set rules 86% of the time and had a tendency to offer help to 4-year-olds in many circumstances. In the instances of offering help, the researchers noticed an interesting pattern. When the child failed several times, the parent would offer him or her a block instead of asking to the child to find one, thus changing the rules based on certain behaviors.

Based on the analysis of tutoring videotapes, the authors arrived at the characteristics of the function of the tutor. At first, the tutor needs to engage the child in the requirements of the task. Then the tutor needs to simplify the task by having the learner focused on whether “the learner could recognize whether or not he had achieved a ‘fit’ with task requirements” (p. 98). The tutor also needs to model how to solve the task in an idealized way, keep the learner motivated to continue the task, help the child in recognizing discrepancies between the child’s production and task requirements, and control the learner’s frustration. As the study showed, in this apprenticeship into learning, the tutor needs to be responsive to the needs of the child and adjust his or her assistance accordingly; the tutor is in a position as an expert who engages the child in the task and the requirements.
Interactions from a sociocultural perspective. Shirley Brice Heath (1983) created a study in which children’s language development was described in two distinct communities. Trackton was a black working-class community whose older generations worked on farms, whereas Roadville was a white working-class community whose four generations worked in the mills. Heath’s elaborate ethnography of these two communities employed a vast amount of ethnographic data to answer the question, “For each of these groups, what were the effects of the preschool, home and community environment on the learning of those learning structures and uses which were needed in classrooms and job settings?” (p. 4). Data included the archives of both Winthrop College and the Carolina Library of the University of South Carolina, conversations with historians of textile mills in Piedmont, field notes, video recordings from school settings, audio recordings of 15 teachers who had small children and recorded their interactions with them, and her own audio recorded data and field notes. Field notes and audio recordings captured children’s interactions in these communities, including all the activities in which children used language.

The findings from this longitudinal study revealed that the two focal communities had distinctively different ways in which children were apprenticed into language, and that those approaches depended on the ways in which these communities structured and defined their familial roles. The findings also showed that apprenticing children into language during interactions around books was especially beneficial if parents were dialogic during those reading events. The different ways of communicating were a result of “different social legacies and ways of behaving in face-to-face interactions” (p. 11).
In terms of learning to talk, the Trackton and Roadville communities held different conceptions of parenting. While in Trackton, an entire community cared for children’s upbringing, in Roadville, children’s upbringing was more the responsibility of their parents. The communities differed in boundaries for social and physical environments in which children could communicate or were engaged in communication, the limits of the situations for talk, the patterns of questions asked by parents, and choices of language children exercised and valued. The communities also differed in the types of stories they told. Reading, in Trackton, always involved social activity with negotiated meaning, and it was used to accomplish practical goals. In Trackton, many children did not have books. Roadville parents surrounded their children with print and read to them at bedtime but taught them to listen passively. As a result, children in both communities were not seen as fit for school requirements.

Both of these communities differed from the third group she studied: townspeople. Townspeople consisted of both blacks and whites who held the power in both school and other institutions. Townspeople treated children as conversationalists from birth, and their environment was print-oriented. Parents apprenticed their children into meaning making by engaging them in many question and answer routines and extending the content of read books into everyday life. These families also had more resources and therefore their children had many experiences outside of their homes. Additionally, children were expected to produce a narrative and acquired patterns of conversation around books.

Heath’s (1983) attention to the sociocultural histories of the families she researched allowed her to explain differences in the nature of interactions in these
families. This attention and her research findings stress the importance of including sociocultural perspectives on interactions.

Michael Halliday’s (1975) attention to the sociosemantics brought new insights to the nature of children’s language development via parental apprenticeship. Halliday studied his son, Nigel, from nine months to two and a half years. He took notes on his son’s development using a notebook and pencil and then interpreted those notes every six weeks. His findings suggest that children have a linguistic system before articulating any words, and that they are able to express meaning with this system. They also use this system to transition to adult language in functional ways.

Halliday (1975) distinguished three phases of early language development:

“Phase I, the child’s initial functional-linguistic system; Phase II, the transition from this system to that of the adult language; Phase III, the learning of the adult language” (p. 33).

In Phase I, Nigel could already do a lot with his linguistic system. He could satisfy his needs (instrumental function), regulate the behavior of others (regulatory), establish contact with others, and express his individuality (interactional). Later other functions appeared and served the purpose of learning: personal (self-awareness), heuristic (oriented on others), imaginative, and informative. In Phase II, the child learned words rapidly. With rapid acquisition of words, the child also engaged in dialogue and learned to adopt social roles. Halliday wrote about the importance of social roles, “They are of general significance developmentally, since they serve both as a channel and as a model for social interaction” (p. 46). He also went on to say, “With dialogue, the child acquires a potential for adopting and assigning linguistic roles, which in turn calls for further resources in the grammar (for example, a set of options in mood — declarative,
interrogative and so on — and the structures used to realize them)” (p. 54). In this phase, the child transitions from one functional system (“functions” as “use”) to stages that lead to more abstract functions of adult language. Halliday observed that this transition started for his son in Phase II, when he systematically used rising intonation for those utterances that demanded responses and falling intonation for those that did not. Nigel also learned, in Phase II, to use grammar. Halliday stressed, “The need for a grammar arises out of the pragmatic and mathetic [relating to personal, heuristic, imaginative, and informative functions] functions” (p. 53). In Phase III, his son discovered that language has many uses.

Based on earlier research on his son, Halliday (1991) extended his initial explanation of the role of interaction in children's learning of how to make meaning. He stated, “From the beginning of life a child’s acts of meaning are joint constructions, dialogically enacted between himself and some ‘significant other’ by reference to whom he is achieving a personal identity” (p. 253). In Phase I, when the child develops protolanguage, this happens through sharing meaning potentials with others. Then, when the child transfers from protolanguage to language through dialogic meaning making through interactions, children learn that dialogue does not always involve action but that through it, people can talk about shared experiences that can be a form to express meaning. Gradually, children discover that experiences can be reconstructed through language and shared with someone who did not witness them. Dialogue also contributes to the classification of things, forming arguments and questions, and recognizing contradictions.
Gordon Wells’s (2009) longitudinal study of a group of children further enriched insight into how children undergo language socialization, particularly in terms of how they make meaning in their conversations with parents. Wells and other collaborating researchers studied 32 children, both girls and boys, from birth to their last year of elementary education. Wells and his collaborators recorded and observed half the children between ages three and a half and five and a half and selected half of the remaining group for the longitudinal research. The researchers audio recorded every child every three months over 42 months by means of radio-microphones that children wore. Observers were not present during recordings; however, transcribers called the child’s home every evening to gain all the information about the context of recorded conversations. Altogether, the researchers made 1,200 recordings and transcribed and coded all of them. They also tested children’s comprehension in a playroom at the university and interviewed parents to obtain more knowledge about the children’s environments and parental views of upbringing.

The researchers engaged in five years of analysis, explaining the sequence of children’s language development in the context of home influences. Data analysis was both quantitative and qualitative. The quantitative results showed a common sequence of language development of children involving linguistic functions (e.g., making requests), meanings that children expressed (e.g., events and relationships), and grammatical structure. They also provided evidence that children did not simply learn by imitating their parents’ talk but instead used language to communicate with the parents. They found that children were active constructors of hypotheses for language, which means that children were intentional (Harste, Woodward, & Burke, 1984) in their
communication through print. They modified hypotheses later, when they communicated with others.

The role of parents was paramount in this process, as children needed experience in conversation. Wells (2009) also found that the quantity of talk was important, but that children did not always develop quickly because they spoke a lot. It appeared that the most enriching practices were those in which parents and adults engaged in shared activities in which adults modified their speech to achieve mutual understanding, were good listeners, could guess the intentions of children, and checked those guesses with children. These attributes led to longer exchanges in which children learned about both the language and the world. In this collaborative meaning making, it was important that parents were responsive to children’s cues, incorporated children’s contributions, extended children’s perspectives, and did so without imposing a fully developed adult system. Moreover, talk was connected to certain goals and reasons for conversing. Concrete goals initiated productive conversations in which children learned about language, activities, the structure of language, and themselves. As children grew older, watching somebody engaged in an activity sparked interest in learning, and by asking curious questions, children showed that they constantly sought meaning. In these apprenticeships, parents were experts who were knowledgeable about activities that they engaged in on a daily basis.

Wells (2009) also discussed examples that demonstrated how shared interests and engagement over a TV show could result in a conversation and more possibility for learning. Interactions stimulated children to internalize (Vygotsky, 1987, cited in Wells, 2009), and later apply internalized experiences to explore other questions. He also
commented on reading, concluding that reading stories “is one of the most fundamental means of meaning making” (p. 215). He found that children’s reading experiences showed up in their play, when children took on roles and showed what characters feel and think. Wells argued that, play “provides a relatively safe area, in many ways complimentary to the imaginary worlds created by the fairy tales and other powerful stories that children hear, in which the narrative structure serves to contain and make intelligible feelings that might otherwise remain violent but inarticulate” (p. 220). In other words, reading stories allow children to understand their experiences better by relating them to others’ experiences. In storytelling, children learn about the representational power of language as conveying meaning. Wells suggested that reading and writing were a way to communicate meaning.

Wells (2009) provided data that illustrated collaborative meaning making in school, where the teacher was not always an expert but listened carefully to what children had to say. He also included a discussion of how stories helped children learn. Wells stated:

What is so important about listening to stories, then, is that, through this experience, the child is beginning to discover the symbolic potential of language: its power to create possible or imaginary worlds through words — by representing experience in symbols that are independent of the objects, events and relationships symbolized and that can be interpreted in contexts other than those in which the experience originally occurred, if indeed it ever occurred at all. (p. 177)

**Interactions specifically around books.** There is also a body of research specifically devoted to investigating interactions around print media books. This research details the types of interactions and parental language choices that contribute to children’s meaning making development, thus additionally enriching the knowledge about the nature of parental influences in a traditional apprenticeship around books. It is
important to note that what enables a joint construction of meaning, as portrayed by this literature, is parents’ and children’s mutual understanding and agreement regarding what type of activity in which both parents and children are engaged. Usually, this implies that adults read the text and interact with the child about what they have read.

Brooke Graham Doyle and Wendie Bramwell (2006) stressed that verbal interaction between children and adults is crucial as it allows children to create connections between their experiences and events encountered in books. They stated, “Children regulate their learning by asking questions of adults with whom they are interacting in the moment; this further enables children to construct meaning and make sense of text” (p. 555). Dialogic reading has a positive influence on oral language development, vocabulary development, comprehension, and learning social skills (Arnold, Lonigan, Whitehurst, & Epstein, 1994; Crain-Thoreson & Dale, 1999; Dale, Crain-Thoreson, Notari-Syverson, & Cole, 1996; Lonigan & Whitehurst, 1998; Valdez-Menchaca & Whitehurst, 1992; Whitehurst, Arnold, et al., 1994; Whitehurst, Epstein, et al., 1994; Whitehurst et al., 1988, 1999; as cited in Doyle & Bramwell, 2006).

Annemarie Hindman et al. (2008) analyzed book-related interactions in both home and school settings to see how the quality of the talk related to children’s emergent skills. Parents were encouraged to read books with children as they normally would, assuming that parents read to children, engage them in talk, and allow children to share their perspective on reading. They found that talk between parents and children in homes centered on recall, prediction, and inferring, and that these factors were predictors of vocabulary at the end of preschool.
Elaine Reese et al. (2010) reviewed experimental studies to investigate how parent training could improve children’s literacy. In the studies they reviewed, parents were trained to ask open-ended questions, expand children’s responses, and connect to other experiences. As with Hindman et al.’s (2008) research, these studies also assumed that parents read to their children, engaged them in talk, and children shared their perspectives on reading. Across studies, Reese et al. (2010) found different results, including expressive language gains for children (Whitehurst et al., 1988; Huebner, 2000, as cited in Reese et al.), receptive vocabulary (Chow et al., 2008, as cited in Reese et al.), and metalinguistic and print skills (Chow and McBride-Chang, 2003; Chow et al., 2008; Ezell et al., 2000, as cited in Reese et al.). Reese et al. concluded that “shared book-reading interventions that train parents to adopt dialogic reading techniques are an effective way to enhance” (p. 107) children’s expressive and receptive vocabulary and metalinguistic and print skills.

Studies discussed in this section provided evidence in support of the critical role that interaction plays in children's learning how to make meaning, pointing to a traditional apprenticeship into language as a joint activity, usually around such familiar practices as reading regular books or talking about daily activities. In these activities, parents are knowledgeable others who can extend children’s thinking and meaning making by using language in ways that invite connections and learning. It appears that interaction with adults is crucial in learning how to make meaning, and that this interaction and learning start from the beginning of children’s lives. In particular, interaction of a higher quality, in which parents carefully listen to children’s talk and intentions and are able to extend the dialogue around what stimulated children’s interests,
is valuable. This exposure to interaction also creates an opportunity for the child to test hypotheses about how language works and to mutually construct knowledge about the world. Interactions around stories read to children are also critical for children to learn the power of language in meaning making.

**New Literacy Studies and Multiliteracies**

In this section, I discuss key concepts in reconceptualizing “literacy” as “literacies.” I follow this discussion with perspectives that underpin the way literacy is now theorized as situated in social conditions.

**Reconceptualizing literacy as multiple literacies.** The concept of multiple literacies appeared historically alongside theorizing about the conditions of the contemporary society. New social and technological realities such as fast transfer of information, the diversity of knowledge (Kalantzis, Cope, & Harvey, 2003), changes in representation and communication from print to digital media with their increasing sophistication and complexity of visual layouts (Kress & Van Leeuwen, 2001), and writing as no longer a dominant mode of representation, have influenced the ways in which many view and practice literacy.

Additionally, increasingly changing and growing possibilities for new technologies have greatly affected the ways authorship, production, and distribution are understood, creating relationships between these entities that are constantly reconfigured and without strict boundaries (Jewitt, 2008). Within this new multiliteracies framework, resources such as DVDs, CD-ROMS, the Internet, cell phones, and portable computer devices, for example, are viewed as available resources for children’s meaning making. These devices fill young children’s out-of-school literacy worlds, and in some
communities are beginning to be incorporated into their educational curricula. In addition, children are exposed to Web 2.0 online interaction, multi-user collaboration, social networking sites like Facebook, fan fiction sites, massive multi-player online games, wikis, and video- and music-sharing sites such as YouTube (Wohlwend, 2010).

All these experiences are testimony that interaction with technology is no longer individual, but based on collaboration. Identity, too, plays in the thinking about these new engagements. New conditions for technology use initiate new affordances and demands in terms of how one accesses knowledge and presents his or her identity. It is no longer face-to-face communication but also a virtual world in which a person performs her or his identity (Butler, 1990).

Twenty-first century conditions and demands contrast with industrial economies that dominated in the last century and continue to dominate in the educational system (Gee, 2004; Collins & Halverson, 2009). As Jewitt (2008) stresses, “Against this changing communicational landscape, which can be typified by diversity and plurality, the dominant view of literacy as a universal, autonomous, and monolithic entity is at best dated and in need of reconsideration” (p. 244). Street (1984) explains this dominant view as resting “on the assumption that is a neutral technology that can be detached from specific social contexts” (p. 1). Thus, the autonomous view isolates literacy from the ideological nature of literacy practice. New Literacies Studies (NLS) and multiliteracies shed light on culturally and historically situated, ideological literacies.

**New Literacy Studies.** As early as the 1980s, research started focusing its efforts into the nature of literacy and learning as intertwined with everyday interactions and social practices in a wide range of settings. Scribner and Cole (1981) found in their
longitudinal study of a community in Liberia that community members used three written scripts for particular purposes. They used Vai script for creating technical plans and diagrams concerning crafts, as well as diary entries about marriages, deaths, births and other events, while they used Arabic and English scripts for different purposes. This, according to Scribner and Cole, demonstrated that literacies are differentiated, and this differentiation is rooted in practices. Therefore, they called their framework “a practice account of literacy” in order “to emphasize that socially organized activities influence human thinking” (p. 236), with practice defined as “a recurrent, goal-directed sequence of activities” (p. 236). They also emphasized that literacy cannot be simply limited to knowing the script but rather, constitutes knowing how to apply literacy for specific purposes. Ultimately, understanding a larger social system that enables such practices is crucial. Heath’s (1983) ethnography of three communities, previously reviewed, also showed that the development of literacy competence is related to literacy uses in different communities.

Brian Street (1998) stressed that literacy has to be seen within a broader landscape of communication and that one should attend to a wide repertoire of communicative practices and how they relate to each other across multiple domains. He argued that multiple competencies beyond schooled literacy are needed in life and are valued by employers. He advocated exploring the links between school and everyday social practices as they dynamically converge in the lives of children.

Drawing attention to global relations, Gee, Hull, and Lankshear (1996) argued that a new order of the globalization of production and distribution processes has implications for the work place and education:
There is now a shift towards forms of production which employ new ways of making goods and commodities, serving more differentiated markets, or niches, through segmented retailing strategies. There is now a great deal more attention paid to the selling environment at every level of production, from design to distribution. So while the old work order stressed issues of costs and revenue, the new work order emphasizes asset building and market share. (pp. vii-viii)

These changes in the work order, as Gee et al. (1996) emphasized, have made adaptation and flexibility desired competencies in the new communication order, including new literacies. As Street (1998) stressed, “The fact that whilst employers acknowledge them [new literacies] because of their everyday experience of literacy in social practice in workplace conditions, the media and government agencies, dealing with proxy measurements and traditional schooling practices do not, indicates the need to conceptualize and study them in their social context” (p. 9). He added, “In order to do so, though, we need to develop theoretical and methodological tools that are freed from the traditional models of language...” (p. 9). Language, Street explained, is just one aspect of communication, where people employ resources such as visual images.

Literacy, tied to what people do in specific contexts, is multimodal (Kress, 2003; 2010; Kress, Jewitt, Ogborn, & Tsatsarelis, 2001; Kress & Van Leeuwen, 2001). As such, meanings are communicated, made and remade with a variety of communicational and semiotic resources including language and images, without granting language a privileged role in this process (Kress & Van Leeuwen, 2001). This means that in schools, it is important for teachers to ask about students’ literacy practices within their communities, as this knowledge can form the foundation for transforming classroom literacy practices (Larson & Marsh, 2005). NLS allows one to see literacy within social processes, and readers and writers as purposeful contributors to literacy practices (Street, 1995, as cited in Larson & Marsh, 2005).
David Barton and Mary Hamilton’s (1998) ethnographic research on the everyday literacies of a community in England additionally challenged a narrow scope of literacy and contributed to the characterization of literacy as situated. Based on this study, Barton et al. (2000) proposed six literacy propositions, which constitute a framework for a theory of literacy as social practice. The principles stress that literacy practices are purposeful, tied to different life domains, and ideological.

Multiliteracies. A group of researchers, the New London Group, met in 2006 and coined the term of multiliteracies. The New London Group argued that the theory of multiliteracies has the potential for addressing a need in education for pedagogies that are responsive to linguistic and cultural complexity. They reasoned that thinking of literacy in the plural—as literacies—could assist students in accessing the language of power and provide necessary critical engagement that would enable them to create futures they might desire. The goal of multiliteracies is to cross the borders and constraints of spoken and written language and highlight cultural and linguistic diversities and multimodal texts.

NLS and multiliteracies share many assumptions; however, multiliteracies builds on the political and critical pedagogy of Paulo Freire (2001) and on teaching writing as genres of practice (Cope & Kalantzis, 1995, cited in The New London Group). Thus, multiliteracies aims to be a socially and culturally responsible pedagogy that purposefully designs social futures (The New London Group, 1996). In essence, “Multiliteracies pedagogy can be described as developing models of effective critical engagement with student values, identity, power, and design” (Jewitt, 2008, p. 245). With social change as its aim, the framework of multiliteracies attends to culturally and linguistically diverse
and globalized societies, as well as to diverse practices and texts that circulate in those societies, including multimedia technology.

Research on Children’s Interactions with Technologies

The findings from the majority of research on children’s interactions with technologies, while insightful, do not attend to how children make meaning in interactions with technology. Instead, they detail the kinds of technologies that children use in homes and also discuss how children’s experiences with technology are reflected in their non-technology events (Marsh, 2003, 2004, 2011; Robinson & Turnbull, 2005; Merchant, 2005; Pahl, 2005; Smith, 2005). This body of work points to an immense gap in research on younger children and digital media, specifically the paucity of research describing how young children’s interaction and meaning making with digital media develops over a period of time. Although research on young children and their meaning making with technologies exists, it is rather sparse (Vasquez & Felderman, 2013; Wang, Jaruszewicz, Rosen, Berson, Bailey, Griebling, Buckleitner, Blagojevic, & Robinson, 2008).

In the case of older children, there is a body of longitudinal research that investigates the development of technological expertise and meaning as embedded in larger social conditions. Brigid Barron (2004) utilized learning ecology, a framework that draws from activity theory (Vygotsky, 1978, 1986; Engeström, 1993) and Bronfenbrenner’s (1979) human ecology. The framework is defined as “the set of contexts found in physical or virtual spaces that provide opportunities for learning” (Barron, p. 2006, p. 195). Barron (2004) conducted an open-ended survey among 98 high school seniors who described their access to technology in both home and school, how
they used technology, and motivational aspects of technology use. Based on the results of the survey, Barron was able to illuminate how learning unfolded across time and historical context.

Barron, Wise, & Martin (2009b) described the development of learning as a progression of the expertise that led a student involved in a computer club to seeing himself as an animator. In this development, activities at home and parental support contributed to ideas brought to the club. Barron, Martin, Takeuchi, & Fithian (2009a) identified the many parental roles that influenced this learning: teacher, collaborator, learning broker, resource provider, nontechnical consultant, employer, and learner.

In the investigation of complex relationships between learning in school and learning out of school, Barron, Martin, & Roberts (2007) and Barron (2006) also compared several case studies and showcased how interests developed differently for different youth, as well as shed light on the roles that youth saw for technology in their lives (some for practical reasons and some for self-expression). Barron et al. (2007) used technobiographies to describe how learning unfolded across time and historical context for several students who took computing courses and used these experiences to create new learning opportunities and to picture their future careers in computing. They identified three types of pathways in which interests originated, discussed strategies that students used to learn, and examined parental roles. Barron (2006) found that when interests emerged, students would become active in creating new learning opportunities and that peers or parents would help them in that learning. In these studies, the researchers also called for further investigation of interest development, especially in the ways both interests and participants’ roles emerge during specific interactions with
technologies. Importantly, they also stressed that activity theory can be a useful framework to investigate how interests emerge.

An ecology of learning framework was also utilized in a multi-institutional research effort that investigated adolescents’ media practices (Ito, 2010). This research revealed complex dynamics of how adolescents’ media practices change, how they influence friendship performance, and how public discourses displayed by parents and reflected in youth influence adolescents’ attitudes toward new media. The report revealed two categories of involvement in media: interest-driven and friendship-driven. It also identified genres of participation, such as hanging out (using social media such as Facebook in order to negotiate identity), messing around (experimentation with media production), and geeking out (engaging with media production involving specialized knowledge). The researchers illustrated dynamic and nonlinear progression of these participation genres through cases. Although progression was not linear, it appeared that many friendship-driven practices resulted in youth involvement in media production, sharing, and then taking these interests to further communities of interest when they began to require more focused expertise. The report also revealed that such productions usually did not emerge from desires to be creative, but rather the drive to express personally meaningful events. Not many young people took those interests further, to economic activity. Those who did distributed their work, freelanced, and generally engaged in entrepreneurship (in the case of teens coming from less privileged backgrounds) and nonmarket productions (in the case of youth coming from more privileged backgrounds).

Although the literature discussed in this section applies mostly to older children and
relied on interview and open-ended survey data in which interactions with technologies are reported, the findings are very important for this study. They point to the complexity of young people’s interests and provide information about the development of expertise. These studies also showcase that children interactions with technology is driven by their interests and spontaneous. Furthermore, these researchers saw a need for studies embedded in sociocultural frameworks.

Closing Remarks on the Need for This Research

Literature on children’s interaction and meaning making around both traditional print and digital media uncovers two areas that need more research. First, there is a gap that exists within research on meaning making in terms of traditional print (Britton, 1972; Caspe, 2009; Doyle & Bramwell, 2006; Halliday, 1975; Heath, 1983; Hindman et al., 2008; Reese et al., 2010; Valencia, 1991; Wells, 2009; Wood et al., 1976). This research rarely attends to the larger social conditions that influence meaning making (Rowe, 2010). A sociocultural perspective is needed in order to understand the complex nature of contexts as culturally and historically situated, and how such complexity may influence meaning making. Secondly, although research on interaction around traditional print and children’s other productions illuminated the development of children’s meaning making (Britton, 1972; Caspe, 2009; Doyle & Bramwell, 2006; Halliday, 1975; Heath, 1983; Hindman et al., 2008; Reese et al., 2010; Valencia, 1991; Wells, 2009; Wood et al., 1976), current research on younger children and digital technologies does not illuminate this development as adequately as research on older children (Barron, 2004, 2006; Barron et al., 2007; Barron et al., 2009a; Barron et al., 2009b; Ito, 2010) does. Research on small children, digital technology, and meaning making is still rather sparse (Vasquez &
Felderman, 2013; Wang, Jaruszewicz, Rosen, Berson, Bailey, Hartle, Griebling, Buckleitner, Blagojevic, & Robinson, 2008); therefore, we do not know the degree to which an apprenticeship model of literacy learning can be transferred to computer literacy contexts.

In order to address these gaps, it is important to operate with a broader definition of literacy that comes from New Literacy Studies and multiliteracies. These frameworks define literacy as embedded in social conditions and as much more than writing and reading traditional print; New Literacy definitions allow for the manipulation of images. Children increasingly engage in new interactions, and yet the literacy field does not know much about meaning making with these new technologies, their possibilities and constraints, and how the development of expertise occurs within dynamic sociocultural contexts over time.

By incorporating activity theory and an innovative approach to grounded theory this research substantially contributes to an understanding of family meaning making with technologies, a field that research on interactions of younger children with technologies has not yet illuminated. Theorizing interactions on the iPad as activity also allows me to illuminate complex interactions within larger sociocultural conditions that shape them and that are not often considered in interactional research that illuminated apprenticeship for print books. This approach reveals and explains an aspect of meaning making, tension, that has not been theorized in literature on apprenticeship but that saturated our interactions around iPad technology and played an immense role in meaning making.
Chapter Three: Theoretical Framework

This research advances the knowledge of the development of interaction and meaning making by incorporating activity theory. In this chapter, I make a case that activity theory as a research framework can illuminate interaction and meaning making within a larger sociocultural context that includes family histories and larger social processes that influence participants’ engagement with technology. Inevitably, the socio-cultural-historical production of interaction influences all participants’ development of expertise in literacy activity.

Activity Theory

Activity theory can provide “a framework for thinking about the interconnection of modes, the process of meaning making, learning and social context...” (Jewitt, 2006, p. 23). Jewitt adds, “It [activity theory] is useful as it moves away from the idea of an individual learner engaged with what is represented on screen to suggest a more complex view of learning to ask how technologies mediate activity” (p. 23).

Activity theory builds on the cultural historical approach to learning developed by Vygotsky (1978, 1986), a Russian psychologist who created the first generation of activity theory. His concepts were later advanced by his students, Aleksander Luria and Alexei N. Leont’ev, who enriched Vygotsky’s original thinking by adding historical, social, and cultural facets, thus constituting second-generation activity theory. Michael Cole was influential in introducing this theory to the English speaking world (Cole, 1988), and other publications such as: The Concept of Activity in Soviet Psychology (Wertsch, 1981) and Learning by Expanding: An Activity-Theoretical Approach to Developmental Research (Engeström, 1987) substantially contributed to the popularity of
There are several central concepts in activity theory that are often presented in the form of a triangle to represent an activity system (Figure 1). These concepts are subject, object, division of labor, community, rules, tensions, and agency. Engeström (1999) defines activities as “social practices oriented at objects” (p. 380). The term activity, as Roth and Lee (2007) stress:

is not to be equated with relatively brief events with definite beginning and end points (characteristic of school-based tasks) but an evolving, complex structure of mediated and collective human agency. Thus, farming, commerce, dance, architecture, and, as a more recent form, mass schooling all are historical activities with objects and motives that contribute to maintaining human societies and, therefore, to maintaining individuals. (p. 198)

Figure 1. Engeström’s activity system (adapted from Engeström's (1987)

Activity Theory Terminology

In what follows, I explain the seven elements of Engeström’s activity triangle. The subject may be the easiest concept to understand; it is merely another term for the participants in the activity. The object is less straightforward; “It exists twice (Hegel, 1807/1977; Leont’ev, 1978): first as a material entity in the world and second as a vision
or an image, both in its present state and how people envisage it in the future” (Roth & Lee, 2007, p. 198). Engeström (1993) explains further, “The object refers to the ‘raw material’ or ‘problem space’ at which the activity is directed and which is molded or transformed into outcomes with the help of physical and symbolic, external and internal tools (mediating instruments and signs)” (p. 67). Objects can be also conceptual understandings (Barab, Barnett, Yamagata-Lynch, Squire, & Keating, 2002), “at which the activity is directed and which is molded or transformed into outcomes with the help of physical and symbolic, external and internal tools” (Engeström, 1993, p. 67).

Engeström (1999) stresses that objects are not goals. Goals, according to Engeström are “are attached to specific actions” (p. 381) and “actions have clear points of beginning and termination and relatively short half-lives” (p. 381). Rather, “activity systems evolve through long historical cycles in which clear beginning and ends are difficult to determine” (p. 381). He also underscores that “an activity system constantly generates actions through which the object of the activity is enacted and reconstructed in specific forms and contexts – being a horizon, the object is never fully reached or conquered” (p. 381). Roth and Lee (2007) further explain, “The relationship between action (goal) and activity (motive) is dialectical, for actions constitute activities, but activities motivate particular action sequences” (p. 201).

The outcomes of people’s actions depend on available means, or tools. For example, “In CHAT [cultural-historical activity theory], one speaks of the mediation of a relation, here subject-object, by another entity: the artifacts that embody the accumulated history of human ingenuity and creativity” (Roth & Lee, p. 199). In Figure 1, tools are at the top of the triangle; tools mediate the activity taking place with people and their
objects. Activity also takes place in a certain community, and communities operate under a certain division of labor, such as participants doing certain tasks that constitute the activity. Rules, such as norms, codes, values, and routines are always engaged in a task.

Roth and Lee stress:

All of these theoretical units must be understood as threads that make a strand or fiber, in the sense that the environmental activity as a whole would not materialize without these entities, but these entities appear in this configuration only because the activity is preexisting. That is, these entities and the activity they reference presuppose each other. (p. 199)

Again, Figure 1 illustrates these components within the activity system. As subjects engage in a problem space (object), this engagement (activity) is often mediated by tools, such as computers that individuals use together to solve a problem, or even the conversation used as participants engage with the computer screen. The bottom of Figure 1 represents broader social conditions that contribute to understanding the activity system. As people (subjects) interact, they bring different rules and understandings, often from their communities, which influence how the activity is done, including the distribution of labor. The triangle constantly reminds a researcher that an activity relates to these invisible community rules and also to a larger societal community that may not be visible in a single literacy event.

The activity system is a very dynamic phenomenon. Roth and Lee (2007) stress that “the outcomes of actions become part of the newly transformed system that continues in like manner” (p. 199), with a constant exchange between individual subjects and others in the community. Roth and Lee underscore that transformation occurs in activity, “Any material entity is not fixed but can take different functions within an activity system. For example, signs can switch functions and become tools in the process.
of reading texts that further generate new texts and meanings that are culturally and historically situated” (p. 200). Along the same line, Engeström (1996) explains that textbooks can be used in different functions, either in the same activity system or a newly transformed system. The third generation of activity theory also stresses that “all activity systems are part of a network of activity systems that in its totality constitutes human society” (Roth & Lee, 2007, p. 200). That is, when individual subjects contribute to one activity system, because this system is linked to other systems, others (from other systems) also influence the system within the network of activity systems.

Another important term in this theory is contradictions, or in other words, problems or tensions that “become the primary driving forces that bring about change and development within and between activity systems” (Roth & Lee, 2007, p. 203). Roth and Lee (2007) give explanations of four different kinds of contradictions, depending on where in an activity system they occur. A primary level contradiction occurs within one entity, such as the entity “learning.” For instance, when learners are expected to perform well on tests, and at the same time there is need for addressing students’ lived experiences in learning, a primary tension may occur. A secondary level contradiction occurs between two entities, “such as when the demand for quality work in complex environmental problems (object) negates the school-based rule of completing curriculum in a fixed amount of time” (Roth & Lee, 2007, p. 203). Third level contradictions “exist between the object (motive) of the dominant and the object of a culturally more advanced form of the activity” (p. 203). An example would be when a teacher tries to implement an inquiry-based learning project and at the same time societal pressures, such as high-stakes testing, challenge his or her motive. A fourth level contradiction refers to a
contradiction between the main activity and its neighboring activity. For example, a teacher in one fifth grade classroom may teach according to inquiry pedagogy, whereas another fifth grade teacher may implement a different approach for the same material. These different pedagogies used in neighboring proximity can result in tensions for both fifth grade classrooms and within the school system.

In this study, tensions between particular activity system elements became crucial to understanding meaning making and its development within our family activity system. As we worked on the iPad as a family, tensions arose immediately around our different perspectives on the object, division of labor, and rules. Learning on the iPad involved these contradictions and processes of working through them in order to sustain interaction.

Agency is yet another prominent concept in activity theory. Sannino, Daniels, and Guttierez (2009) highlight:

From the viewpoint of activity and expansive learning theories, the concept of human agency is briefly described as the subject potentialities and positions of creation of new tools and forms of activity with which humans transform both their outer and inner worlds and thus master their own lives and futures (Engeström, 2005a, 2005c, 2006b). The account of new forms of agency in activity theory brings the Vygotskian heritage alive with regard to the future of human freedom (Yamazumi, 2007). (p. 212)

In this study, it is through agency afforded by the new tool that my daughter realized her perspectives on objects, and thus influenced interactions with which her meaning making interests were realized.

With these descriptions and definitions of activity theory elements in mind, “CHAT has much potential for educators, because it is thoroughly about development and learning, encompassing the system as a whole and various subjects and communities
that constitute it” (Roth & Lee, 2007, p. 204). From this perspective, Roth and Lee define learning as “equivalent to the mutual change of object and subject in the process of activity” (p. 198). Specifically, this theory can explain how learning is mediated between individuals and objects and how other activity system elements, such as tools, division of labor, community, and rules, as well as tensions and agency, mediate and influence this development.

**Activity Theory in Examples of Research**

While several studies have used activity theory to explain children’s learning as part of an activity system (Hardman, 2005; Lecusay, Rossen & Cole, 2008; Calderón, 2009; Alcock, 2010), the design of my study was primarily informed by Lecusay, Rossen, and Cole (2008). In addition, Engeström (1993), and Barab, Barnett, Yamagata-Lynch, Squire, and Keating (2002) informed the design of my study.

**The Fifth Dimension: Activity in an after-school program.** The data from Lecusay et al. (2008) came from a large-scale study described by Michael Cole (2006). In the study, Cole and colleagues researched an after school program called the Fifth Dimension. In this program, elementary school children used computers and developed relationships with undergraduate students who supported their learning. Incorporating activity theory in the analyses of these interactions revealed changes in students’ cognitive, cultural, and social development. Lecusay et al.’s (2008) exemplary analyses showcased how activity theory enabled the researchers to answer important questions and consequently provide insight into development. These questions were, “What activity is taking place? What are the objects and outcomes of this activity? What are the mediating elements that constrain and coordinate actions in this activity? How do these constraints
and coordinating actions change as the interaction unfolds?” (p. 98) Lecusay et al. (2008) also discussed how roles of participants changed in collaboration, what kinds of tensions appeared, how new outcomes emerged, and how participants sustained activities.

The work of Cole (2006) and colleagues (e.g., Lecusay, et al., 2008) provided a model for my own analysis of family interactions around the iPad, with an eye toward explanation of meaning making. Lecusay et al. (2008) focused mainly on language as a mediating tool and analyzed development of meaning within individual engagements. Using activity theory and the concept of the zone of proximal development (Vygotsky, 1978), with the zone of proximal development as the difference between what a learner can do without help and what he or she can do with guidance, they provided a detailed analysis of a computer gaming session, in which a child advanced as a game player and a reader under skillful scaffolding of the tutor. Importantly, in this exchange, it was not only the child who changed her thinking; the graduate student also was impacted as a result of learning from the student.

Activity in doctor-patient relations. Yrjö Engeström (1993) used activity theory to examine systemic tensions of a health care facility and their impact on doctor and patient relations. The study was a large-scale, longitudinal examination conducted between 1985 and 1989 in Finland. Participants were 16 doctors, 23 nurses and administrators, and 85 patients. Data collection included individual interviews, observations of doctor-patient consultations, and stimulated recall interviews that were based on consultation videos. The researcher conducted a discourse analysis of these data. The unit of analysis was individual doctor activity when he or she worked on patient
Engeström used interviews and observational data to further inform this unit of analysis.

Engeström’s (1993) analysis portrayed a typical doctor-patient encounter when a patient went to urgent care for a diagnosis. The subject in a typical activity was the doctor, and the object of this activity was the doctor’s attempt to provide the best diagnosis for every patient, taking into account the large number of patients that they needed to see. While doctors strived to achieve their goals, they also had to deal with many tensions that came from the health system. For instance, while a doctor tried to provide the best care, he or she also needed to be an efficient bureaucrat. In this case, the tension came from the hospital rule that stated that patients who came to urgent care must be diagnosed quickly.

This is an important study because Engeström (1993) explicated the usefulness of this theory in describing human interaction. First, treating activity as a unit of analysis can illuminate events that might appear random at first. “An activity system integrates the subject, the object, and the instruments (material tools as well as signs and symbols) into a unified whole” (Engeström, 1993, p. 67). Engeström explained further, “An activity system incorporates both the object-oriented productive aspect and the person-oriented communicative aspect of the human conduct” (p. 67). Engeström also stressed the importance of recognizing the system and its components historically. He examined the nature of doctor-patient interactions within historical and cultural conditions. He explained, “An activity system always contains sediments of earlier historical modes, as well as buds or shoots of its possible future” (p. 68). Engeström underscored that these
‘sediments’ are found in “physical tools and mental models of the subjects” (p. 68), as well as in actions and objects of the activity.

In addition, by pointing to contradictions within the system, Engeström (1993) provided a possibility for analyzing them in terms of “the source of disruption, innovation, change, and development of the system, including its individual participants” (p. 65). Engeström claimed that activity theory helps explain development by detecting these tensions within both broader historical and also micro levels. In fact, he claimed that lower-level contradictions reflect broader ones. He also stressed that activity systems are connected to other systems, and these connections can be realized through all components of a system. This was evident in his study when new patients entered the diagnostic system. New patients often brought new expectations, which altered the doctor-patient activity, including doctors’ rules and instruments.

Engeström’s (1993) study provided a model for tracing contradictions in discourse and detecting how they are rooted in the larger system. In my research presented here, what we (the parents) did, shaped our daughter’s interactions with the iPad. Larger systems shaped parent and child beliefs and attitudes and influenced activity. Activity theory, therefore, helped detect these connections.

**Activity in an astronomy class.** Sasha Barab et al. (2002) used activity theory to explain how undergraduate students learned astronomy concepts as they created models of the solar system with a computer-based, 3D virtual tool. The researchers used activity theory to describe students’ use of conceptual and technological tools and to describe interactions with peers. They conducted the research as part of a team-based longitudinal investigation in Indiana, from the late 1990s to early 2000. Participants included 33
undergraduate students. Barab et al. (2002) conducted the research using naturalistic inquiry methods (Lincoln & Guba, 1985, as cited in Barab et al., 2002). Data were observations, field notes, video from group activities, interviews with both students and instructors, artifacts, and documents.

After identifying salient themes and drawing on activity systems for each of them, Barab et al. examined contradictions in the data. They later conducted member checks with students and instructors and conducted two levels of analysis. First, they pointed out a series of group activities, based on goal-directed actions. Second, they studied object-related activity between instructors and students at the course level. Identifying individual, goal-oriented activities was the basis for identifying more global activity. For instance, multiple actions by subjects (students and teachers) resulted in a more common outcome, in this case, the understanding of eclipses. The researchers explained the relationship between activity systems as “nested systems.” They theorized that a “nested system” occurs when an element of one activity system becomes utilized in another activity system. This was evident in group work, when one student worked by himself on a problem concerning “planetary scale,” the object of action. In a subsequent action, he worked with his partner, using what he created alone as the tool in the new action. In this way, the outcome of their teamwork, a work plan, could be traced back to the previous activity. The researchers also showed contradictions in actions in the ways projects brought difficulties to students and how contradictions that resulted from object-oriented activity at the course level affected students’ engagement.

Barab et al.’s (2002) research was a pivotal framework for my study. One might consider this assistance an example of “nested systems,” since I am utilizing their work,
in another activity system, to help my own. Barab et al. stressed, “It is important to note that an activity system is made up of nested activities and actions all of which could be conceived of as separate activity systems or other instances of the same system depending on one’s perspective” (p. 79). Barab et al. captured how activities affect other activities over time; thus, their research methods have potential for explaining development in other interaction studies. Transformation of activity into further activity is an important aspect to consider when studying learning.

Barab et al.’s (2002) explanation of tensions also informed this research, as “tensions are critical to understanding what motivates particular actions and in understanding the evolution of a system more generally” (p. 80). Barab et al. (2002) discussed tensions over the role of an instructor in the process, such as a tension between teacher-centered and student-centered learning. They analyzed students’ goal-oriented actions as evidenced in the dialogue and investigated the transformation of activity components through collaboration. This illuminated how these tensions played out in groups of students and how they solved them. In other words, subsequent activity components mediated the interaction between participants and objects: “tools (both technological and human), the overall classroom micro culture (emergent norms), division of labor (group dynamics and student-instructor roles), and rules (informal, formal, and technical)” (p. 101). The researchers also investigated “how these factors supported the participants’ transformation of astronomy content into virtual models and astronomical understandings” (p. 101). Here, I saw clear implications for this research. As my daughter used the iPad with us, many factors, such as norms, division of labor, tools, and changes within these systems along the way constituted the objects of our
activities. Sometimes, tensions resulted between elements. Barab et al. provided a useful and very clear path for tracing changes and transformations of activity components into other systems and how these transformations, across different activities, lead to certain outcomes. They also provided clarity for how to find tensions within a larger system and across systems. In our case the larger system was our family, Kalina’s own activity systems, such as her kindergarten or other activities, my university work, and the larger societal system.

Finally, Barab et al. (2002) were able to introduce and use this theory in a dynamic way, illustrating that it is not “the static model, but rather the trajectory of the system through time, that makes activity theory a useful theoretical lens for characterizing activity” (p. 103). They were able to show how “introducing new tools, modifying rules and expectations, or modifying divisions of labor to facilitate the production of new outcomes” (p. 103) changed the system they studied.

**Summary**

In summary, activity theory is a framework that has tremendous potential for investigating meaning making and its development as a process not only taking place in interactions but as part of larger sociocultural conditions. Such a lens is needed not only in research on children's interactions with the latest technologies, but also in research on children’s meaning making, its development, and learning all literacies, both traditional and digital (Rowe, 2010).

While drawing on all the studies, this study particularly extends Lecusay et al. (2008). Like Lecusay et al.’s emphasis on the role of the tool (in their case, interactive dialogue), I also emphasized the role of a tool—particularly the iPad itself. Its influence
on meaning making during our iPad engagements was often more prominent than
language. I also used activity theory to theorize the development across all focal
engagements, chronologically, from the first encounter with a focal application to the last
one, thus drawing from Lecusay et al.’s research.

Activity theory offers potential for investigating meaning making and its
development on the iPad. The theory can illuminate these processes because it accounts
for influences coming from multiple elements: subjects, tools (iPad, applications and
talk), objects (meaning making interests), community, division of labor, rules, tension,
and agency.
Chapter Four: Methodology

Research Approach

This study is a single-case study that aims to describe the development of meaning making for one child as she participated in an activity system involving an iPad, and her parents who set up and supported those interactions.

Based on the gaps in literature and activity theory, the following research question emerged and guided this study: What was the nature of meaning making in the iPad practices of our family during the first six months of my daughter Kalina’s iPad use?

Case Study Methodology

Features of single-case study methodology. A case study design is appropriate when the object of study is a bounded system (Stake, 1994). In single-case studies, a case may be an individual child or an entire community (Stake, 1994, Yin, 2009). It can also be a place or activity, or a combination of both (Dyson & Genishi, 2005). In this research, the case that will be examined is my family. I chose a single-case study design in order to explain the nature of meaning making with iPad applications in more depth.

Once a researcher binds a case and conceptualizes the object of study, he or she forms research questions in order to select issues to be studied (Stake, 1994). The questions most appropriate for a case study are “why” and “how” questions. However, for my case, I developed a question starting with “what:” “What was the nature of meaning making in the iPad practices of our family during the first six months of my daughter, Kalina’s, iPad use?” This question could be also asked as “How did our family make meaning in the iPad practices during the first six months of my daughter, Kalina’s, iPad use?” in order to conform to a more standard research question format. Because ultimately these questions will reveal the same results, I adhered to my original question
for this case study.

Yin (2009) stresses that, “for case studies, theory development as part of the design phase is essential, whether the ensuing case study’s purpose is to develop or to test theory” (p. 35). At the same time, emphasis is on understanding the case rather than generalizing beyond it (Stake, 1994, p. 236). Rather, generalization occurs at the level of processes (Dyson & Geneshi, 2005), by studying details and their dependence on context.

As compared to multiple-case studies, a case that reveals something hitherto unknown is “likely to involve only single cases” (Yin, 2009, p. 53). In addition, choosing a single-case design is warranted for investigating how conditions change over time (Yin, 2009). This study attempts to do both. It is revelatory because it aims to reveal something hitherto unknown: the nature of one family’s meaning making around a relatively new technology. It also investigates how the nature of this meaning making changed over a period of time. Single-case designs “require careful investigation of the potential case to minimize the chances of misrepresentation and to maximize the access needed to collect the case study evidence” (Yin, p. 50). Because I am the primary investigator with direct access to data for this case, I have the opportunity to investigate the details and processes of the case closely.

Triangulation, “a process of using multiple perceptions to clarify meaning” (Stake, p. 241) is especially important in cases. “A major strength of case study data collection is the opportunity to use many different sources of evidence” to increase the validity of the findings (Yin, 115). For this case study, I collected several types of data: field notes, videos of interactions, videos of the iPad screen, and notes from informal interviews with my daughter and my husband. I drew from all these sources in all steps of data analysis:
formulating preliminary findings, theorizing deeper meanings, and generating patterns.

**Single-case studies in examples of research.** Two case studies, Bauer (2000) and Bissex (1980), were particularly informative to my methodological framework because they studied their own children and familial contexts. In addition, they provided useful insight in regard to “casing” the study, rationalizing the importance of single-case studies, and considering the value of single cases and of triangulation of data sources.

Eurydice Bauer (2000) investigated her bilingual daughter’s code switching during shared reading of both German and English texts and independent reading. She also compared these events with events beyond these interactions. Her research questions adhered to the requirements of case study methodology as her questions asked: 1) How did Elena approach and interact with different types of stories? and 2) How did her language use during reading compare to her use of oral language when not reading? She also rationalized her single case by stating that her goal was to provide “detailed accounts of how a preschool bilingual systematically differentiated between her languages during oral communication and emergent reading” (p. 105). Bauer triangulated data sources (field notes, journals, video and audiotapes) thereby strengthening her findings. She analyzed data using constant comparative methods for the purpose of developing theoretical propositions, and the analysis took place at the sentence level and in relation to the context (type of event, setting, and person guiding reading). Although her findings could not be generalized, they provided direction for further studies of young bilinguals. As her daughter’s code switching differed across contexts, Bauer suggested more research on how young bilinguals interact and code switch across different contexts and texts.
Glenda Bissex (1980) researched her own child, Paul, from age five to eleven, as he learned to read and write. Her account was the first extensive case study of a child learning to read and write, with detailed description of development, especially in writing. The researcher stressed that she did not want to offer any kind of generalization, but would like others to see her work as “encouragement to look at individuals in the act of learning” (p. vi). Her approach to investigating development was to describe her son’s writing properties in every phase of development. Each new phase was marked by a change, such as his shift to a visual strategy at the beginning of his conventional spelling period.

Bissex (1980) documented and described everything that she recorded during the first weeks of her son’s inventive spelling, including conversations in which he asked questions about spelling. She also specified when he took breaks from writing and for how long, pausing and reflecting on his accomplishment before moving to the next period of his writing development. She identified several phases of development and offered descriptive categories of forms, and functions. Bissex noticed that her son’s writing development progressed from global to more differentiated, especially when he began writing for different audiences. Based on her findings, Bissex recommended that teachers make more room for spontaneous writing in schools.

Bissex (1980) described phases of Paul’s reading development too; however, how she explored writing offers enough explanation of her work to exemplify the important role case study methodology can play in literacy research. Single-case studies have a particular value:

In observing one child, we are also observing much that is common to other children. What we cannot know, until we observe others, is how much of what we see is
common and how much idiosyncratic. We look for the commonalities, and perhaps overlook the value of differences. (p. 174)

The showcased examples of single case studies illustrate both attention to main features of this methodology and different approaches to data analysis. In regards to the main features of this methodology, such as bounding one case for a deeper exploration, these studies provided me with a framework to follow for my own case. In terms of approaching data analysis, these studies represented different approaches, as reflected in researchers’ questions, thus rationalizing that my own data analysis methodology would need to illuminate my specific research question and reflect the theories I would use.

**Participants**

Participants in this study were my daughter and my husband. I played a dual role of participant-observer. Our family is diverse culturally and linguistically. I immigrated to the United States when I was an adult, with a Master’s degree in English from a Polish university, ten years as a teacher of English as a second language in Poland, and perspectives on learning and education that did not include sociocultural approaches. When I began a literacy program in the United States, my perspectives on literacy changed. I learned about sociocultural perspectives that I was not familiar with previously. From these studies, I knew about the importance of following children’s leads, extending thinking, and that reading with children should be interactive in order to contribute to their meaning making.

My husband was born and raised in the United States and has worked in sales. His perspective on literacy was different from mine. He loved to read to Kalina, but he also thought that reading to her should not be interrupted by her, and that her major role in
reading events was to listen. In our early years together, I sometimes made gentle
suggestions that it was all right that she interrupted and wanted to talk about the story and
pictures or ask questions. By the time of this research, my husband hybridized his style of
reading to Kalina; he maintained his preference for reading as not interrupted but, also
followed my suggestions of dialogic reading when I occasionally made them.

Our five year old daughter’s bilingualism is uneven, with more fluency in English
than in Polish. Prior to collecting data, I interacted with Kalina either in Polish or English
during our daily conversations. When interacting around books and movies, if the
language of the text was Polish, I initiated conversations in Polish, and conversely, if the
language was English, we spoke English. We didn’t have a fixed rule and often mixed
languages. During interactions in which all of us were present, including my husband,
dialogic exchanges were mostly in English. This nature of our linguistic conversations
naturally extended to interactions around the iPad.

**Setting, Data, and Data Collection**

I began collecting data in July 2012 and continued until the beginning of January
2013; therefore, results from this study examine how a child developed technology
expertise and made meaning when first introduced to an iPad. The setting of this study
was mainly my living room. My husband, our daughter, and I interacted with the iPad on
the carpet on the living room floor. Initially, a few sessions took place in Kalina’s
bedroom. She wanted to use the iPad in her bedroom, but because of technical difficulties
associated with software mirroring, we needed to use our living room. She never objected
to using the living room after we added a cozy blanket in front of the couch and she could
sit on it, just like she sat on her bed. Our family regularly video records Kalina’s
activities; therefore, it was not unusual that a video camera was poised to capture our family’s interactions on the iPad.

During a typical nightly iPad session, Kalina, my husband and I sat in front of our living room couch, with Kalina between the two of us. During our interactions I took field notes, more or less intensely, depending on the nature of my involvement in the interactions. I had two recording cameras: a digital camera recorded our interactions and screen capture software installed on my laptop recorded the iPad screen. After an iPad session was over I interviewed Kalina and my husband informally and took notes after these interviews.

Sessions typically occurred after dinner, before Kalina’s bedtime, almost every day. They generally lasted about 30 minutes. Sessions at the beginning of the study, in summer, were sometimes longer than 30 minutes, whereas in the fall, when Kalina went to kindergarten, iPad events were often shorter. Generally, Kalina would initiate these engagements by saying, “Daddy is home. Time for the little computer.” Later on, when she went to kindergarten and her day was filled with school activities, my husband or I usually initiated sessions by saying, “Time to use the iPad.” Roughly half of the analysis in this study occurred retrospectively, with previously collected data.

The iPad was a tool to support interaction and collect data; hence, I offer, here, a brief description of it. While there are different kinds of digital tablets, many of them only function as electronic readers. The iPad is multi functional. It consists of several controls on the sides and on the screen that turn the device on and control the volume. Certain “applications” come with the machine, while many others can be searched for in an iPad application store and downloaded, either free of charge, or for varying fees.
Applications that came with our device were Maps, Game Center, iTunes, Photos, Calendar, Notes, Reminders, Clock, Newsstand, Photo Booth, Camera and iBooks, Mail and Safari, a Macintosh web browser. There is also an “App Store” where one can search for applications by typing words just as one does on a search engine. Once purchased (by entering a password), an app is instantly downloaded to the device. In many cases, apps we used were initially free, but it turned out that only a small portion of the app was free. By performing “in-app purchases” while using an app, one could instantly purchase the rest of it. In short, applications make a multitude of data and activities available to users. The applications that are salient in this research are Dress Up applications (which one can change characters’ outfits, accessories, and backgrounds) and ebooks (which one allows the reader to choose between reading with audio or reading without audio).

**Data Triangulation**

Collecting multiple sources of data, including videos, played a significant role in triangulation. Specifically, I synchronized videos of our interactions with videos of the iPad screen and watched both videos at the same time while typing field notes and writing memos (in which I began to record my thinking regarding what I thought the data revealed). In this process, I also confronted my preliminary thinking with notes from informal interviews. In addition, I revisited videos and checked notes from informal interviews as I continued my preliminary theory development. I also revisited videos and informal interviews later, when I theorized deeper meanings, and toward the end of the study when I was writing the report.

**Data Analysis Methods**

I conducted three levels of analysis. Figure 2 depicts the methods. The figure refers
to charts I used to analyze data. I explain these charts within each level of analysis. Note that I discuss analysis methods, using examples from Dress Up apps. I used the same analytic method for ebooks.

<table>
<thead>
<tr>
<th>Level 1:</th>
<th>Level 2:</th>
<th>Level 3:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Reduction with Matrix, Appendix C</td>
<td>Grounding Preliminary Findings in Activity across Events Activity System Analysis Chart, Figures 3-4</td>
<td>Theorizing Deeper Meanings of Preliminary Findings Grounded Theory Analysis Chart, Figure 5</td>
</tr>
</tbody>
</table>

*Figure 2. Three levels of data analysis*

**Level One Analysis: Identifying applications for analysis.** I spent several months considering how to reduce field notes and video data so that I could focus on just a few applications that engaged the family. In order to determine which applications engaged us, I considered the frequency of engagements, who initiated those engagements, and also what Kalina considered her favorite applications. To help me identify “engaging applications,” I made a matrix (see Appendix C). In the left column, I recorded the date of use, thereby designating a row for each day of the six-month project. In the top row of the matrix, I categorized all the application “types” Kalina used throughout the study, for example, “Drawing,” and “Puzzles.” In the row below types, I recorded all the apps Kalina used within these categories. Then, going through each day’s data, I noted the apps Kalina used in appropriate columns, and the kind of involvement (for example, who initiated the use).
Upon viewing the completed matrix, I identified two application types that engaged our family in different ways and for extended periods of time: Dress Up and ebooks. Dress Up applications were Kalina’s favorite applications and involved images without text. I also chose ebooks for this investigation because ebooks involved print, and therefore were different from Dress Up. Kalina always initiated engagements with Dress Up and mentioned several times that this was her favorite application. We also used ebooks frequently, although her interests in ebooks diminished in the second part of the data collection period, when she became more interested in Dress Up. I analyzed ebooks in spite of her diminished interest later in the six month period, however, because our family’s interaction around them provide interesting insight into apprenticeship relationships.

**Level Two Analysis: Preliminary understanding of activity using grounded theory.** In the second level of analysis, I was concerned with grounding understanding of Kalina’s involvement on the iPad in our family’s actual activities on the iPad. Thus, I began an explanation of our family’s activity system and Kalina’s use of the iPad using grounded theory.

Grounded theory is a flexible analytic tool that allows one to ground a new theory in data. Charmaz (2006) underscores that “Grounded theory methods consist of systematic, yet flexible guidelines for collecting and analyzing qualitative data to construct theories ‘grounded’ in the data themselves” (p. 2). Charmaz explains further that “Data form the foundation of our theory and our analysis of these data generates the concepts we construct” (p. 2). In traditional grounded theory, pioneered by Glaser and Strauss (1967; Glaser, 1978; Strauss, 1987), the researcher needs to be involved
simultaneously in data collection and analysis, construct analytic codes free from preconceived hypotheses, make comparisons at all stages of analyses, engage in theory development in each level of data collection and analysis, write memos in order to describe relationships between concepts, and relate findings to literature.

Mercer (2010), however, argues that traditional grounded theory methods do not always lend themselves to explaining processes and development. He argues that, in such cases, researchers need methodological frameworks that recognize sociocultural influences on development. Because I wanted to theorize meaning making development, I did not develop codes that would lead to larger themes but instead, I compared activities as they developed over time and recorded what was noteworthy. Traditional grounded theory coding schemes involve creating open codes that reflect specific features of a studied phenomenon and then categorizing them into primary themes and subthemes to capture prominent features. By refining and validating themes and subthemes by checking data against them, researchers can characterize the nature of what they study. However, such a method does not allow one to theorize development and changes occurring within a phenomenon because, in coding, one puts “together all observed utterances which share the same surface features” (p. 4). In other words, a researcher’s codes can (perhaps inadvertently) actually decontextualize action from its explanatory context. In order to theorize development, I abandoned traditional coding schemes and, following Mercer’s (2010) suggestions, developed a new scheme, one that would allow me to theorize the progression of meanings making across events.

**Overview of procedures.** With Mercer’s (2010) cautionary note in mind, for the second level of analysis, I made a chart called, “Activity System Analysis Chart”
(abbreviated in Figures 3 and 4). I made the chart for two reasons: (1) To keep track of activity system elements in each literacy event around the iPad and (2) to create a record which would help me pay attention to my observations over time. This way, I theorized Kalina and the family’s meaning making on the iPad as activity, thereby grounding my analysis in data directly from our family’s iPad activities over time. With these records of activity prepared for each literacy event, I paved the way for a third level of analysis, when I would compare activities (the nature of activity system elements and their relationships) as they developed over time and began theorizing about activity system elements, changes in these elements, relationships between those elements and changes in those relationships. For now, I will explain the construction of the Activity System Analysis Charts.

**Procedures.** Level Two Analysis occurred as follows. First, I bounded each use of an app as a “literacy event” (Barton & Hamilton, 1998; Heath, 1983). Then, for each Dress Up event, I created an Activity System Analysis Chart (see Figures 3 and 4). These charts enabled me to examine field notes and my memos regarding the field notes while re-viewing video clips of the events in order to characterize activity system elements and relationships between them. Note, in Figures 3 and 4, that I comment on all activity system elements (tool, subject, object, outcome, etc.) when analyzing the event. Using the Activity System Analysis Charts, I was able to begin noticing patterns and start theorizing on how our family activity system was making meaning with the iPad. The charts provided a way for me to keep track of ongoing analyses for all the 15 Dress Up applications and across the total number of Dress Up literacy events (there were 76 events). Two charts for the Dress Up application, *PopStar*, can be seen in Figures 3 and
**Event 2:** *PopStar*

<table>
<thead>
<tr>
<th><strong>Tool</strong></th>
<th><strong>Object:</strong></th>
<th><strong>Outcome</strong></th>
</tr>
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</table>
| iPad, app, singers K knows (free and not free) | K: Experiment with outfits, change music  
D: Experiment with all available features | K changes outfits.  
M & D have to buy out of reach singers.  
K gets disappointed in tool (can’t change music). |

<table>
<thead>
<tr>
<th><strong>Subjects</strong></th>
<th><strong>Rules</strong></th>
<th><strong>Community</strong></th>
</tr>
</thead>
</table>
| K, M, D | M and D buy apps.  
K can’t have all she wants.  
IPad time is in the evening, in the living room. | Family, economic community: Buys apps, music industry/pop culture: makes app attractive (high expectations), K’s dolls from her daily play |

<table>
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<tr>
<th><strong>Division of labor</strong></th>
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</table>
| M, D engage in K’s object.  
K designs.  
M, D teach about limitations. |

*Figure 3.* The Activity System Analysis Chart for Event 2 (M=Mom, D=Dad, K=Kalina)
**Event 3: PopStar**

<table>
<thead>
<tr>
<th><strong>Tool</strong></th>
<th>iPad, app, singers M bought, outfits are fixed for singers, not exchangeable</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Subjects</strong></th>
<th><strong>Object:</strong></th>
<th><strong>Outcome</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>K, M, D</td>
<td>K: Experiment with outfits, give singers same outfits</td>
<td>K cannot give singers same outfits.</td>
</tr>
<tr>
<td></td>
<td>M, D: Use all available features</td>
<td>K changes outfits for several singers.</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th><strong>Rules</strong></th>
<th><strong>Community</strong></th>
<th><strong>Division of labor</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>K can’t get all she wants. K makes do with what she gets. IPad time is in the evening, in the living room.</td>
<td>Music industry/pop culture, Family, K’s daily play</td>
<td>M teaches about limitations. M and D: Audience (M provides some suggestions for design.)</td>
</tr>
</tbody>
</table>

| **Figure 4.** The Activity System Analysis Chart for Event 3 (M=Mom, D=Dad, K=Kalina) |

**Level Three Analysis: Theorizing deeper meanings of preliminary findings.**

In order to theorize findings from the Level Two Analysis more deeply, I created yet another chart, excerpted in Figure 5, Grounded Theory Analysis Charts.
<table>
<thead>
<tr>
<th>Event</th>
<th>Activity Theory</th>
<th>Grounded Theory</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Event 2</strong>:</td>
<td><strong>Subjects</strong>: K, M, D</td>
<td><strong>Thinking</strong>:</td>
</tr>
<tr>
<td><strong>PopStar</strong></td>
<td><strong>Object</strong>: K: Experiment with outfits, change music, M, D: use all available features</td>
<td>Object is tied to the community, which is tied to the device. In order to have access to all outfits, the entire app needs to be bought. Object is also tied to participants’ different perspectives.</td>
</tr>
<tr>
<td></td>
<td><strong>Tool</strong>: Device, app, singers K knows that are free and that aren’t, knows music</td>
<td>She cannot control the object, to change songs.</td>
</tr>
<tr>
<td></td>
<td><strong>Outcome</strong>: Changes outfits; have to buy out of reach singers; disappointment in</td>
<td><strong>Object is tied to tools.</strong> Not successful with changing music.</td>
</tr>
<tr>
<td></td>
<td>tool (can’t change music)</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Community</strong>: Family; economic community (buys app), music industry/pop culture</td>
<td><strong>Division of labor</strong>: M, D need to teach about app limitations. (Division of labor is tied to object, which is tied to the tool)</td>
</tr>
<tr>
<td></td>
<td>(makes app attractive and also expect a lot from it, K’s daily play)</td>
<td>There is a tension between the tool limitation (cannot change music) and K’s perspective on the common object.</td>
</tr>
<tr>
<td></td>
<td><strong>Division of labor</strong>: M, D engage in K’s object and K designs. M, D teach about</td>
<td><strong>Questions to inform further analysis</strong>:</td>
</tr>
<tr>
<td></td>
<td>limitations.</td>
<td>What is the relationship between the tool and all activity elements? What is the role of tensions?</td>
</tr>
<tr>
<td></td>
<td><strong>Rules</strong>: M buys apps, K can’t have all she wants, iPad time in the evening (living room)</td>
<td><strong>Across</strong>: In both events, object was tied just to the tool and subjects. The tool in both events creates rules: does not get what she wants. Tensions, although appearing in both events, are different. In the first one, there is a tension between parents’ and K’s perspectives over objects, and in the second event the tension is also between K’s perspective on object and tool limitation.</td>
</tr>
</tbody>
</table>

*Figure 5. The Grounded Theory Analysis Chart for Event 2 (M=Mom, D=Dad, K=Kalina)*

In this new chart, I made three columns. The first included the name of the event, the second reflected activity system elements and their characteristics as transferred from Activity System Analysis Charts, and in the third column, I theorized about activity system elements, changes in these elements, relationships between the elements, and changes in relationships. As I theorized, I also asked questions that allowed me to follow
particularly important and interesting relationships and changes across events.

I began theorizing about the nature of Kalina’s engagement with Dress Up applications through conceptualizing the nature of the relationships of activity system elements and changes in those relationships across all events chronologically, in order to capture this development. For example, in Figure 5, the first column notes, “Event 2, PopStar.” The second column contains the content from the Activity System Analysis Chart for PopStar, Event 2. The third column contains theorizing based on the second column and the Activity System Analysis Chart from the first event, Dress Anime. (Dress Anime was the first Dress Up application Kalina used. I did not include it in the figures; however, it was the first application I analyzed according to these methods.) In essence, what I observed, regarding activity in column two, I reflected upon in column three. For example, upon viewing my notes in column three, one can see that I have noted a tension that exists between object and tool. One can see, in column two, under “outcome,” that Kalina could not change the music and was disappointed. I noted her object at that time was not only changing outfits but also changing music. Hence, upon analyzing this event, I noted the tension and asked the questions, “What is the relationship between the tool and all activity elements? What is the role of tension?” The Grounded Theory Analysis Chart provided a mechanism for me to ground my observations and theories in data.

As I continued with my analysis, I began answering my own questions as I progressed through the data. In doing so, I found myself asking additional questions about the relationships between activity elements themselves. I found that tensions were evident among object, division of labor, the tool, and other factors. I then took those questions and began categorizing patterns of changes across Dress Up events, until
patterns became saturated (see Appendix D). I followed this same procedure across ebook events. For both ebook events and Dress Up, I reached a point, with my questions in which I needed to stop searching the data and begin theorizing outward. At that point, I directed the findings from my grounded theory analysis into questions that the data pointed to, situating my theorization in data but also more speculatively into the larger literacy field.

**Theorizing tensions.** In the process of data analysis, described above, I began to distinguish between tensions over tool limitations, tool control, perspectives on the common object, and purchasing apps. For example, upon a closer look at the developed patterns and tensions with Dress Up applications, I noticed that our activity system developed in four ways, and that each of these ways was influenced by specific tensions. Tensions around perspectives on the common object led to learning about each other’s expectations. Tensions around division of labor led to certain outcomes. Tensions around tool limitations led to learning about how to use available tool possibilities and solve problems. Tensions around purchases also led to learning and, additionally, sustaining these engagements.

Chapters Five and Six report findings from this analysis in a way that captures the role of these tensions in this development of meaning making on Dress Up and with ebooks. In addition, I made sure that I followed Roth’s (2007) guidelines regarding utilizing activity theory without reducing it solely to activity system elements. He stressed:

Practical activity is the unit of analysis and cannot be reduced to the acting subject, object/ motive driving the activity, tools, community, division of labor, or norms. These structural aspects of activity are not elements but different ways in which activity is expressed—in one-sided form. True understanding of activity requires us to
go further than the analysis of these structural aspects and consider the dialectical relation that integrates agency and structure together (p. 88).

In the chapters reporting findings, I also strived to adhere to Roth’s (2007) suggestion concerning the dialectical relations as integrating agency and structure.

An issue with the activity system element, “object.” The object and tensions around it became a complex issue in this analysis for both Dress Up and ebooks. I conceptualized “the object” as “meaning making” in our family activity system. While participants’ goals, regarding an object, are “common ground” in what a group does, I found that participants brought different frames to bear on the common object (what we were all doing together). Due to particular influences brought to these interactions by participants, as well as affordances of the tool, tensions appeared. Tensions in the system allowed us as parents to recognize differences in the way we perceived the common object and worked toward sustaining interactions.

Reflexivity

As Kalina’s mother, I participated in all the iPad activities she was engaged in and thus provided a data-driven perspective on how a child first used and made meaning with an iPad. My role as a mother allowed me to gain access to researching a child as she used technology in an environment in which she was “at home.” I view my natural access to the activity system under study as a strength of the research design. However, the possible biases an insider might have regarding a case can influence data collection and analysis, requiring that a researcher act reflexively.

Being a participant-observer, I was reflexive about my role (Denzin & Lincoln, 1994; Patton, 2002; Creswell, 2007), as my position within the study did influence data
collection and analysis. To begin, the manner in which I designed the research
determined how the activity went and developed. First, we as a family used the iPad
mainly in our living room, for recording purposes. Because Internet-based mirroring
software that I needed to use in order to record the iPad screen worked well only when
the iPad and Internet router were in close proximity, we needed to use the iPad in the
room with that Internet router. For this reason, our iPad activity was restricted to one
room in our house. Had there been no such technological restrictions, we might have used
the iPad in several other rooms, which would have influenced the manner in which we
interacted as a family, and even what applications we used.

It is possible that the presence of our camera on a tripod affected our behavior and
interaction. On the other hand, as I watched videos after each recording, I could tell that
such influence, if it took place, was minimal. We typically videotaped Kalina on a daily
basis and therefore the presence of the camera was not unusual for her. Videotaping and
the awareness of it may have affected my husband’s and my participation. It is possible
that the way we interacted with Kalina would have differed had we not recorded our
interactions for the research purpose. Yet, my observations of videos did not indicate that
we acted in ways that were not natural and true to our personalities and general patterns
of interactions with our daughter. Still, I cannot rule out such a possibility and its
influence.

Because it was my husband who typically read with Kalina, it was important that
we use the iPad when he was home from work. For this reason, we used the device at a
specific time: in the evening. If I had not been occupied with the research goal of
investigating these interactions as family interaction that included my husband, my
daughter would have probably used the iPad just with me, or mostly with me. This usually happened in the case of other technologies. In many cases, my husband introduced a device to her, but it was usually me who interacted with her because he came home late. The fact that she had to wait until he came from work in order to use the iPad probably did influence this research. Kalina developed a very personal relationship with the iPad and it is possible that waiting until later to use it may have contributed to its elevated status in her life.

My background as a literacy specialist and the fact that I studied these interactions for a dissertation also played centrally in my own interactions with my daughter and husband. As a literacy specialist and a researcher, I had knowledge of interactional literature, which described effective patterns of interactions with children, and this knowledge greatly influenced my participation. However, there were also moments where I was not always following Kalina’s lead and was directing the situation. I also noticed that although I was aware of issues related to critical literacy, such as limited representations of women in media, (also a result of knowledge gained in my university studies), I did not initiate conversations pertaining to those limited representations of women regarding an application type called “Dress Up,” which I explain in detail in Chapter Five, when our family used the apps during data collection.

While my participant-observer role affected my participation and findings, I took steps to minimize these effects by reflecting on my role. Viewing videos after each iPad session was particularly helpful because I could view myself from a distance. When I viewed the recordings, I tried to separate myself from my participant role and looked at my behavior from the perspective of a researcher. During this viewing, I asked myself the
following questions: Are my field notes affecting my participation? Would I participate differently if I did not have to attend to my researcher’s role at the same time? I noticed that at times, when my husband participated, I focused on taking field notes more intensely and he interacted more with Kalina. At other times, when he was not present, I paid less attention to field notes and devoted my full attention to Kalina, particularly when she needed assistance. It is possible that when I played more of a participant role, the role affected my observations, and when I played more of an observant role, the role affected my participation. I minimized the first effect by completing my field notes immediately after recording, and I also watched recordings the same night. In this way, I was less prone to missing my observational points and, at the same time, I could assure that my participation was affected as little as possible. My husband’s presence minimized the second effect, because when he was the primary interactant with Kalina, my role in interaction receded.

While my role in the family might have potentially clouded my analysis, I had access to more data as Kalina’s mother than a researcher would normally have, and this access enabled the possibility of research on a family’s activity system during naturally occurring activity.
Chapter Five: Findings for Ebooks

Overview of Context

Kalina grew up in a family consisting of both parents and her paternal grandmother who lives next door and who often takes care of her when her parents are at work. At her grandmother’s, Kalina has a collection of dolls, books, and toys. Kalina’s aunt, who does not have children of her own and who frequently visits, purchased many of the dolls and interacts with Kalina. As an only child, Kalina interacts mostly with adults at home or at her grandmother’s house. Now in first grade, she began to play often with children her age in pre kindergarten and kindergarten. Kalina was five years old and in kindergarten during the six months of data collection for this study. Throughout these chapters, I will refer to my husband Richard as both Richard and Daddy. At home, Kalina and I both refer to him as Daddy. I also often refer to us, as parents, as “we.”

Prior to the beginning of the study, Kalina had some experiences with digital media, mostly in the form of her own laptop and her father’s or her aunt’s cell phones. She used her laptop for playing games corresponding with her favorite TV shows on the Nickelodeon channel and for watching music videos and videos pertaining to her interests at that time, such as space. She also liked to play with her father’s cell phone, taking photographs or interacting with an application in which she would talk to an animated cat character that would repeat her words. As parents, we use technology every day for work, study, and entertainment.

When the study began, we were interested in providing Kalina with technological devices that would enhance her learning and contribute to developing her interests beyond regular books, magazines, and TV shows. Therefore, once she already had her
own laptop and used it, we also thought about introducing a device on which we could read digital books. We decided to purchase an iPad, a device that offers many more opportunities than just reading because it offered a quality of screen display, a larger screen than reading tablets, and was reliable in terms of navigation. As parents who are technology oriented and also Macintosh users, we appreciated a device that would be compatible with the equipment that we already had at home.

We purchased an iPad in December 2011, but waited until Summer 2012 to introduce it to Kalina. I took some time to learn how to use it myself. I also learned how to search and download a variety of educational and entertaining applications that I thought Kalina might like, based on her interests, what I heard from other mothers whose children used iPads, and also based on my belief that she should have a balanced mix of applications. I downloaded some books, applications for dressing up characters, making meals, educational applications pertaining to letter and sound knowledge, math applications, digital puzzles, digital coloring pages, and writing applications, as well as both educational and more entertaining games that corresponded with her interests and her favorite Nickelodeon characters. I also learned how to group them in folders, such as books, letters, cooking, etc. to make for easy app retrieval. We introduced the iPad to Kalina at the beginning of Summer 2012 and the first applications that we presented to her were ebooks.

Prior to introducing ebooks, Kalina had a long exposure to regular books. We surrounded Kalina with books from the moment she was born. In her room, Kalina had a bookshelf with a wide repertoire, ranging from children’s literature classics, such as Dr. Seuss and Eric Carle, to series reflecting popular culture and television shows she
watched on Sprout, PBS, or Nick Jr. These included stories about Curious George, an adventurous and mischievous monkey, different versions of stories about Ariel, a mermaid depicted by Disney, or *The Cat in the Hat’s Learning Library* books imitating Dr. Seuss’s style of writing and pictures and teaching concepts about the world. We regularly added more books to her home library, reflecting her interests in popular culture, animals, nature, dinosaurs, anatomy, space, ancient Egypt, and beyond. Books were also items she would get as Christmas gifts from her aunt, grandmother, and other relatives. When she began early childhood classes, her reading repertoire expanded yet further. In addition, Kalina received Polish children’s classics from her grandmother in Poland. I would sometimes read these books to her, but the majority of reading time was devoted to books in English.

At home, we also established reading routines, such as bedtime reading. In general, our bedtime reading routine was similar to bedtime reading routines established by many parents (Caspe, 2009; Doyle & Bramwell, 2006; Hindman et al., 2008; Reese et al., 2010; Valencia, 1991). We would choose a book to read and sit closely to each other. Then, either my husband or I would read and turn pages as well as point to pictures and print and initiate some dialogue around a story, pictures, or both. In such engagements, Kalina would also be an agent, as she would often pick a book, point to pictures, and ask questions about the content. However, we as parents set up the structure of these reading sessions, from the beginning of her apprenticeship into reading books with us. Depending on our availability at night, either one or both of us would read to her. Sometimes, Kalina would express her preference and would pick who would read and what. Also, she often wanted her Daddy to read as she did not see him all day long, missed him, and wanted to
interact with him at bedtime. Therefore, it was often he who read to Kalina before she fell asleep. Because I usually had more time for Kalina throughout the day and often read with her earlier, I thought that letting my husband do more reading at bedtime was beneficial for Kalina’s relationship with her father. Kalina loved to hear Richard read and interacted with him during reading. I was happy to observe these interactions and often assumed a role that our daughter exhibited herself—of a listener. Our bedtime book reading was always a time for bonding as a family. Additionally, sometimes, when Kalina’s aunt visited and stayed longer, Kalina asked her to read with her in bed; these readings and interactions looked similar to ours.

Reading regular books looked different at times as a result of my husband’s and my different cultural models (Gee, 2005) of what reading to children should look like. As a person with graduate work in literacy, I was aware of the importance of making reading interactive and dialogic and used Kalina’s natural curiosity as an opportunity to talk about books we read. My husband had a different model of reading, seeing it as an activity that children should not interrupt. However, with time, he modified his attitude and often became dialogic, especially around books that were nonfiction.

When we bought the iPad, we thought about using the device with Kalina mainly for reading. Its bigger screen (bigger than other tablets such as Nook) and good quality display enabled us to better access print and images. My husband said, “If I am going to read to Kalina on this, I’d better see well what I read.” In addition, as he read a lot on the computer (but not on tablets), he himself approached reading on the screen as similar to regular reading, with the screen as just a different medium from paper. I, on the other hand, had more knowledge of how children read ebooks through reading educational
research pertaining to this topic. I realized that such reading would be somewhat different, as ebooks come with a different design, which can influence how parents and children read them and interact around them. However, the studies I read were usually experimental and referred to computers (e.g. Korat & Or, 2010), not tablets, so I did not have any knowledge of what reading ebooks on tablets might involve and look like. I myself did not use tablets for reading, although I read regular books or articles on the computer or laptop.

The kinds of ebooks that were available on the iPad and our criteria for choosing them were also significant. I was the only one who selected ebooks. In looking for ebooks, I considered several aspects. I searched for ebooks that would correspond with paper counterparts, Kalina’s interests in popular culture, and nonfiction. But the most important factor that I had to consider was availability. Many books that I wanted to include in the ebook version did not exist as applications, so the repertoire was limited. Since the iPad had its own collection of ebooks that could be purchased through iBooks and put on the iBooks digital bookshelf, that was a good place to start. I also often visited the Barnes & Noble website to see which ebooks were available for the iPad through this company. In addition, I did my own search on the iPad and found an application called Read Me Stories that offered short ebooks. Once bought, new ebooks were regularly added to this app, automatically, without a customer’s control. Later, I also found some digital versions of The Cat in the Hat’s Learning Library series. Unfortunately, not too many titles of that series were yet available in the digital version, which upset my husband a bit because he loved to read books from this series with Kalina. Later, I also downloaded several books by Dr. Seuss and searched for digital versions of books Kalina
read in kindergarten. Additionally, some ebooks were published only in one version, “Read by Myself,” while others were published in two versions, “Read by Myself” and “Read to Me.” Read to Me books included a narrated recording. Some ebooks also had an “Auto” version. This version was similar to Read to Me; however, while in Read to Me, the reader could control the timing of page turning, in the Auto version, audio was continuous and page turning was automatic.

Although Kalina had prior exposure to technology in the form of television, DVDs, computers, and laptops, she never used a tablet and never read on the screen prior to introducing an iPad to her, with an exception of reading an ebook once or twice on her laptop, an experience she did not find particularly interesting. We introduced the iPad and ebooks at the same time. As she started building a close relationship with the device, reading ebooks on the iPad became embedded in that intense relationship. Although we suspected, prior to this introduction, that Kalina would like the new device, we did not anticipate that she would develop a relationship in which she personified the device, which she exhibited by kissing it, saying she loved it, and gently handling it when she covered it after iPad sessions. She also talked about it to the family and neighbors, made a paper iPad to play with when she could not access the device, and one time she said that she loved the iPad. She even engaged in the analysis of its name. She inspected the word “iPad” critically and announced, based on the sound of the name, that the device did not have the right name, as it suggests a pad for an eye (“iPad” sounded to her like “Eye Pad.”). She then came up with a name that, according to her, represented the device better – “little computer.” The iPad became a member of our family in Kalina’s imagination. That she developed such a close relationship with it influenced her imagination for book
reading on the iPad. This chapter describes how Kalina redesigned a traditional apprenticeship for books on the iPad.

**Explanation of Dialectics**

Dialectical relationships became a significant concept with which I understood data related to ebooks. Even though Vygotsky (1986) used dialectical materialism, the theory was not well developed yet during his lifetime, until the work of philosophers such as Evald Il’enkov (1974/1977, 1960/1982). Dialectics theorizes activity “in terms of mutually exclusive category pairs, including individual-collective, body-mind, subject-object, agency-structure, and material-ideal; that is, the opposites are theorized as nonidentical expressions of the same category, which thereby comes to embody an inner contradiction” (Roth, 2007, p. 195). Glassman called dialectics “possibly the most appropriate frame of reference for the study of human development” (Glassman, 2000, p. 2).

I began paying attention to dialectics when I found, in my analysis, that tensions played so strongly in how our family interacted on the iPad and in how meanings were expressed and made during these interactions. At points, certain activity elements were prominent, and tensions in the system revealed their prominence. Tensions revealed dialectical relations across different elements of our system. At other points, these same elements might have receded in terms of their influence on our actions, while yet other elements emerged as prominent.

Using the analytic methods described in Chapter Four, I found four significant dialectical relationships:

1. Dividing Labor with Parents’ Object versus Dividing Labor with Kalina’s Object
2. Parents’ Object versus Kalina’s Object

3. Parents’ Rules versus Kalina’s Rules

4. Kalina’s Object versus Tool Limitation

Table 1 is an outline of vignettes that exemplified each of the four findings.

Table 1

*List of vignettes exemplifying the four findings*

| 1. Dividing Labor with Parents’ Object versus Dividing Labor with Kalina’s Object |
|---|---|
| a | Reading by device vs. composing a narrative with pictures |
| b | Reading by Daddy or device vs. composing a narrative with pictures |
| c | Parents’ definition of ebook vs. Kalina’s definition of ebook |
| d | Reading by Daddy or device vs. Kalina’s persistence in composing a narrative with pictures |
| f | Reading by Daddy vs. reading as Kalina’s talking to the device |

| 2. Kalina’s Object versus Parents’ Object |
|---|---|
| a | Reading as listening to audio vs. reading with using additional ebook features |
| b | Reading as interacting between parent and child in dialogic ways vs. reading as creating dialogues between characters |

| 3. Parents’ Rules versus Kalina’s Rules |
|---|---|
| a | Parental attention to maintaining rules of traditional print vs. ignoring rules of traditional print |
| b | Parental attention to respecting rules of turning pages at the right time vs. ignoring rules of turning pages at the right time |
| c | Parental attention to respecting rules of turning pages at the right time vs. disrespecting the rule of turning pages at the right time in order to select parts of the book |
| d | Parental attention to the role of highlighted print in turning pages vs. ignoring the highlighted print |

| 4. Kalina’s Object - Tool Limitation |
|---|---|
| a | Desire to get new ebooks instantly vs. tool restrictions regarding availability of new ebooks |
| b | Desire to animate pictures in ebooks vs. tool restrictions regarding availability of animation |
Dialectical Relationship 1: Dividing Labor with Parents’ Object versus Dividing Labor with Kalina’s Object

This category explains how the family learned from one another, what their perspectives on divisions of labor were, and also what their perspectives on an object of this activity were, as directly related to division of labor and the expression of agency. In addition, it explains larger sociocultural forces that influenced these perspectives. Within the explanation of this finding, I use italics to mark “the object.” The number of italicized objects should give the reader an idea of just how negotiated “the object” was for our family, as we learned the apps together.

Ebooks were the first applications that we introduced to Kalina. As the device was new to her and she was not sure how to hold, touch, and navigate on it, she initially was fine with our suggestion that Richard would read the first ebook to her. The first ebook did not have audio and the only available version was Read by Myself. We assumed that Read by Myself would mean that we would read, as Kalina could not read yet. Kalina’s role, naturally for us, became to listen, view the illustrations, participate in dialogical exchanges, and also swipe pages. Yet, as it turned out in the second book event, this was not going to be a division of labor that Kalina would accept. As she began to develop a personal relationship with the device, she began to demand exclusive control over every aspect of interaction. The device provided certain affordances, such as specific navigation of pages, by easily moving them by sliding with just one finger. She used this affordance and others in order to realize her vision of interacting with ebooks. Her agency in realizing her own vision of reading ebooks, combined with tool affordances and Kalina’s own perspectives on an object of reading, had a significant impact on the way our family
interacted with ebooks. Reading for Kalina, in Vignette 1a, meant *composing original narration based only on illustrations*, without accessing ebook narration. Faced with Kalina’s unique perspectives on division of labor and, consequently, on the object, we began to desperately look for ways to convince her that she should allow Richard to read from the screen. “Reading” for us as parents meant *reading printed text*; however, we quickly realized that Kalina’s relationship with the device and her unique perspective on what reading on it meant were so strong that our persistence on how we perceived the object could only lead to her disengagement.

The vignette exemplifying Dialectical Relationship 1, “Dividing Labor with Parents’ Object versus Dividing Labor with Kalina’s Object,” reveals how tension plays in finding perspectives on division of labor and, consequently, on the common object. Throughout transcripts of literacy events, the following key applies: K is Kalina; D is Daddy, M is Mom.

**Vignette 1a: Reading by device vs. composing a narrative with pictures.**

Immediately, after Richard read *Mystery in Gabba Land*, the first ebook, to Kalina, we remained in the virtual library of the Nook ebook application and Kalina chose another ebook, *Dinner with Olivia*. She also began holding the device in her hands. This time, as Kalina realized that she started to like the device and wanted to have more control over it beyond just listening and flipping pages, she immediately chose Read by Myself, even though the ebook also gave her the Read to Me version.

*Dinner with Olivia, 7/02/12*

K: [Goes to the Nook Library, tries to hold the device in both hands, and chooses the book based on our suggestion]
M: Good. ...Oh, you have a choice. You can either read by yourself or they will read it to you. [Points to the button symbolizing different ways of reading]
K: [Clicks on the Read by Myself]
M: Do you want them to read it to you?
K: No.
M: No? You want to read by yourself?
M & D: Ok.

Because Kalina chose Read by Myself, we tried to promote using the audio recorded narration. We did not suggest that we would read because we naturally thought that she would like to try audio. Letting a recorded narrator read is a different division of labor from parents’ reading, but having Kalina listen to audio meant accessing narration that would be similar to parental reading. Initially, although surprised, we agreed to her rejection of audio, thinking that this was just beginning her exploration of ebooks. It turned out that Read by Myself meant that Kalina could interact with the ebook and the device on her own, in any way that she was capable of doing, and not just for this event. It was not traditional reading that was important to her at this moment. She wanted to interact in a way that would realize her interpersonal relationship with the device, a special relationship she did not want to share with us by allowing us to control the narrative with tool affordances. Kalina may also have had a different imagination for the audio as something that would interfere with her exclusive handling and interaction with the device. She did not know what it would be like if she let “them” read.

Her developing relationship with the iPad, her different perspective on reading on the iPad, and the tool’s affordances led to a unique division of labor and, consequently, contributed to a different type of “reading.” It turned out, we as parents assumed the object was reading in the traditional sense and all that entailed, historically, for our family. Kalina began teaching us otherwise, changing the object to a different type of
Kalina engaged in creating her own narrative based on illustrations that was not conventional, at least as defined by our family’s past reading practices. By moving pages effortlessly on her own and commenting on the pictures, she sounded as if she was giving her interpretation of what was happening in those pictures. We needed to adjust and become an audience, watching her interactions with the device and listening to her version of the story, based only on the pictures. She ignored our attempts at initiating a dialogue or demonstrating other features. Her emerging deep bond with the device became more important to her than the literary bond with us and composing her own narration was more important than listening to an ebook narrative. She also demonstrated this relationship and her agency in controlling the narrative by pushing my hand away.
when I tried to show her how to get back to the library. Evidently, my gesture threatened her relationship with the device and her perspective on an object.

That was not the way we imagined reading on the iPad prior to introducing ebooks to Kalina. We thought we would be able to guide her more and simply have her listen to narration when available and listen to us when audio was not available, as we did in bedtime reading. Our perspective was rooted in the Discourse of reading as print reading and involving certain behaviors. Gee (2005) used the term “Discourse,” with a capital “D,” “for ways of combining and integrating language, actions, interactions, ways of thinking, believing, valuing, and using various symbols, tools, and objects to enact a particular sort of socially recognizable identity” (p. 21). Influenced by the community of the literacy field, to me, reading was print reading and interacting in certain ways, by engaging in conversations about print and illustrations. My husband’s perspective was also rooted in the communities that valued reading as print reading. That was the way he read when he was a child, both in school and at home. Kalina’s imagination for these interactions was completely different, influenced by her emotional relationship with the device and by tool affordances, such as being able to navigate it easily. She was not as historically rooted in the Discourse of reading that we were. Because of her unique meaning making interests – the expression of a special bond with the device and controlling a narrative by composing her own – she eliminated the possibility of audio. She did not need it in order to realize what reading on the iPad was for her.

**Vignette 1b: Reading by Daddy or device vs. composing a narrative with pictures.** In the previous encounter, I demonstrated that Kalina was not interested in listening to audio, at least when we suggested it for the first time. Therefore, in response
to this tension and in order to achieve reading that would include ebook narration, a type of reading that we always promoted with regular books and with which Kalina was familiar, we tried a different division of labor in the next event. In this, she chose a book with both Read by Myself and Read to Me and, again, did not want to listen to the audio. As the following fragment illustrates, our response to the tension between her original story telling and our suggestion that the device could read created yet another tension because Kalina rejected the idea of Richard reading to her and maintained her preferred division of labor and her own composing during this ebook engagement.

*How to Train Your Dragon, 7/02/12*

K: [Enters the book]
M: Wait a second. Maybe they can read it to you.
K: [Taps on Read by Myself]
M: Do you want to hear them read?
K: No. Look at that dragon. [Slides the page]
M: Do you want Daddy to read?
K: No.
M: Ok.
M: Wow.
M: She likes it, you know. [Looks at D]
D: Yeah.
M: I wasn’t sure about this book.
K: Wow, look at that dragon. [Looks at D]

Kalina’s insistence that she would read (which meant that she would compose her own narratives, without letting anybody read the actual ebook narrative) meant that we would have to maintain her perspective on this exploration as opposed to reading with ebook narration, a way that we favored and the only way we accepted as reading. Here, her original narrative had a specific and striking form. She asked a question about what was
happening and directed our attention to the dragon, as if she was trying to engage us in the story that she was about to unfold based on her own interpretation of what was happening in pictures. Still, this improvising was a problematic perspective to us because we were positioned in the Discourse of reading as print reading, and while she never challenged that Discourse during our regular book interactions, she did on the iPad, refusing both reading by the device and reading by parents. Still, although worried, we backed away in order to sustain her engagement, became an audience, and engaged in a conversation, upon Kalina’s initiation, based on the illustrations that she herself used in order to create an original story. She directed this engagement and reduced our roles. We seemed to be helpless.

As excluding both audio and reading by parents in order to control narration began to be a trend for Kalina, achieving a division of labor that would allow us to access an ebook story line became a goal and desired outcome for us as parents.

K: Oh, he is flying.
M: Oh, what do they say? [Taps on the print, the text gets framed and a little triangle appears] Click on that little triangle.
K: [Taps and starts hearing narration, which stops]
M: [Tries to click again and asks K to click, but the sound does not play, and K moves with her exploration]
M: Can we see what they say?
K: No. [Pushes M’s hand]

When Kalina continued her way of exploring the ebook, I decided to take a risk of interfering with her control and tried to introduce audio to her by tapping on the text box that framed print. I also directed Kalina’s attention to a little triangle that, once tapped, activated audio for the text box. Yet, although initially she was interested and tapped, when I asked her to do it again, she decided to explore in her way, creating her own narration, without giving the audio a second chance. Her perspective for both division of
labor and object prevailed.

In the face of Kalina’s specific outlook on division of labor in the ebook, these excerpts showed her agency in controlling the device by not letting us decide who told a story. Her agency in controlling the navigation and narrative positioned us as parents in different roles from the roles we normally held during shared book reading at bedtime. Because, in the case of regular books, we read and often held them, we also had more agency over stopping points, when to comment, ask questions, or guide a discussion. Here, Kalina changed our division of labor because she wanted to control everything around ebooks on the iPad, consequently changing the object our family was used to (from reading and discussing the story and pictures to creating her original commentaries on pictures). As parents, we were unprepared for this kind of division of labor and a changed object. We did not know at first how to participate, which we demonstrated by silently listening to Kalina and observing her actions, much like an audience. Our prior perspectives on how we would apprentice Kalina for ebooks, shaped by the Discourse of reading as print reading, did not translate into a reality conducive to this apprenticeship, which caused tensions. Stunned at first, we rethought our usual “teaching” roles and adapted to this new type of apprenticeship, without understanding it fully. We worried that Kalina might want to continue the same division of labor and, consequently, never experience reading with ebook narration. But what we did not consider in our attempts was Kalina’s relationship with the device and how the ebook design did allow her to create her own design in narrating. Therefore, in those initial attempts, we focused so much on changing the division of labor geared toward our family’s typical reading object, thinking that changing it would automatically result in reading that looked more like our
bedtime reading. However, by focusing on this change, we interrupted Kalina’s desires to create with ebooks. Also, the more we imposed our perspective on reading, the stronger Kalina’s attachment to the device was.

**Vignette 1c: Parents’ definition of ebook vs. Kalina’s definition of ebook.** As ebook events progressed, the tension over the division of labor and our perspectives on interaction with ebooks intensified. Yet, we continued to try changing the division of labor, without directly addressing our differences about what we thought we were doing in these interactions and why. Richard, in particular, became more persistent in asking Kalina to let him read.

_Tuffy’s First Adventure, 7/03/12_

M: Kalina, listen carefully. You want to listen to the book read to you, or you want to read it yourself?
K: ...
M: Then touch this. [Taps on the Read by Myself button]
D: Do you want Daddy to read?

Kalina’s response revealed that she did not even consider the ebook to be a book, and therefore, indirectly, she also explained why she did not think she had to adhere to our bedtime reading division of labor.

K: But it’s not a book. ... Read the page...
M: What about the book?
K: A book that we’ve got.

As a result, Daddy explained his definition of an ebook to Kalina:

D: This is a book on the computer. You have to move the pages with your finger. Here, slide the finger, oh, push the arrow, and it will go to the next page. Here, Kalina, sit up.
K: Noooo. You’re supposed to move with your finger.
D: Oh, this one is done differently. It has an arrow.
M: Oh, you want to move the finger.
K: Yeah.
D: See this one, I just pushed the button. Look at this guy. He is cute. ...
K: [Laughs]
D: ...and then you push the page.
K: It looks like Mommy’s nose.
D: [Reads] Look, Kalina, look what it’s doing. [Refers to a blue hot spot on the screen]

After this explanation and exchange with Kalina about swiping pages, Richard began to read the ebook, probably thinking that this explanation would be enough to convince Kalina that since this is a book, but just on the computer, he could read it. Yet, Kalina was not convinced.

K: [Gets up from the bed and looks] What is he doing?
D: [Continues reading]
K: ...tell something...read a story.
M: You want Daddy to read the story from the real book or from?
D: [Keeps reading from the eBook]
K: That’s a book! [Points to the books on her shelf, irritated by D's reading from the device]
M: She is talking about a different book.
K: Those are books! [Points to the books on the bookshelf in her bedroom]
M: Oh, those are books. So you want Daddy to read from these books?
K: *Inside Your Outside*. [Refers to her favorite regular book at that time]
M & D: Ok.

Kalina certainly made her point by gesturing toward regular books on her shelf and verbally expressing what she considered a book. Clearly, she distinguished between an ebook and a regular book and made it clear that an ebook was not a book. This expression also indicated her distinction between a regular book and ebook concerning division of labor. In her understanding of ebook experiences, ebooks were not regular books and, therefore, they did not require parents to read them. On the contrary, she considered regular books that we read at bedtime as books and parents needed to read them, according to what we established a long time ago as bedtime routines. Contrary to these perspectives, we thought that books on the iPad were books, but just in an electronic version, something that seemed very obvious to my husband and me. As we both engaged
in reading practices in both formats, paper and on the computer, and switched between them without even thinking about differences, we naturally brought this perspective to iPad interactions. The way we defined an ebook was also in line with the Discourse of reading in which we as parents were positioned. Our definition of an ebook implied that ebooks can be read just like regular books. For Kalina, however, there was a difference between these formats because of the kind of experiences that she brought in, and this difference had implications in terms of her preferences for division of labor and an object. She insisted on composing her own storylines and rejected both reading by the device and parents because she wanted control over both navigation and narrative. For her, an ebook and the device were one and she perceived an ebook through her attachment with the device. In addition, the tool gave her certain possibilities for realizing her way of reading as designing her own narratives.

Vignette 1d: Reading by Daddy or device vs. Kalina’s persistence in composing a narrative with pictures. In order to maintain Kalina’s engagement, but also because we had exhausted ideas for changing the division of labor and started to learn how much her definition of an ebook was different from ours, we allowed Kalina to compose her narratives in subsequent sessions. Occasionally, Richard reminded Kalina about the existence of audio, but consistently, she continued her creation of stories. Eventually, however, we went back to thinking about new ways to promote different divisions of labor. First, we started to show support for each other as parents in asking Kalina if Daddy could read. When Richard asked if she wanted him to read and she said no, I asked the same question again, hoping that this reinforcement might change Kalina’s mind. When this did not work, Richard changed his approach and began
promoting teamwork, asking Kalina if he could read and she would flip the pages or expand print. When all these attempts also failed and Kalina insisted on her way of interacting with ebooks, Richard changed his focus from only promoting a certain type of division of labor to explaining what the type of division he stressed could help Kalina achieve. He said, “I can read it though, and you will know what this is about.” Kalina remained indifferent to this argument as well. These attempts showed certain creativity that we as parents employed in order to persist with our division of labor and object pursuit, but without discouraging Kalina from ebooks. After each attempt and a growing challenge in our persuasion for the changing division of labor, we adapted to Kalina’s ways of exploring ebooks.

One day, I told my husband that it was very interesting that Kalina consistently did not want him to read. He responded by telling me that he had “made a deal” with Kalina, after our iPad session, and arranged with her that he would read an ebook to her next time. This was yet another attempt to change division of labor and the object; however, this time, it was more desperate, as my husband negotiated with Kalina outside iPad interactions. When Kalina entered an ebook, Daddy reminded her that they “made a deal” and she was supposed to let him read. The following fragment illustrates the result of this agreement between Kalina and Richard.

D: You want Daddy to read now?
K: Yeah.
D: And you’re gonna flip the pages. So Read by Myself, the blue one.
K: [Taps on the blue one]
D: We have to make it a little bigger so Daddy can read. Let’s see.
K: [Puts the device on the bed, in front of her]
D: You know how to make it bigger? [Tries to zoom in but his hand covers the page]
K: I want to look at it! [Swipes the page]
D: But Daddy has to read. We made the deal.
K: Wow, he is a ...guy.
D: But you will like it when Daddy reads it.
K: [Keeps making comments about the character]
M: [Enlarges the print by tapping and framing it] See? It pops.
D: Ok. [Points to the words and reads] His name is Hiccup.[Keeps reading]
K: Hiccup?
D: [Keeps reading] Ok, Kalina, flip the page.
K: [Flips the page] Wow.

As Kalina was obliged by the agreement and did not want to break it, she also tried to do everything she could to get out of it, by trying to interact with the device in her preferred way: focusing on pictures in order to design a story; however, Daddy was aware of her attempts and made sure she complied with her previous agreement. It is significant that, after exhausting ideas for reaching a collective object and agreement on division of labor during our interactions, we then achieved our parental goals by negotiations that took place outside of these interactions, at least for a while. At the same time, we interrupted her strong desire to create original stories in order to satisfy our perspective on what reading is, the perspective that we had as a result of being influenced by one particular Discourse of reading.

As a result of this division of labor and the accompanied power that the position of parent has over a child, the interactions around the ebook, in this vignette, looked more like interactions around regular books; however, the nature of reading and interacting still differed from the nature of more traditional book apprenticeships. In order to access the print on the ebook, it needed to be enlarged; therefore, much of this interaction revolved also around synchronizing Richard's reading with Kalina's print enlarging. Kalina was in charge of print enlarging, but she also needed some verbal assistance.

D: Ok, now make words bigger for Daddy.
K: [Enlarges print]
M: Wow, that’s awesome.
D: [Reads]
K: Wow.
D: [Reads and when he finishes the page, he looks at K]
K: [Turns the page]
D: Make it bigger for Daddy.
....
K: Aaaaa, he’s dead.
D: No, he let him go.
K: He killed?
D: Make the words bigger.

Although Kalina enjoyed when Richard read *How Do You Train a Dragon?*, for the second reading of the same book she wanted to go back to her preferred way – composing narratives and exclusive handling of the device. Richard agreed to this division of labor, probably thinking that this was a reward given to Kalina for allowing him to read the entire and quite long book to her. As she explored on her own, there was no tension over trying to convince her that Daddy should read, but we both still tried to suggest audio, to which she responded negatively and went on with her own, established way: being in charge for turning pages, enlarging the print, a feature that she added now, and creating narratives based on pictures and prior knowledge from Richard’s reading.

**Vignette 1e: Reading by Daddy vs. reading as Kalina’s talking to the device.** In an earlier interaction, Kalina already indicated that her perspective on the object in relation to ebooks on the iPad might be not necessarily the same object as reading print books. She did not even consider that books on the iPad are like books, but just in a different form. Yet, because at times Richard tried to be more forceful and attempted to read from the screen in spite of Kalina’s different perspective, during one of those incidents, Kalina did not tolerate it and came out with an argument that made us realize what the nature of her relationship with the device was, and thus, her perspective on the object. This relationship had a profound effect on her creative interactions with ebooks.
At first, she clearly stated that she was going to read and rejected all of Richard’s suggestions that he should read to her.

Why do we need bones? 7/07/12

K: Oh, that’s my shelf. [Referring to a virtual shelf]
D: Oh, I see the book about bones.
K: I wanna read. Make it big. [Tries to enlarge the page]
D: Can Daddy flip the page? Daddy flips the page and you read. [Attempts to flip the page]
K: No. [Pushes his hand away]
D: We had a deal.
K: No.
D: [Flips the page backwards but K tries to interfere]. Daddy went the wrong way. Wait. You want Daddy to read?
K: I want this one. [Wants him to stop on that page and touches his hand]
D: Ok. That’s the table of contents.
K: Table of contents? [Flips the page]
D: Wait, it is all about me. Do you want Daddy to read?
K: No. And this is about your foot.
D: About skin. [Points to the picture showing hands in water] Wrinkly fingers. When you in the pool too long, your fingers get wrinkly.

As Kalina engaged in her own storytelling, this time by trying to present her explanation of what particular pictures showed, she noticed that Richard did not just comment on the pictures but started to read. In reaction to his action, she revealed in an intense and emotional way why she could not let him read.

K: Oh..
D: How come?
M: It says “wrinkly fingers.”
D: You know why? [Points] Because [Points to the part that he reads]
K: [Pushes his hand away] No.
D: If you are staying in water for too long.
K: No! [Looks at him and almost cries] You don’t! You can’t talk to it!
D: I wasn’t talking to it. I was just reading.
K: Dooooon’t. But you said... I want to read it.
D: Ok.
K: [With enthusiasm, flips the page] So your skin is...[Flips the page] Your friends...This is like skin too. [Refers to the picture]
D: Oh!
K: The skin when you go to the beach, the skin is real. [Flips the page]
D: Bumps and boo-boos.
K: Your boo-boo is gonna be gone. [Flips the page] The boo-boo is gonna bleed. [Flips the page]

As soon as she noticed that Richard read, she first said, “No.” Then, she elaborated, “You can’t talk to it!” and accompanied this verbal expression with crying. This unexpected order that she gave to him was a clear sign that, for Kalina, the iPad was not just a tool but also a special thing that she treated almost like a live entity. Telling Richard not to talk to it meant that she was the only one who could talk to it. Yet, people do not often talk to non-living things. That she wanted to talk to the device meant that this device was more than a non-living thing for her. Letting us read from the iPad would mean letting us have an intimate relationship with the device. That relationship was something she certainly did not want to share as, in her understanding, she owned this bond. It belonged exclusively to her. Hence, any impression that let her think that we wanted to take it over threatened her relationship with it; therefore, she resisted our attempts in order to protect her unique attachment. For her, reading was interacting deeply with the device, and she understood reading with the device as different from reading in the traditional sense. Ebook interaction was special, unlike interacting with regular books. If somebody else read, this would not only interfere with her experience and the emotional attachment that she formed but also with the type of reading that she invented. For her, reading was composing the story through pictures, and she also understood it as talking to the device. This is a very different view of reading than a traditional view that stresses decoding and learning the story or nonfiction from putting together the words. Words, in Kalina’s reinvented view of reading, were not central to her reading of the nonfiction book;
pictures were central. Therefore, in talking to the device, she was narrating pictures, or giving information based on illustrations. Moreover, she seemed to talk to the characters, especially when she tried to assure a boy with a little wound on his knee that the wound eventually would be gone. This was unconventional information presenting, talking to, and storytelling.

Kalina’s relationship with the device (also reinforced by our constant attempts to gain more control) and outlook on the object changed the entire dynamic of these interactions. While in our interactions around regular books, books did become important items, this importance did not match the unique attachment to the device observed in interactions around ebooks. This unusual attachment to the iPad, coupled with Kalina’s unique perspective on reading and device design affordances, had its consequences for apprenticeship. Apprenticing for reading ebooks differed much from apprenticing for reading regular books, where Kalina’s expression of agency as seen in this study did not usually occur. During regular book reading, Kalina formed a bond with us, and that connection always seemed to be more important than bonding with a book. She had her favorite books, but she always wanted us to read them. In this exchange and in others on the iPad, the bond with the device, also because of its unique design possibilities, was a priority for her. This relationship with the device and its affordances allowed her to become creative. We jeopardized that relationship when Richard attempted to read. After she got a confirmation that he would let her explore in her way, she enthusiastically went back to talking to the device and telling the story using pictures. It was striking that when we commented on pictures, she did not perceive it as a threat to her relationship and engagements, but when we tried to read the words she did perceive it as a significant
threat. She also maintained what she meant when I tried to read, not just Richard, by pushing my hand away. The object “reading” has socio-historical ties to books, bedrooms, and bedtime reading. Ebooks, it turned out, were not tied to the object of reading, through these same deep social, historical roots and practices; hence, apprenticeship on the iPad did not start from previously understood roles of expert and novice. Kalina’s control over the object assured that traditional expert/novice roles were rendered obsolete. The object of reading changed.

The tensions over division of labor and the object continued, with Richard trying to promote his view of reading and now, my role of mediator, asking him not to upset Kalina, until Kalina tried audio on her own.

The dialectics revealed that tensions played a significant role in participants’ learning about perspectives on a common object – reading (which could be traditional reading or a variety of reading possibilities afforded by ebook design, whether it was listening and viewing or Kalina narrating the story herself) – and division of labor. The tension required stabilizing to sustain engagement. As we as parents and Kalina began interacting around ebooks in alignment with our different perspectives on what these interactions should look like in terms of an object and division of labor, tensions appeared and revealed different meaning making interests. In the process of learning these different perspectives, we recognized Kalina’s emotional relationship with the device and her demonstration of agency that resulted in her perceiving reading as talking to the device by composing her own stories. The device gave her an opportunity to compose her own stories based on pictures. That was what she valued as reading, and she was ready to explore audio only later. We as parents valued reading as reading print, as a
result of being positioned in a specific Discourse of reading.

**Dialectical Relationship 2: Parents’ Object versus Kalina’s Object**

This section illuminates further how we as a family learned about our perspectives on an object. The previous section dealt with the object as tied to the division of labor. The differences in perceiving a common object were in a direct relation to particular configurations in division of labor, with tensions over division of labor as more frequently articulated than tensions over the object. Tension was tied to the possibilities of the tool that Kalina used in order to realize her unique reading. In this section, tension between different perspectives on an object is articulated. This section explains how the dialectical relationship contributed to sustaining a common object, which is understood here mainly as reading with decisions regarding additional features. Captured by the device, forming a close relationship with it, and rejecting any interference that could potentially take away from her exclusive handling of the device, Kalina was interested in telling her own story based on pictures, which she described as talking to the device, and for that, she did not need to use new features that we wanted to introduce. We, on the other hand, were interested in showing her all possibilities available on ebooks, such as zooming, in hope of drawing her attention more to words, which was the focus in her kindergarten and to what we felt we needed to adhere.

**Vignette 2a: Reading with using additional ebook features vs. reading as listening to audio.** As different ebooks had various possibilities, we were interested in exploring them and in encouraging Kalina to try them to see how they worked. While introducing these features, we thought that we needed to show her all possibilities so she could learn to use them. Also, we were interested in exploration of additional features
ourselves and wanted Kalina to pay more attention to print. She, on the other hand, either used our suggestions or not, following her imagination for the device and her interests in making sense out of her interactions with ebooks.

*Dinner with Olivia, 7/02/12*

M: And now you do like this, Kalina, with your finger. [Tries to introduce the zooming feature]
K: [Pushes M’s hand away] Wow, he is in lunch.
M: But look. Look at this [Zooms in] You can make bigger if you want.
K: [Slides to turn the page] Oh, they eat Brussels sprouts. [Turns the page] Oh, they’re making a party. [Turns the page] Oh, look at. [Turns the page] Oh, they’re eating spaghetti and meatballs.

As this excerpt shows, whether Kalina followed those suggestions was often connected to her expression of agency through handling the device and composing her stories. At that time, the device mesmerized her. She was forming a close relationship with it and rejected any interference that could potentially take away anything from her exclusive handling of the device. She was also interested in telling her own story based on the pictures and for that, she did not need to use the zooming feature. When I tried to mention for the second time that such a feature existed, without taking over the device, she simply ignored me and engaged in her own story telling.

This was not an isolated behavior. Even a month after introducing the iPad to Kalina, she would sometimes reject our demonstration when she thought it would interfere with her relationship with the device and her interest in telling her own story based on pictures. As a meaning maker, she also used multiple modes of communication (verbal language and gestures) in order to express what she meant, as well as ignored any suggestions regarding using additional ebook features.

We were also influenced by the focus on word recognition in Kalina’s kindergarten.
We thought we could promote word recognition in this way. However, that was not Kalina’s interest. Her interest was simply in listening to the story. By promoting word work, we satisfied our sense of our perspective on the object for the following engagement, but we also ruined Kalina’s engagement with the story.

*What Was I Scared of? 10/13/12*

K: [Enters the book, listens, slides the page, and smiles when she hears a part about pants with nobody inside them]
D: There is pants way up. [Points] Tap for pictures! [Points]
K: [Slides the page instead]
D: Go back, Kalina! You can tap.
M: If she wants to.
D: You can tap on the picture to see what it says.
K: [Taps on the background and sees the word “bush” appear, then slides the page, listens]
D: Haha. The pants started jumping.
K: [Listens]
M: Those pants were scary. [Comments on the narration]
K: [Slides the page]
M: What about if you tap on [Gets interrupted because the audio starts playing]
K: [Listens]
M: [Taps on some pictures and the words appear]

As Richard remained interested in additional ebook features, such as tapping on pictures to see their word representations and hear the pronunciation, he encouraged Kalina to explore these options. I, on the other hand, was more aware that Kalina rarely chose to do so. Unlike Richard, I participated in every iPad session, so I was more familiar with her preferences. Therefore, I became a mediator between Kalina and Richard when I saw that he strongly expected her to tap on pictures. Still, encouraged by Richard to tap in order to see words, without imposing tapping, Kalina did tap on a picture. When she did, this resulted in a conversation between my husband and me, with Kalina interacting mostly with the ebook, not with us. She also remained focused on her listening and turning pages instead, while we were more focused on technical possibilities and motivating Kalina to
use them in order to pay more attention to words.

Vignette 2b: Reading as interacting between parent and child in dialogic ways vs. reading as creating dialogues between characters. A new type of tension over an object appeared when Kalina read non-fiction books pertaining to animals. While my interest was to draw her attention to information and talk about it, Kalina’s interaction with the text was unconventional – imitating animals and talking to them.

*Baby Animals, 9/12/12*

K: [Turns pages back and forth until she likes an illustration, listens and turns another page; then listens, turns a page and hears the voice of the narration “Where is this panda's mommy?”] “Mamma. She’s gotta be back...only.” [Turns the page] “There.” [In reaction to the part about the panda mom] Ooo, little baby.

M: Oh this is a little piglet.

K: “I love you too, Mom.”

M: Kalina, so this baby kangaroo lives in his mom’s pouch. [Points to the picture but K is interested in turning the page]

K: “I will find you.”

M: Do you know what pouch is?

K: Yeah.

M: What is pouch?

K: [Turns the page] “Hey Mom.” [Listens to the narration] “Mommy!” “Yeah!” [Creates a dialogue between a baby seal and mamma seal that she sees in the picture]

M: Oh, so he is almost white, like Bonnie.

K: [Interrupts M] “Are you ok?” “I will be.” (Continues with her imitating). “Remember, be safe.” “Ok...When I see you...” [Turns the page]

M: Who’s that?

K: Beluga. [Repeats after the narration] “I have to go.” [Turns the page]

M: Who says it?

K: “Thank you.” [Turns the page] “Where is my mom?” “She is gotta be here.”

Kalina’s striking way of interacting with the ebook began with the way the narrative itself invited her to this type of engagement. Kalina treated the question, “Where is panda’s mommy” as literally directed towards her and she even responded saying that the mom would be back. She then started creating imaginary dialogues between mom animals and baby animals in response to the narration and the pictures. Occasionally, she would
interrupt the narration, but most of the time, she enacted a dialogue after the narration was over. That she listened to the narration was evident also when she repeated some wording that she heard. It is also evident that my attempts to transform this type of interaction into a more conventional conversation between a mother and child around a nonfiction ebook did not work, as she ignored my questions. In this way, she communicated that her attention was somewhere else, not on interactions with me, but on creating dialogues between baby animals and mom animals, talking to them and talking to the device. Yet, as a parent, I did not see the value in the way she made meaning in this interaction. To me, Kalina was not adhering to the conventions of a conversation around nonfiction. She, however, engaged with something more sophisticated than a conversation as a result of her interaction with the ebook. Through interpretation of pictures and narration that she heard, she was able to create little dramas between mom animals and baby animals in response to the information she tried to synthesize from multiple modes. Talking to them was what reading meant to her, and the ebook afforded it.

While I did not want to accept Kalina’s unconventional interaction with nonfiction about animals, which she recreated each time she interacted with this ebook and others about animals, we as parents had more tolerance for Kalina’s unconventional interaction of a similar kind around a different book. This book, *The Monster at the End of This Book*, in which Grover, a character from *Sesame Street*, talked directly to the reader, warns the reader not to turn the page as there was a monster at the end of the book.

The dialectics revealed that tensions played an important role in mutual learning about participants’ perspectives on a common object. As Kalina was first interested in
creating her own stories and then in listening to a narrated story, she was not too eager to explore additional features. On other occasions, the fact that she controlled the device and interacted with it, not with her parents, allowed her to read in yet one more unconventional way: by creating dialogues between characters.

**Dialectical Relationship 3: Parents’ Rules versus Kalina’s Rules**

This section describes how tensions over the rules constituting the Discourse of traditional reading contributed to Kalina’s meaning making with ebooks on the iPad. Tensions around where to start and which direction to go, rules established with regular books, were re-envisioned by Kalina on ebooks, and appeared during the first phase of research, before she started using audio. Tensions concerning when to turn the page appeared later, when she needed to learn how to navigate the audio. These rules and the tensions around them were situated in a new type of interaction and influenced by participants’ different social standings, perspectives regarding objects, and affordances and constraints of the iPad and ebook applications. The tensions revealed that in order to be able to interact with ebooks, Kalina needed to re-envision the rules of the Discourse of traditional reading that she already mastered and make sense of them in the new environment. As she determined division of labor and maintained control of the device, not adhering to these rules were also an expression of her agency. Additionally, as she explored ebooks on her own, she was driven by her interests in designing her own stories. Therefore, the rules of where to start and in what direction to go did not always matter to her in maintaining her unique meaning making interests. The design of the device and ebooks also contributed to breaking conventional rules.

**Vignette 3a: Parental attention to maintaining rules of traditional print vs.**
ignoring rules of traditional print. Which way to go and where to start are important concepts in literacy acquisition for small children. As part of a larger notion, concepts about print (Clay, 2002), these two terms are some of the indicators of a child’s understanding of how print works. At the time of these interactions, Kalina had a good understanding of these concepts regarding regular books. We always read books with her in this way and encouraged directionality each time she handled a book. Yet, on ebooks, when she was interested in interacting on her own without audio or parental reading, although Kalina had mastered these rules for regular books, she seemed to respect them less with ebooks. This was especially true when an ebook opened to a page that was not the actual book beginning page, as a result of previous browsing and not resetting the ebook to its beginning.

Why Do We Need Bones? 7/06/12

M: Wait a second. Let’s do it from the beginning, ok? [Slides pages to the beginning]  
K: But I like this one. [Refers to the page that caught her attention]  
M: [Tries to go back to the beginning]  
K: I like this part. [Refers to another part that caught her attention]  
M: Oh, ok. [Keeps flipping to the beginning]  
D: We need to start from the beginning.

When the book opened to a particular page, Kalina got interested in it right away, but because it was not the first page, I decided to start from the beginning, with Richard’s confirmation in this regard. Still, even though we browsed to the beginning of the ebook, Kalina did not start from it. Instead, she began browsing pages on her own and stopped on what caught her attention.

K: Ok. See [Browses through a couple pages and stops on the page showing bumps and scrapes]
Not so good. [In the comment to the picture showing the scrapes, browses forward and stops on the page showing a boy getting his haircut] Look at this. [Points to the boy] Look at the hair. [Slides a page and stops on the page with a skeleton]
D: Oh, bones.
K: This is a feleton. [Points to a skeleton] See? The feleton has bones inside.
M: They do?
K: Yes, they have bones inside.
M: Kalina, it says here that babies have three hundred bones. [Points to the picture]
K: [Turns the page forward] And see those ...? This is a real bone. [Points to it]
D: Kalina, see this part here? [Points] Daddy had an operation on that part.

The illustrations drew her attention and determined what to focus on, rather than starting from the beginning of the book, as previously accepted as a convention. It was particularly the illustrations that sparked her interest, and moving effortlessly from page to page by sliding them additionally enabled this exploration. The images offered enough information for her to demonstrate her prior knowledge and connect it to what she saw in pictures in order to walk us through what caught her attention. That she chose where to start was also her way of demonstrating that she had control over the device, the ebook, and navigation. Her decision about where to start also influenced possibilities for a conversation. When she decided to skip a page, we could not initiate a dialogue around the information that she omitted. In this way, through division of labor that allowed her to exhibit control over the rules, and through particular ebook design, she also controlled an object, to a large extent. She challenged the Discourse of traditional reading at multiple levels: the rules, division of labor, and the object of reading itself.

Breaking the rules regarding where to start did not just apply to nonfiction but also to narratives. In terms of narrative stories, we as parents realized that it was especially important to start from the ebook beginning. However, many times, when Kalina opened an ebook, the page that appeared first was not the actual first page. Also, certain ebook features contributed to disobeying the rule of where to start. With her story composing
that was connected to her deep relationship with the device, this kind of reading (with breaking rules regarding where to start) did not bother her as, in her exploration, she did not follow the actual story, but created her own version, based only on pictures. The ebook let her “write” the narrative, and not as a typically structured story. In this case, the tool allowed Kalina to verbalize what she knew about the human body, as it related to the pictures. Additionally, in connection to her control and unwillingness to share the iPad, she usually did not welcome my attempts to reset an ebook to its actual first page. As ebooks on the iPad are stripped from the three-dimensionality of their hard copy counterparts, this might have also contributed to Kalina’s insisting on starting her exploration from the page that appeared first.

The rule of which way to go also did not matter as much in this type of exploration, as designing her own stories did. When she began from whatever page opened first, she also did not know what was before that page. Additionally, because while reading it was sometimes easy to activate other features and end up in a different part of the book, when this happened, Kalina did not have a way of realizing this.

*Wizard of Oz, 7/07/12*

M: You don’t want from the beginning?
K: [Makes monkey sounds when she sees monkeys]
D: Flying monkeys.
K: [Flips the page forward]
D: That’s a witch’s hat.
K: The witch is gone.
D: Ding-dong, witch is dead.
K: [Flips the page forward, activates a feature that brings up two last pages, clicks on the first page out of two pages shown, and goes back to the that page] Roar! [Makes monkey sounds]
D: Maybe with Mommy for a while...Daddy is falling asleep.
Interestingly, while she explored the ebook in this way, by not starting from the
beginning and by exploring only illustrations, she accidentally activated a feature that
highlighted two pages, and, as a result, she was brought back to those pages, which
happened to be the pages from the earlier part of the book – pages she never even
explored because she started from the middle. But this did not cause any confusion for
her. She simply continued her story, even making the same monkey noises she made
before, when she entered pages with monkeys for the second time. She did not realize she
went back because she was not tied to the structure of the story. She was freed from that
narrative. As directionality— a key aspect of learning to read paper texts – seems to
require that the “reader” stay with the structure, in this case, the ebook did not impose the
structure and put the “reader” in the “composer” seat. Reading here was composing and
not tied to the structure of the ebook narration. In this way, Kalina challenged yet another
element of the Discourse of traditional reading.

Most of Kalina’s ebook engagements included audio. However, since she
occasionally explored ebooks with no audio on her own, throughout this data collection
period, there were also some examples of this type of exploration from the end of data
collection period. Kalina’s actions and interests from that period indicated that the rules
remained not as important to her, but what drove her interests and caused her to ignore
“reading” rules were pictures. They determined what Kalina wanted to talk about and
possibly extend. When she interacted with her favorite nonfiction book, Why Do We
Need Bones?, about the human body, she maintained directionality in general, but when
she entered a double page spread, she would sometimes direct her attention to the page on
the right first, not on the left. In addition, in this later period, as Kalina’s being in charge
was already established, when I managed to read some information from the screen before she turned the page, she did not tell me that I could not talk to the device.

Vignette 3b: Parental attention to respecting rules of turning pages at the right time vs. ignoring rules of turning pages at the right time. As Kalina started to use audio, a new tension over another rule appeared: wait until the audio is finished before turning the page. When we as a family read regular books, as parents, we always synchronized our reading with turning pages. Therefore, this was not something Kalina had to learn how to do. However, in order to navigate an ebook with audio on her own, she needed to master this new skill, and she also needed to modify it for different versions of ebooks. Some did not require that she recognize when to turn the page because the design would not allow her to turn the page before narration was over. However, others employed a chime or highlighted the print. Still, some did not have any indicators regarding when to turn pages. In all these cases, our parental assistance was needed.

At first, I ignored instances in which she disrespected the rule of waiting before turning pages. After all, without being able to read words, she could not know when exactly to turn. I wanted to give her time so she could get used to the navigation. I also wanted to avoid instances in which any tension due to my teaching might have discouraged her from exploring audio. I realized that our many attempts to promote either our reading to Kalina or reading by the device failed and when she got interested in audio on her own, it was important to give her some time, as this was the only way she would access actual narration.

However, when she read a book about Ariel, her favorite mermaid character, with
audio accompanied by words on the pages, when the narrator specifically mentioned that
the reader was supposed to wait for the sound of chime before turning the page, we
started to reinforce the rule that was a part of this ebook design. Her initial response, as
she demonstrates, was to ignore our teaching. Then, she learned to adhere to turning
pages at the right time, although inconsistently.

_The Little Mermaid, 7/16/12_

K: [Taps on the orange button. Listens to the narrator making remarks about turning the
page when the chime is heard]
M: That is when you turn the page.
K: [Listens to the audio] The flounder! [Exclaims to D] [Tries to slide the page before the
chime]
D: No.
M: You have to wait for the bell to ring.
K: [Keeps listening]
M: Now.
K: [Slides the page and listens] That’s Ursula.
D: Oh.
K: [Slides at the right times and listens] He must be alive...That’s Sebastian. Wow. She
likes. She loves Eric. She took her voice away.
M: Yes.
K: That's Eric and his dog. Voice was gone. [Repeats the last sentence after the narrator]
D & M: Wait, it is not done yet.
D: Wait.
K: [Turns the page at the right time] She became...
D: Wait. It was not done, Kalina.
K: [Does not wait] They got married.

It is significant that Kalina learned quickly from this tension and never resisted our
teaching. She did not treat our reminders about turning pages at the right time as intrusive
and disturbing her relationship with the device. Even though the tension never completely
went away as she sometimes chose not to wait, she began to understand that this was an
important rule, a rule that would allow her to hear all of the audio and to access the entire
story. It was as if an important breakthrough happened with her acceptance of audio: she
also began to accept some guidance, in connection to her engagement in the story. She knew that our assistance helped her to access the entire audio and because it was in her interest to hear the story, she was motivated to listen to us and obey the rule most of the time. It was then in these interactions that our assistance became crucial. While in our traditional apprenticeship we read stories and initiated interaction around it, here our parental role was different: we taught her how to master the skill of synchronizing turning pages with audio so that an efficient interaction between Kalina and ebooks took place. In these interactions, she could navigate and access the story on her own, without parental reading.

As this interaction shows, there were particular consequences of interacting with the ebook in this way, by viewing pictures and listening to the audio. While we paid attention to how Kalina synchronized turning pages with audio, she interacted mainly with the ebook, not with us. She started this exchange by talking to us and looking at Richard, but she had a certain purpose for it: expressing how delighted she was that an ebook with her favorite character appeared on the iPad. When the audio started, she concentrated both on it and the pictures, making comments based on her prior knowledge, illustrations and audio, and even repeating some language from the audio. In addition, in her comments, such as “That’s Eric and his dog,” she used the ebook as a confirmation of what she already knew about that story from a Disney movie and as a way of sharing this knowledge with us, her audience.

As Kalina began to understand that audio allowed her to access interesting features such as characters’ voices and sounds without parental reading, she came under the device’s control. She adjusted to this new situation by adhering to the rules that were
built into the design of the particular ebook applications. We all needed to follow these rules in order to listen to a narrative. As Kalina’s interest in audio grew and she mastered turning pages, she was also able to self-correct herself when she turned a page too soon.

**Vignette 3c: Parental attention to respecting rules of turning pages at the right time vs. disrespecting the rule of turning pages at the right time in order to select parts of the book.** As Kalina mastered respecting the rule of waiting for narration to be over before turning a page and transferred this rule to other ebooks, we introduced Dr. Seuss’s ebooks to her. She first obeyed the rule but then, from a certain point, she began navigating through pages faster, not obeying the rule of waiting for the narration to be over, which resulted in skipping some audio. It turned out that she disobeyed the rule on purpose.

_The Lorax, 8/20/12_

K: [After over ten minutes of reading the book, does not wait for the narration to be over and swipes]  
K: I know. I like it.  
M: You like going faster?  
K: I just want to go faster.  
R: But you skipped the page. You missed what he's was reading. You skipped the page.  
K: It’s fine, Dad.  
D: Kalina!  
K: I wanna.  
M: Want what?  
D: ...  
K: I wanna, Dad!!! [Looks at Daddy]  
D: ...  
K: I wanna!!! [Gestures angrily]  
D: All right.  
K: They’re chopping trees. [Swipes before the narration is over] That was cool. [Swipes and looks at D]  
M: That was cool?
K: I like Lorax. [Continues with selecting which pages she would skip and which she would listen to, taps on some pictures to hear words and see the words, and then listens to all the narration on the pages]

As this fragment illustrates, Kalina used her mastered rule of turning pages in order to advance her own interests in meaning making. For this long book, her interest eventually was to skip certain pages and stop on the ones that drew her attention. She was not dominated by following the narrative. She was selective and cared only about certain parts. The device allowed her to skip parts she was not interested in. Assuming that she simply did not respect the rule of turning pages at the right time only caused a tension between Kalina and Richard. Because at that time the skill of turning pages at the right time was already mastered, we did not understand initially why she stopped respecting it.

Vignette 3d: Parental attention to the role of highlighted print in turning pages vs. ignoring the highlighted print. One of the ebooks highlighted the print in synchronization with reading; however, Kalina turned the pages before the highlighted print was narrated. Therefore, I explained to Kalina how to use this feature so that she could turn pages at the right time. The following data fragment illustrates that although Kalina wanted to learn the rule, the rule also interfered with her desire to view pictures on both sides of ebook pages. My teaching was a complicated endeavor because of the ongoing narration.

Curious George Goes Camping, 9/21/12

K: [Turns the pages after hearing the title and author, listens to the first page, then cannot swipe to the next page]
M: [Helps with swiping]
K: [Goes by accident to the first page]
M: Careful.
K: [Turns the page properly, then does not see the print on the first page of the double spread because she wanted to see the pictures on the entire double spread]
M: Oh, so he wants George to help him with setting up the tent. Yes?
K: [Swipes to the next page in the next double spread, starts listening to the narration, and moves to the right page before the narration on the left page is finished]
K: [Turns the page after the narration is over]
M: But it was not done yet. [Thinks narration was not done] I need to show you...[Does not finish talking as the new narration started]
K: [Listens to the narration on the left page but does not finish looking at the page on the left as she moves to the right side with narration still pertaining to the left one]
M: They did not finish yet.
K: [Moves back to the page on the left by sliding]
M: It’s ok.
K: [Moves to the right and then to the left again, and then to the right, and then wants to turn the page before the narration is over]
M: No no no.
K: [Remains on the page for a while and tries to turn again before narration is over]
M: Wait. Do you see the blue print? [Points to the blue print] The blue print indicates when [Interrupted by narration]
K: [Turns the page and starts listening, then tries to swipe to the page to the right, before the narration on the left was over]
M: Not yet, still blue. [Points to the print]
K: [Watches the device switch automatically to the right page after the narration on the left one was over]
M: Yes.
K: [Activates a dictionary feature accidentally]
M: I will show you something.
K: [Swipes to the next page, listens, and swipes to the right before the narration on the left is over, and swipes several times between the two pages]

As Kalina wanted to see bigger pages, it was impossible to fit two pages on the screen and she needed to view them separately. However, during reading, Kalina was not happy with just viewing the left page and only part of the right page, so she tried to at least center the double spread in order to see as much as possible on these two pages. As a result, she only saw some print on the left page while the audio for that page was still on. This created a tension because I wanted her to view the entire page synchronized to the narration. Therefore, I decided to tell her this fact. At first, I just said that they did not finish the narration, but later, I showed her the blue print. That was not easy to do as once I missed my chance to explain it to her, she already listened to the new page and I did not
want to interrupt the audio. When I found an opportunity, before she turned the page, I explained to her, both verbally and pointing, why the blue print was important. She then respected the rule. However, later, she went back to her earlier way, probably because she really wanted to see illustrations on both pages.

The dialectics revealed that tensions played an important role in Kalina’s learning how to make sense of the rules of the Discourse of traditional reading on ebooks. At first, when she was only interested in creating her own stories, she disrespected the rules she mastered with regular books, which the device allowed. However, when she discovered the attractiveness of the audio, she was more willing to respect the rules. She also showed sophistication in her expertise in order to engage with the audio according to her interests.

**Dialectical Relationship 4: Kalina’s Object versus Tool Limitations**

This portion of the study describes how a dialectical relationship between Kalina’s perspective on the object and tool limitation contributed to her meaning making during interactions with ebooks. Data point to two types of tensions between Kalina’s object and tool limitations. The first type of tension was specific only to ebooks of a certain kind and was a result of Kalina’s desire to engage with new books on that application. The second type of tension was around the lack of an animation option on some ebooks. This tension appeared as a result of interacting with ebooks that included animations.

**Vignette 4a: Desire to get new ebooks instantly vs. tool restrictions regarding availability of new ebooks.** One ebook application, *Read Me Stories*, enabled Kalina to go back and find new ebooks that were added automatically to the application from time to time. Thus, reading new ebooks soon became one of Kalina’s expectations regarding
this particular application. Yet, the tool design always restricted interactions with new
ebooks in certain ways, and Kalina could not immediately get access to the ebooks that
the app promised. The app first presented cover pages of new ebooks, with a caption
saying, “coming soon,” but without specifying exactly when. After a while, the ebooks
marked as coming soon would change their category to “coming tomorrow,” but the time
of that change was never specified. Therefore, Kalina wanted to check every day, and
when an ebook she waited for was still marked as coming soon, this caused tension. Once
the preview sparked her interest, her desire was to read the ebook right away, not wait
until the next day.

*Jack in the Beanstalk, 8/30/12*

K: What’s new? What’s better new?
M: Let’s see. There is a new book in *Read Me Stories*.
K: [Taps on the app]
M: Do you remember? Some of them were supposed to come.
K: Yes. Robot. I am a robot. [Imitates a robotic movement]
M: Maybe.
K: Can have a robot?
M: Let’s see.
K: [Browses]
M: Today’s new book.
K: Robot! [Finds the book she looked for]
M: Coming soon.
K: [Screams with disappointment]
M: Let’s see. [Starts browsing]
K: Robot!
M: But Kalina…
K: I want robot robot!
M: Oh, let’s find something else. You go here, to the library, and you can find some other
books.
K: I want robot. [With disappointment and sadness]

In this exchange, Kalina had a high expectation for a certain ebook because she
remembered from the previous encounter that the ebook was supposed to appear soon.
Knowing that soon did not necessarily mean the next day, I let her know that, but, apparently, she still expected that the ebook would appear and insisted on the ebook she wanted. Eventually, she chose a different one, but this disappointment also resulted in a diminished interest in the app for a while.

As Kalina’s expectations grew throughout engagement with this ebook series, mainly concentrating around reading more and more new ebooks, as a parent I needed to teach her how to handle this limitation by choosing another ebook. She learned that what the app promised was not going to appear on the next day and needed to make do with another ebook. This influenced her motivation. Here, motivation was high at first because the promise was so obviously displayed, but its fulfillment was problematic because having to check every day if the promised ebook was there led to a disappointing experience. On the other hand, this could have been a more motivational activity if she had gotten more access to new ebooks.

**Vignette 4b: Desire to animate pictures in ebooks vs. tool restrictions**

regarding availability of animation. The second tension over tool limitations appeared as a result of Kalina’s exposure to another type of ebook, ebooks with animations. I did not analyze this type of ebook in this study because they mainly involved animating pictures while listening to a story without any print appearing on the page. Yet, as this type of ebook often included an option of dressing up a character, this was appealing to Kalina. She would also occasionally tap on pictures in regular ebooks, hoping that this action would animate them. Her frustration was not intense when this did not happen, but this desire and attempt to animate revealed that it was in her interest to also animate pictures in order to see what would happen or in order to redesign characters’ looks, not
only listen to narration, turn pages, and enlarge print. This tension had appeared in an earlier period of the data collection; thus, in the later period, Kalina’s decision to tap in order to see if items could be animated was not accidental. In one event, when she was reading an ebook, Kalina tapped on some clothing items that the main character bought. She wanted to see if she could change the clothing the character wore, a practice she learned from her previous interaction with ebooks that featured such a possibility. In those interactions, changing outfits was sometimes a main object, not following a narrative, and animation served this object. Kalina wanted to incorporate this object of animating in order to design characters’ looks in regular ebooks. However, when she realized that tapping did not change the character’s look and I told her that this ebook did not work like the ebooks with animations, she simply continued with the object she started with – reading the ebook by accessing the narrative and turning pages.

Kalina’s attempts to animate pictures also appeared on other occasions. When she interacted with a Read Me Stories ebook, she tried to tap on some items in order to see them jump or spin, a practice she knew from ebooks with animations, where her object was experimenting with animating.

*Jack in the Beanstalk, 9/10/12*

K: [Turns the page, starts listening to the audio and at the same time taps on pictures]  
M: Oh, they don’t animate. These don’t move. [Looks at D] You see, she is trying.  
K: [Tries to animate pictures again, tapping more forcefully]  
M: No, these don’t animate. They are not like those another ones.  
K: [Turns the page and listens]  
M: [Looks at D] Animations are cool.  
D: Yes.  
K: [Turns the page, listens, and tries to animate again]  

In this exchange, Kalina not only tried to animate, but she also had a hard time giving up
on these attempts, even after I stated that in that ebook there were no such options. I also acknowledged Kalina’s desire in an exchange with my husband, which he confirmed. We both felt that animating was an important feature to Kalina. She eventually distinguished between books with just animations and without and was able to adjust her expectations to different types of ebooks.

The dialectics revealed that tension played in learning what object was possible on ebooks, and in this mediation, parental role became important. The tool also became an avenue for learning how to take advantages of tool affordances in order to satisfy Kalina’s meaning making interests.

**Summary of Findings**

The four dialectical relationships outlined in the chapter: 1) Dividing Labor with Parents’ Object versus Dividing Labor with Kalina’s Object, 2) Parents’ Object versus Kalina’s Object, 3) Parents’s Rules versus Kalina’s Rules, and 4) Kalina’s Object – Tool Limitations revealed that meaning making around ebooks was significantly influenced by the complex interplay of participants’ positions in society, experiences brought to those interactions, the Discourse about reading as print reading, affordances and constraints of the tool itself, and parental mediation. The findings also revealed new areas of parent–child interactions. In these interactions, the characteristics of the tool and participants’ perspectives played crucial roles. These areas indicate that interactions with ebooks differed entirely from more traditional models of interactions that resulted in commonly held conclusions about the parental support that is conducive to literacy development (Britton, 1972; Caspe, 2009; Doyle & Bramwell, 2006; Halliday, 1975; Heath, 1983; Hindman et al., 2008; Reese et al., 2010; Valencia, 1991; Wells, 2009,
Parental and Kalina’s perspectives on the object varied on ebooks at times in two different ways. One way was tightly connected to participants’ different imagination of division of labor. In those interactions, it was often tension over the division of labor that was more articulated, rather than tensions over perspectives on the object. Yet, with time, tension over an object also became pronounced in order for participants to rationalize their particular preferences regarding division of labor. Another way involved mostly preferences for using particular ebook features, such as zooming, and it was always articulated as tension over the object. The dialectical tension enabled us as parents to constantly learn about Kalina’s expectations regarding division of labor and the object. Yet, these two ways in which perspectives on objects differed were also influenced by a larger community that shaped our parental expectations toward what the object, reading, was. We as parents wanted to interact with Kalina with the Discourse of reading as print reading, whereas Kalina was not as historically rooted in that discourse as we were and used tool possibilities in more creative ways.

As Kalina developed a deep emotional relationship with the device, she wanted to handle it exclusively. This resulted in specific types of division of labor on ebooks. As she decided she would not only turn pages but also read, this arrangement, as well utilizing tool affordances, had consequences in her perspective on the object – interacting with the device by talking to it and creating her own versions of narratives. Because our parental perspectives were different regarding what reading on ebooks is and should look like, tensions occurred and resulted in mediation, with a parental goal of sustaining these engagements. In this mediation, we balanced pursuing ways for achieving divisions of
labor that would access narration with adapting to the labor distribution Kalina preferred in order to sustain her engagement. At first, this meant adapting to interactions around her composing. Yet, when Kalina explored audio on her own and decided that the new way of reading could enrich her interactions and her meaning making, we as parents adapted again. This process alone indicates that meaning making on ebooks can differ substantially from traditional book apprenticeships. The bond that Kalina developed with the device and the way she perceived reading by appropriating tool affordances resulted in interactions (tied to rules, communities of practice, and distribution of labor) that differed from traditional apprenticeships.

Tensions between Kalina’s and parents’ different perspectives on the object, in regard to preferred ebook features, were also connected to participants’ different meaning making interests. While we as parents were interested in Kalina’s exploration of various features such as zooming and animating words and pictures to see and hear words in the colorful print, in her decisions, she always considered her relationship with the device and either reinvented reading as composing or merely following the story line when she became engaged in audio. In these cases, she viewed our demonstration of new options as intrusions and interruptions. Often, when such exploration of features became parents’ object, talking about a story became secondary. This additionally contributed to the nature of this meaning making as different from regular book apprenticeships, in which the focus is usually on pictures and narration, and there are no additional features. The data also featured interactions with ebooks that were of an unconventional nature, either interacting with a character or creating little dialogues between characters, as a result of audio available on ebooks and Kalina’s perspective on the object as talking to the device.
and composing.

In these interactions, influenced by participants’ different social standing and related to Kalina’s deep connection to the device and her desire to control the narrative by composing her own, Kalina at first disrespected the rules of print that constitute the Discourse of traditional reading because improvising her own stories, based just on pictures and prior knowledge, did not demand that she respect these rules. In addition, certain features of the tool (the device and ebook apps) allowed her to effortlessly switch pages in any direction. Tool constraints, such as complexity in resetting an ebook to its actual first page also enabled her to ignore the rules of the Discourse of traditional reading and compose original stories that did not require starting from the first page.

Her attitude to the rules changed only when she became interested in listening to audio and had to learn how to synchronize audio with turning pages in order to get meaning from narratives. In most of those instances, she was motivated to learn from us how to do it and she showed sophistication in coordinating listening to the audio, turning pages, and enlarging print.

It also appeared that Kalina interacted mostly with the device through listening, viewing pictures, repeating phrases heard during audio, and confronting it with her prior knowledge. Parental assistance was mostly reduced to teaching her how to navigate, as well as being an audience. In addition, tool constraints, such as not being able to comment at any time without interrupting the audio contributed to the nature of this meaning making. In these interactions, our parental model of a traditional apprenticeship was challenged and we adjusted to the dominance of Kalina’s interaction with the tool, her growing expertise with navigation, and audio that could not be interrupted. Our
parental roles of teaching how to smoothly navigate ebooks in audio form, becoming an audience, and looking for opportunities to initiate a dialogue during audio became prominent.

The fourth dialectical relationship, tensions over tool limitations, illuminated further Kalina’s interests in meaning making and how she wanted to realize them, as well as what influenced some of those interests. As she interacted with ebooks, she was sometimes interested in animating their pictures to see what they would do and what sounds would accompany them, an object she wanted to transfer from her interactions with ebooks where animation as reading, was prevalent. These attempts were in line with her motivation to design on ebooks.

The four dialectical relationships revealed that meaning making with ebooks was a complex process for our family. In the following chapter, I explore the dialectics of Dress Up applications.
Chapter Six: Findings for Dress Up

Overview of Context

This chapter describes how our meaning making in interactions with Dress Up applications began and progressed as Kalina, Richard, and I interacted as a family around these applications.

Kalina began exploring Dress Up applications in her third week of using the iPad. Simultaneously, she also slowly began exploring other applications such as games, and began having favorites. In these explorations, we often made suggestions, gravitating toward educational applications, but she quickly realized that there were many different apps on the iPad and wanted to explore them on her own. In addition, when she began her engagement with Dress Up, her emotional relationship with the device was already developed.

Dress Up applications became her favorite type, especially after another favorite app, a math game with a girl character disappearing in whirlpools of water and emerging to reach her final designation, stopped working with the iPad operating system update. Elimination of the math game was a very sad experience for Kalina.

Dialectics and Dress Up

Similar to ebooks, dialectical relationships became a significant concept with which I understood Kalina’s meaning making and its expression on Dress Up. Some of these dialectical relationships resembled the relationships with ebooks and some were different. Once again, I noticed tensions around different perspectives on objects, similar to the tensions that appeared with ebooks. Tensions over tool limitation also existed on Dress Up, but disappointment resulting from their use was much more intense on Dress
Tensions while using Dress Up also revealed a dialectical relationship between
Kalina’s control of the tool and parental control. Finally, while on ebooks, an economic
community was not significant because we bought ebooks prior to engagements, on
Dress Up an economic community played an important role in our activity.

In this chapter, I use the notion of design (New London Group, 1996; Kress,
2000) in two ways. First, I talk about the design of applications when I discuss the
availability of certain features. For instance, most of the applications were designed in
such a way that although they included numerous choices, those choices were also
limited. Second, I also talk about design when I describe what my daughter did on these
applications; she used resources available to her on Dress Up, such as outfits, in order to
realize her meaning making interests, such as designing a doll.

Meaning making in our activity system was expressed in four significant ways as
Kalina, Richard, and I interacted with Dress Up. At points, certain activity elements were
prominent and tensions in the system revealed their prominence. Tensions revealed
dialectical relations across different (dynamic) elements of our system. At other points,
these same elements might have receded in terms of their influence on our actions, while
yet other elements emerged as prominent. The four significant dialectical relationships
follow:

1. Parents’ Object versus Kalina’s Object
2. Kalina’s Object versus Tool Limitation
3. Parental Tool Control versus Kalina’s Tool Control
4. Production versus Consumption

Within these major dialectics, there was a progression of development across
different literacy events. Table 2 is an outline of vignettes that exemplify each of the four findings. In addition, because the object of our family’s activity was the major source of tension for the first two dialectical relationships, I focus discussion for those findings on the object. To draw the reader’s attention to how changeable the object was, in Dress Up, I italicized the objects in these discussions. The changing object made activity difficult for our family and revealed how important a stable object is for activity participants to “reach common ground” on their activity (Rogoff, 1990).

My analysis of the object may raise questions for some, as examining the object closely can construct activity as bounded events when the goal of analyzing with an activity theory framework is to explain activity over time. For example, findings in Chapter Five demonstrated activity over time, even as I examined separate literacy events. The broad object of “reading,” in that case, allowed for a look at activity over time, even as it differed in singular events. For Dress Up, such a broad object would not capture our activity. On Dress Up, tensions occurred at the level of very localized activity, such as “exploring screenshots.” Furthermore, objects changed frequently as the family learned the affordances and limitations of the tool. While, for the first two dialectical relationships, “exploring” or “experimenting” may have been the overarching object, tensions occurred in each literacy event as each family member struggled with “exploration,” thereby reducing the object to a number of competing objects.
Table 2

The list of vignettes exemplifying each of the four findings

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<th>1. Parents’ Object versus Kalina’s Object</th>
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**Dialectical Relationship 1: Parents’ Object versus Kalina’s Object**

This category demonstrates how the family learned to define the object of activity from one another. It also explains how the dialectical tension eventually contributed to sustaining a common object.

When Kalina first started Dress Up, her interests for meaning making were
different from those of her parents. Kalina was interested in narrowing our activity object to *just designing a background*, initially, or in *experimenting with a feature* (screenshots). We, however, tried to enforce a different object—*designing outfits*—and feared that *experimentation with screenshots* would lead to issues with storage room on the device. Faced with the new device, its new possibilities, and Kalina’s seeming lack of interest in initial experimentation with outfits (which we perceived as a threat to sustaining these events), we began apprenticing Kalina into Dress Up applications in a way that corresponded with our own imagination for meaning making possibilities on Dress Up. The object of our activity was to introduce Kalina to app possibilities. She, on the other hand, demonstrated a different vision and understanding of the object on Dress Up. Vignettes 1a and 1b demonstrate tension around the object.

**Vignette 1a: Trying available features in order to experiment with design vs. Kalina’s personification of a character.** At the beginning of her third week of interacting with the iPad, Kalina was skilled in browsing through folders and tapping on what interested her. After interacting with other applications for some time, when we suggested an educational app, she looked at the folder with two Dress Up apps, which were not educational, pointed to it, and said, “I want this.” She then tapped on the folder and opened *Dress Anime*, her first Dress Up application. When she began carefully contemplating a background change, her attempts to change the girl character’s background were not successful due to her lack of familiarity with navigation; therefore, we immediately offered our support and made sure she liked the result.

*Dress Anime*, 7/18/12

M: You can dress her in any way you want.
K: But I like her costume.
M: Good, but you can try other ones. There is tops, there is bottoms, dresses, bows, all different things. [Points to all those options] And there is more. Hair, even where she is. [Refers to backgrounds] You can change the background, where she is--the place.
D: Try some different things.
M: Choose.
K: [Contemplates a background change, and taps but it does not change]
D: Did you click one?
M: Which one? [Points to backgrounds]
K: I just clicked one.
M: Oh, you clicked one?
D: Oh, you have to hit ok.
M: [Taps on one of the backgrounds and changes it] Oh, no. Do you like this one?
K: Yeah.

In this exchange, we framed the object in a way that reflected our own perspectives on it.

These perspectives were based on our positions as participants in a technical society in which we had longer membership, better knowledge of the device, and conviction that experimenting with all available features should be the object of this type of activity.

Experimentation with Dress Up apps remained a dominant parental perspective on the object throughout six months of the study.

After changing the background, it seemed logical to us that Kalina would then try other options, such as changing outfits; therefore, we immediately went back to demonstrating all the options available on the app, beyond changing backgrounds, to encourage Kalina to experiment with them. She, however, was not interested in such experimentation and stated that she liked the costume that the girl character already had.

Kalina’s perspective on the object—to personify a character as a doll—is evident here.

M: So now you can...[Switches to the panel with all options]
M: Now you can choose. [Points to the options and swipes to show how the panel can be navigated]
D: She needs shoes, Kalina.
M: Different shoes, hair. [Points to these options]
K: But I like her costume.
As we continued to encourage Kalina to *experiment* with all options, she responded in a way that reflected her own perspective as a member and agent in this family activity of 21st century consumption around a popular device. This perspective was a result of Kalina’s apprenticeship into this society that began within our family system and her societal position. She was unfamiliar with this type of app and when she saw a girl character, she connected to her and focused on that connection in a similar fashion to the way she would voice her opinion about a new doll.

Her response to our suggestion to *experiment* with outfits was surprising to us and we did not accept it. Instead, we persisted that she *experiment* by choosing different outfits, to which she responded by saying that the character liked the outfit. Tension was not resolved as we continued to work toward a common object.

D: Yes, but try something different.
M: Try different hair. [Points to hair option on the panel] Maybe she would look better…
K: But she likes her costume better. [Points her finger toward M]
D: But this is experimenting, Kalina.

As we insisted that she take our perspective and engage in *experimenting* with changing outfits and hair styles, we showed that we perceived and framed our object as the only appropriate way of interacting with the application. Richard maintained his argument about trying different things, while I extended it to encourage Kalina. I pointed to the character and created an argument that a change in hair might result in a better look. Kalina not only maintained her frame, but strengthened her reasoning by pointing at me and stating that the girl character liked her outfit. We responded with our definition of what this activity was about: *experimenting* with customizing characters’ looks. Kalina’s object—*personifying the character as a doll*—was influenced by her play life, where she
developed whole personalities for the dolls she dressed up.

Subjects’ expectations and what the iPad and its applications meant for us were produced in our various positions in society as consumers of technology, whether technology was a computer, a YouTube video, or a doll. As parents, we had an interest in the tool possibilities; however, Kalina’s meaning making interests were influenced by her personification of objects she played with (whether they were her dolls, the iPad itself – which she kissed for the first month of its use – and the girl characters on Dress Up). Perhaps she engaged in our object of experimentation when she created backdrops, but her greater interest was to personify the “doll.”

After Kalina’s first encounter with Dress Up, she told me she planned to change a character’s hair in a math game that she liked. This might indicate that Kalina’s initial narrow treatment of the application (changing only the background) might have been her way of responding to something novel and complex and making sense out of it in her own way, not by immediately using the full scope of options on Dress Up that we wanted to impose on her. This might also further demonstrate that, indeed, she did take me up on the object of experimentation but was not going to engage in that object with me. Her object was to personify the doll and focusing on outfit changes interrupted that possibility.

Vignette 1b: Trying available features in order to experiment with design vs. taking multiple pictures. Within a week of the first iPad event, we still wanted to show Kalina all the available options that she had not explored yet. For example, when she designed an outfit for one of the singers on PopStar, I suggested that she try taking a screenshot. She liked the idea and took a picture of her design. During the following
event, with *Bey & Riha*, an application that featured two singers, Beyonce and Rihanna, she was also eager to explore taking screenshots when I suggested it, in addition to designing outfits and stages for the characters. Yet, her idea of *taking screenshots* and ours were different.

*Bey & Riha, 7/26/12*

M: Do you want to take a picture?
K: Yeah. [Takes multiple shots of one design]
M: That's enough. The same picture.
K: I like taking pictures...
M: Ok. Do you want to change her clothes, or you want a different singer?
K: ...[Keeps taking pictures of the same outfit]
M: Ok.

As it turned out, she developed an imagination for the object that was different from ours. She approached *taking screenshots* with curiosity and a desire to experiment. When she became fascinated with just taking numerous shots of the same design, this became her prominent interest for this event and she decided to take it further by experimenting with it. For her, this was a possibility to find new meanings. Because she was at the beginning stages of using Dress Up, getting to know these applications in terms of their possibilities meant that she could experiment with their various aspects and not simply accept parental guidance regarding what iPad engagements should look like. While on *Bey and Riha*, Kalina experimented with screenshots. It is probable that she liked to hear the sound of a camera as she was taking those pictures. The more pictures she took and the faster she was, the more sounds she heard. A similar situation, in which her object was experimentation, occurred when she used the iPad’s PhotoBooth later on. She experimented with making faces and taking pictures of herself. She also stood up with one leg in front of the device and another one behind it and, looking down, took a picture
of her entire body. She experimented with the device and the meanings it had for her, as though asking, “What else can it do for me and what kind of effects, feelings, could this evoke?” Her *experimentation* with sound, similar to experimenting with PhotoBooth, was guided by her interest and curiosity for meaning making and was her only focus once she started *experimenting* with taking screenshots during this event. As is evident in the next fragment, her object was at odds with our own.

D: You cannot do too many.
M: You cannot do too many pictures, Kalina.
D: ...
M: Change her clothes and then take a picture.
K: But I ...
D: It records it, Kalina.
M: But it records.
K: [Keeps taking pictures of the same outfit]
D: No!
K: But I wanna!
M: Kalina, do another singer.
K: [Screams]
D: Kalina, you don’t understand; it keeps too many on the computer.
K: [Keeps taking pictures of the same outfit]
D: No, no, no.
K: [Keeps taking pictures of the same outfit]
M: Kalina, we’re gonna shut down the iPad.
K: Sorry... I don’t want this. [Exits the app]

As parents, we had a different imagination for the place of the screenshot option in this engagement and others, which stemmed from our knowledge of the device and our assumptions that the object (which Kalina had now determined was *only experimenting with screen shots*) should actually be *design*. In order to impose what we considered to be proper handling of the device and redirect Kalina’s attention to our perspective, design, we built an argument. First, I told her that she just took multiple pictures of the same design. When this remark did not work, I tried to redirect her attention to starting a new
design or switching to a new character. However, Kalina invested significant attention to her *experimentation with screenshots* and was not going to give up. When Kalina ignored my suggestion to start a new design, we worried that she did not share our perspectives on the object—*to design*—and also that her excessive picture taking might lead to filling the storage of the device too soon. When she ignored our concern, we revised our rationale, a revision that allowed both our objects to play: she could first change a design and then take a picture. Irritated by our persistence in arguments, which she perceived as interrupting her *experimentation* with screenshots, she then raised her voice in order to stress that she simply wanted to take pictures and continued to do it until we responded with a warning of shutting down the iPad. In this case, no object could play.

The first dialectical relationship for Dress Up revealed that tensions over perspectives on an object played a significant role in sustaining activity. As our family interacted with Dress Up according to our different perspectives on the object, tensions revealed different meaning making interests.

**Dialectical Relationship 2: Kalina’s Object versus Tool Limitation**

This category explains how the dialectical tension around Kalina’s desired objects and tool limitations affected what meaning making outcomes she could realize. It also illuminates our parental role in teaching Kalina how to make sense out of tool limitations in order to solve problems and sustain engagement. Kalina experienced a significant tension with tool limitations as a result of her idealized imagination for the kind of possibilities for meaning making that the tool would offer. However, she found out that the tool (app) limited object possibilities. The dialectical relationship between tool and object could be intense; however, Kalina learned over time how to handle limitations.
Vignettes 2a, 2c, and 2e demonstrate the role tool and object tensions played in Kalina’s learning.

**Vignette 2a: Desire to hear singer characters sing vs. tool restrictions regarding availability of different songs.** During her second engagement with Dress Up, Kalina thought she would not only design outfits but also hear the singers (for whom she was designing outfits) sing their songs. After we bought all singers and Kalina engaged with more design, she asked multiple times if the singers would sing. She knew the singers and listened to their songs on the computer and radio; therefore, she thought that the application would allow her to hear them sing. She idealized meaning making possibilities on Dress Up.

*PopStar, 7/18/12*

M: On Stage. [Points to where she should tap]
K: [Not sure where to tap]
M: Yes, middle one is On Stage.
K: [Taps Red Carpet]
M: Oh, Red Carpet. Choose the dress. [Points briefly to dresses]
K: [Chooses a dress]
D: What else can you do?
K: Now On Stage. [Taps On Stage] She won’t sing.
M: But you have to choose an outfit. [Points briefly to the outfit panel]
D: Look, she’s got red, white and blue on the top.
K: [Chooses the top that D suggested]
D: Ooooh…She needs shorts, Kalina. You need to give her shorts.
K: [Chooses the shorts]
M: Try, Kalina...What does it look like on her?
D: Oooh
K: [Chooses a skirt] Now she will sing?

Being more knowledgeable and critical about technology, we as parents understood that Dress Up applications would be limited in what they offered. At the same time, our knowledge of the Dress Up apps was not thorough. In particular, my husband never
downloaded them. I usually previewed them with Kalina’s interests in mind and also tested them to make sure they worked. I did not anticipate that Kalina would expect to change music on these apps, and I did not check what exactly she could or could not do with music. Therefore, after designing an outfit, when she asked if a singer would sing, we had to check if that option was possible.

M: Let’s see what’s here. [Taps on the icon with a music sign]
M: ...[Whispers to D]
D: Try it. [Refers to music choices for Katy Perry]
K: [Taps on one of the choices for Katy Perry’s music]
M: ...iTunes...“Cannot open the page” [Reads the chart that appeared]
D: It’s just dressing, Kalina.
M: ...dresses, Kalina. [Helps her in going back to the app]

Kalina has asked if the singer could sing and we learned she could not without paying for songs on iTunes. Therefore, we let her know that this app was for design, not for changing music. After we both stated that the app was only for designing outfits, Kalina did not seem to accept this explanation. Instead, she began exploring other not yet used options, in order to check possibilities for singing.

K: [Taps on the “Key” section of the app]
M: [Reads the info]
K: I like this one.
D: Just hit ok.
M: [Hits Ok]...to the bag?
D: Yeah, buying them, I am sure.
K: [Taps the character and hears her talk]
D: Go back.
M: [Goes back]
D: There must be other things you can do on it, right?
K: Everything’s locked...
M: No, they are not locked any more. Try Beyonce. How can you dress Beyonce?
K: She will sing?
M: I am not sure, Kalina.
D: This is just...
M: This is not so much for singing. This is for dressing singers.
K: [Cries]
Exploring other sections of the app did not solve the issue of singing, and we redirected Kalina’s attention to design, stating that this application was meant only for dressing singers. Kalina could not control the object because of a tool limitation. Her crying in reaction to our definite answer reflected how strong her desire was and also how disappointed she was.

As a result of this new experience, we were not sure how to approach handling the issue, but needed to work toward a much-needed outcome – sustaining engagement in the face of disappointment. At first, Richard tried to encourage Kalina to concentrate on design. I, on the other hand, tried to explain that making singers sing would require going on the Internet.

D: Kalina, let’s see what you can make her wear. Try Red Carpet.
K: [Cries] I wanted her to sing.
M: We would have to go on the Internet to have them sing.
K: [Cries]
D: This is Miley, Kalina.
K: [Cries] No.
D: Try Red Carpet with Beyonce. [Points to the option]
M: I think we should take a break.
D: Ok.
K: ...more...
M: What one more, Kalina?
D: But Kalina, you bought this. [Points to Kalina] You have to use it.

The situation at this point was so intense, filled with Kalina’s crying, that our attempts to encourage her to dress singers did not work. The only way to ease the tense atmosphere around this app was to take a break from the iPad. However, we feared that Kalina would never go back to these applications, hence Richard’s threat that since Kalina bought the app she needed to use it. In addition, we carried this tension to our post-iPad conversation. My husband blamed us as parents for buying something that did not meet
Kalina’s expectations. I, on the other hand, defended this app choice saying that we could not know that she would have such high expectations and that she may eventually get used to the limitations. One can see in this literacy event that our activity system extends beyond our family. Our activity in this literacy event was embedded in an economic community. Our social class positions in a country where consumerism plays so significantly in young people’s and adults’ lives, do not permit us to satisfy all our desires. Kalina’s disappointment with the tool was a lesson on consumerism within our family: we do not satisfy all our desires at the drop of a credit card number into the iTunes store.

Vignette 2b: Desire to change outfits and hair in particular ways vs. tool restrictions regarding interchangeable outfits and hair. A week after this disappointing experience, Kalina did go back to the same application and engaged with design, without even mentioning music. She also discovered a new restriction – not being allowed to interchange singers’ outfits. This time, however, she accepted my explanation of new limitations with much less distress. A certain “ease” took over once we all recognized that the device could do only so much. At that point, Kalina gained expertise precisely because she had to stay within the confines and experiment within the constraints. She also began to learn, with our help, that in spite of disappointing limitations, there are still some ways of solving tensions without compromising engagement.

During the following event, Kalina wanted to change the hair for one of the mermaids. Because this was not the first time she used this application, she did not simply assume that changing hair would be possible.
M: Oh, That's your favorite one. [Refers to the outfit she chose]
K: Yeah.
M: Why do you like this one?
K: Because it’s cool.
M: Cool?
K: Can you change her hair?
M: Oh, you cannot change in this one. In a new mermaid, you can change her hair. [Refers to a different mermaid app]
K: Oh [Quits the app], I thought so. [With sadness]
M: Yeah. But in the new mermaid dress up you can change her hair.
K: Yeah. [Enters the new mermaid app and engages in hair change and design on it]

As this exchange shows, Kalina demonstrated that she was aware of tool limitations, considered them, and accepted them, although with sadness. She also learned how to solve a problem in a certain way. After I confirmed the app’s limitation and suggested a way of dealing with it, she went to the new mermaid app, where she could change the hair. Her question, “Can you change her hair?” showcased Kalina’s process of internalizing her experiences with limitations. She did not assume any more that she could do everything that she initially imagined on the app. Through frequent encounters with limitations, she began to anticipate them. My parental role was to help her consider possibilities for solutions. She anticipated the limitation and, through my apprenticeship, discovered she could satisfy her object by searching elsewhere.

This is an important finding for Kalina’s growing expertise with the iPad. She became more flexible in determining the object, recognizing that it could only be kept in play in relation to tool limitations and affordances. She also recognized that the family’s division of labor (parental help) could help her keep her object in play. Tool limitation became an avenue for learning how to use tool affordances (switching to a different app in which designing hair styles was possible) to solve problems regarding objects. Her use
of object, tool, and division of labor helped her sustain meaning making on Dress Up.

**Vignette 2c: Looking for sophisticated shades of colors vs. tool restrictions regarding availability of shades of colors.** As Dress Up engagements progressed, Kalina would only sometimes quit an app when she experienced a limitation. With this progression, the kinds of limitations that she experienced depended not only on tool constraints but also on her growing and developing interests around Dress Up and on experiences and interests she brought from non-iPad interactions, such as her interests in fashion and matching colors. Therefore, the developing object, which she always tried to expand according to her interests and her motivation, was in frequent confrontation with limitations, which led to constant rethinking about what could be done, what needed to be compromised, and what was required to solve a particular problem in creative ways. These processes became an integral part of meaning making on Dress Up and its development. For instance, once she started looking for particular color shades, not finding exactly what she wanted led to tension.

*Mermaid Dress Up, 9/08/12*

K: That does not match.
M: It’s yellow. It matches.
D: It’s pretty.
K: No, because it is dark.
M: You mean the dark bra and this is not dark like the bra? Oh, then change the bra or skirt.
K: [Changes]
D: Pretty close.
M: Yes, but it’s not the same shade. [Describes K’s reasoning to D]
D: All right.
K: [Keeps changing tops]
M: ...but Kalina, when sometimes it is a little darker, it does not mean it does not match. It can be a new style.
K: I like that.
M: You like the blue bra and yellow bottom?
In this exchange, Kalina explained why she did not think two outfits matched. At first, I decided to help her deal with the tension over a lack of certain color shades by encouraging her to browse through either tops or bottoms. When she went back to changing tops in order to find the one that matched the bottom, I then added a little more encouragement in terms of thinking about how to handle the limitation: by not limiting herself in terms of thinking that only certain color shades are validated, but, instead, thinking about matching in a way that would welcome different possibilities and different styles. She then engaged in design in more open ways in terms of matching colors. Even though she designed on her own in terms of making decisions related to design and aesthetics, parental support helped her sustain interests in designing in connection to the creative, although limited nature of Dress Up.

Kalina’s pursuit of sophisticated color matches turned out to be strategic. She revealed that the object of *experimenting* with outfits was more sophisticated for her than for us.

*Mermaid Dress Up, 8/30/12*

M: ...this one is the best one, Kalina.
K: But that doesn’t match.
M: What? The tail doesn’t match with the bra?
K: Yes ...
M: I think it matches. They are both red and have sparkles. [Points to the design]
K: I want that doll. [Points to the design]
M: You want what?
K: The doll. [Looks at me]
M: Oh...
She wanted perfect color and pattern matches for a particular reason: she was designing a
doll to play with. While I adjusted my support for her perspective on the object of design,
stating, “I think it matches. They are both red and have sparkles,” it was only after that
point, that I realized she had an outcome in mind for the object of our activity: she was
designing a doll to play with. She connected activity on the app with her daily play with
dolls and used the application to design a doll she did not yet have. She confirmed this
desire in an informal interview that I had with her later.

As this interaction shows, responsive and careful assistance at the stage when
Kalina was more independent involved playing the role of an audience that recognized
her designing qualities. Also, when Kalina revealed that she had an outcome in mind for
the object of design – designing a doll – the interaction helped us understand the
progression of her design choices better. She had looked for specific colors because she
was designing a doll to play with, not just changing outfits.

Several times, during our conversations after iPad engagements, I mentioned to my
husband that, in spite of our encouragement to always experiment with a wide range of
options, Kalina chose only a certain range and liked to repeat designs. We sensed that,
through these choices, her imagination for the object was more than what we imagined.
We aligned our support even more to her perspective on the object of design, which
seemed tied to an outcome– designing dolls. When she then kept going back to her doll
design, she sometimes also asked if we could get a doll like the one she designed. When
we said we did not think it was possible to get exactly the same-looking doll, she wanted
to cut out the one that she designed. Repetition of particular actions is worth further
study. It may be that repetitions reveal what children are working on and point to
outcomes that reveal even further where their motivations in a particular activity lie. For us, as parents, using the multitude of options available for design was the object of our interest, but the desired outcome was abstract. It may have been as vague as “expertise.” Kalina, on the other hand, made the object of design matter in her world. She had a concrete outcome for design in mind: make a doll.

The dialectical relationship of tool and object tension revealed that this tension played an important role not only in sustaining design but in changing standards for design on Dress Up. First, the tool limitation focused Kalina’s attention on what was possible to do, and she engaged in those possibilities. The app also became an avenue for learning how to take advantages of tool affordances in order to satisfy and even extend Kalina’s meaning making interests.

**Dialectical Relationship 3: Parental Tool Control versus Kalina’s Tool Control**

This category explains how subjects’ positions and experiences influenced participants’ perceptions of control over the tool, understood in this study as both the device and Dress Up applications. Agency for controlling both navigation and design influenced whose meaning making interests were realized in interactions around Dress Up and what opportunities for control negotiation existed. Kalina demanded exclusive control of the device, which was a result of several factors. The device, being a new tool introduced to our family system, was a material possession with which Kalina developed a special relationship. Kalina also had an interest in using the device in specific ways, such as designing with Dress Up, focusing on applications she found particularly attractive, allowing to create, and not difficult to navigate. This control over the device was also constructed in a specific time frame. Kalina had access to the device only at the
time of our interactions. She never saw the iPad beyond our evening iPad events. For these reasons, she made sure that she was the only one who handled the device during our engagements. As parents, we aligned our support with Kalina’s demonstrations of agency.

Vignette 3a: Parental attempts to achieve a more equal division of labor vs. Kalina’s control of navigation and design. Kalina would often demonstrate her control by using the iPad main button. As she handled the device, she also had the access to the main control button. She quickly learned that just with one click on that button she could leave a current app and access other apps. She often used this button to show that she was in charge of making decisions for how long to stay with a particular app and when to switch to a different one.

*Red Carpet* and transitioning to *Dress Anime*, 8/04/12

D: [Joins us] What are you making there, Kalina?
M: Look at that. She matched the gloves with the brown dress. Tell Daddy what you are doing.
K: [Looks at D and smiles]
D: Hi.
K: Hi.
D: Tell Daddy what you are making. What are you thinking there?
K: What is that? [Taps on the part of the screen but nothing happens]
D: Oh, that’s just a part of the decoration.
M: That’s just a curtain. You want…
K: [Presses the main button on the device that brings her back to the Dress Up folder]
M: You want…Ok.
K: [Opens *Dress Anime* and points to one of the girl characters] I want to unlock her.
M: Ask Daddy if we can unlock her. [Points to one of the girl characters]

In this exchange, she did not use verbal language to explain to Richard what she was doing. Instead, she tried tapping the screen. When tapping did not work, she simply left the app and selected another one. This is an example of a dialectical tension between her
perspective on the object and ours at the level of the tool: as she got to touch the device, she controlled the object and the outcome. Therefore, the object and outcome resulted from division of labor, realized here as Kalina having control of the device and apps and parents having to assume other roles, such as an audience and occasional technical guides. At the same time, this interaction shows that meaning making was not only realizing a certain object—design—but was also communicating a larger meaning, within which she realized objects. This larger meaning was agency in handling the device. She did not want to share this control with us and thus determined, to a great extent, how labor was distributed.

At times, Richard tried to negotiate a more equal division of labor during Dress Up engagements. One time, he simply picked an item and tapped on it, announcing, “Daddy will pick a tail.” And he did.

_**Little Mermaid, 9/03/12**_

K: [Enters the app]
D: Daddy will pick a tail.
K: [Pushes his hand]
M: Maybe ask her.
D: Can I pick one?
K: [Picks a tail] Oooo, I like that one.
M: Who picked this one?
D: Kalina. [Picks quickly a top without asking K if he can]
K: No! [Pushes his hand]
M: Richie!
K: [Makes a gesture toward the main button]
D: Ok. Here, pick here. [Pushes his hand again even though he only pointed]
M: Yes, but let HER explore.
D: Ok.

As this interaction illustrates, Kalina demonstrated control over the device in two distinctive ways. When Richard attempted to tap, she first only used a gesture—pushing
his hand away. When he repeated this attempt, following her lack of responsiveness to his question if he could pick something, she demonstrated her agency in a stronger way. Therefore, she both pushed his hand away and expressed verbally her dislike for his action. The second act of communication clearly made her point known. In addition, she considered terminating this event by trying to press the main button, but she decided to continue after pushing his hand away again when he only attempted to point the next time.

In this dialectical relationship, tension is not so much between Kalina and her parents but between Kalina and Richard. I took the role of a mediator who supported Kalina’s control of specific labor distribution (Kalina tapped and designed and we were an audience). I wanted Kalina to remain interested in using the iPad and feared she would lose interest if I did not take her side.

As the engagements progressed, Kalina sometimes welcomed our suggestions concerning design, but only to a certain extent. In the following example, she would honor some suggestions enthusiastically at first.

Mermaid Dress Up, 8/30/12

M: Well, we have to find it. Maybe we can buy it. We don’t know. Kalina, what about finishing and giving her a little more jewelry and crown?
D: She needs a crown.
M: Or a flower on her head.
D: Oh, she can have an umbrella, too.
K: Oh.
D: Something in her hand.
K: Umbrella, umbrella.
D: It’s the second one up. [Points from far]
K: Umbrella, umbrella.
D: Different things you can put in her hands.
M: These.[Points to that section]
D: Yes. Touch it, Kalina.
K: [Touches]
D: Keep touching.
K: [Keeps touching]
M: A nice flower.
K: [Keeps experimenting]
D: Maybe you can give her a flower.
K: [Keeps experimenting]
D: Maybe flower.
K: [Selects a strawberry]

Kalina was eager to look for some accessories for her mermaid, when Richard and I suggested that a crown, flower, or umbrella would be nice, even though she was satisfied with the outfit itself. However, during her browsing, when I suggested settling on a flower, she indicated she was interested in browsing through other choices and selected what looked like a strawberry. After making that choice, we indicated our acceptance of it, trying to compare it to a flower (because in our minds, people don’t typically hold strawberries), and offered more suggestions concerning further design.

M: Like a strawberry?
K: Some kind of a flower. Strawberry flower.
D: Touch the shell [Refers to the icon representing different backgrounds]
K: Strawberry flower.
M: Strawberry flower, maybe.
D: Kalina, touch the shell, on the bottom.[He is suggesting she change the background.]
K: [Touches bracelets, instead. She is not designing backgrounds.]

When Richard suggested changing backgrounds, Kalina had other design ideas on her mind and experimented with bracelets instead.

This series of actions showcased that Kalina controlled not only who handled the device but also what the object of design was. She held the iPad, and she controlled the object and the outcome. The tool (the device and the app) enabled her to communicate her agency without using verbal language but by simply performing an action. She did not need to employ other means of communication in order to strengthen her meaning.
making. We respected her choices and her control. That she did not choose verbal language at all throughout this exchange in order to communicate this control over the design is significant because it suggests a level of expertise in composition. She required little feedback for her designs and used the tool to move from one app to another, and within apps, from one design choice to another.

Occasionally, Kalina allowed us to tap on the device, even when she already had control of navigation, but such instances were rare, brief, and carefully controlled. In the following example, she allowed me to tap and change a character’s skin tone, but she was not happy when I wanted to stretch our original agreement.

*Fairy Tale Dress Up, 10/21/12*

M: Try different shorts. Or you want a dress? Shorts. You like those shorts? [Refers to pink shorts that K picked] You like those shorts. Can I change something in her?  
K: Yes.  
M: And then you will tell me if you like it or not, ok. [Changes skin color] Oooo, I made a darker skin. [Experiments with other skin tones and tries to pick shoes.]  
K: [Grabs my hand.]  
M: I wanted to pick shoes. [Picks shoes]  
K: No!  
M: Sorry.  
K: [Picks shoes]

As this excerpt demonstrates, Kalina initially agreed to my participation in the form of changing the character’s skin tone. Yet, when I stretched this agreement and tried to also design shoes, she instantly communicated her control over the design by grabbing my hand. When this gesture was not enough, she reverted to another means of communication and protested verbally. This data fragment indicates that, in the case of applications such as Dress Up on which design and customization were possible, means of communication other than language, such as a gestures, were expressions of agency. In
this exchange, I did not take Kalina’s gesture as seriously as her words, which caused a tension that could have been avoided had I heeded what she initially meant by grabbing my hand.

The dialectical relationship around tool control revealed that tension played a crucial role in Kalina’s expression of agency and parental recognition of that agency. As a result of Kalina’s perspective of the object and control over the device, she controlled the division of labor and how much parental engagement with the object and tool she would welcome. Gestures, such as tapping, appeared to be important means in which she realized her agency in this decision making. Therefore, in order to sustain these engagements, we considered Kalina’s demonstration of agency and backed away from engagement when she clearly indicated she wanted us to serve solely as an audience.

**Dialectical Relationship 4: Production versus Consumption**

This section explains how subjects’ positions and experiences influenced participants’ perspectives on consumerism, and how consumerism affected Kalina’s meaning making. The dialectical tension around consumption and production also illuminates how parents’ different positions, as expressed in interactions, resulted in sustaining Dress Up engagements.

Upon the installation of Dress Up applications, each application usually featured one free character with clothing and accessories. In some cases, a free character had only a limited number of free outfits. Locks on characters or outfits symbolized that these options needed to be purchased. Generally, we did not intend to purchase additional outfits (or other application accessories) before knowing whether Kalina actually liked an app. My husband and I shared this thinking. We also thought that it would be important
that Kalina understand the economic realm of these applications and learn to make
decisions about purchases. As we made in-app purchases during interactions, an
economic community became a part of our activity system, which positioned the whole
family as consumers. The only way Kalina could get more characters and more outfits,
and therefore more access to the pop culture community represented in these
applications, was to engage in yet another community, an economic community. Initially,
for Kalina, buying meant just typing a password, something she thought she could easily
do. Her desire to tap during buying was also tied to her tool control. However, we
restrained her from buying, knowing that only we, as parents, understood our budget
limitations.

The first vignette illustrating the consumption and production tension reveals how
tension played in defining our consumer roles.

**Vignette 4a: Buying by Kalina in order to produce more design vs. buying by
parents.** In the beginning, we as parents proposed a rule: only we would make in-app
purchases. Kalina did not have any prior experiences with buying applications on the
iPad. During the second Dress Up engagement, we asked Kalina if she liked *PopStar.*
When she said she did, we said that we would buy locked items sometimes. When she
showed great interest, I convinced my husband to buy the entire app within the same
session. At first reluctant, he agreed, and we checked how much this app would cost.

*PopStar, 7/18/12*

M: [Views the price] Oh, you can unlock everything for $ 3.99.
D: Kalina, do you like this game?
K: Yes.
D: You want this one?
K: Yes. I want it.
D: All right.
M: So...
K: ...ok.
D: Yes.
M: [Takes control over the device] So we can get it? Say, “Thank you Mommy, thank you Daddy.” [Taps on the “buy” button]
K: No! [Tries to overtake]
M: Mommy is doing the purchase. Parents are doing the purchase, Kalina.

When I was about to conduct the purchase, Kalina protested, indicating that she wanted to purchase herself. As parents, we did not have experiences with making in-app purchases either, but as adults we had an understanding of how financial transactions are made online and what they involve. In addition, we needed to make decisions that would be aligned with our family budget. For Kalina, during our first in-app purchase, buying on the iPad meant entering the password. She had no understanding of a real bank transaction in this act. She did not realize that what looks like just a tap involves a serious financial transaction, involving a parents’ bank account. The initial meaning of “buying” for her was reduced to tapping a locked item, and what was locked almost miraculously would appear on the screen. Accordingly, she was ready to make purchases and felt comfortable about it. Because a rule for iPad interaction formed early in our engagements—she was the one who handled the device—she expected to handle the device while purchases were made as well. They, after all, involved only tapping.

We realized that consumption would be involved in these engagements and that Kalina would be involved in buying. We were concerned about putting Kalina in an adult position of consumer—a position we equated with responsible decision-making about a budget—when she was only a child. The tension with this dialectic was one between her perspective on the object and the role she was placed in as consumer, when we would not allow her to take up the role. Without a plan in place prior to the occasion of buying the
app, I made a quick rule: adults buy apps. As we worked on finalizing the purchase, we also continued explaining to Kalina what her role was in this transaction.

D: Yes.
M: Not Kalina, ok? Wait. [Types the password and downloads] Ok. [Points to the “Thank you for your purchase” button so that K can tap it]
K: [Does not respond]
M: Ok [Points to the “ok” button again]
K: But what about her? I like her. [Points to the character]
M: Ok [Points again] Katy Perry will be there too.
D: You have to do “ok” first, Kalina.
M: Kalina, click “ok.”
D: We have to buy it first.
K: [Clicks “ok”]
M: They are all unlocked.

As we made clear that parents buy, not Kalina, we did include Kalina in the last step, letting her tap the “ok” button that confirmed the purchase. The action we let her make was the transition action between purchase and use. Kalina clicked okay, and all the desired characters were unlocked.

**Vignette 4b: Asking Mom to buy more features vs. buying as a family decision.**

As our engagements progressed, Kalina did not wait for our suggestions regarding buying, but began demanding that we buy right away. She recognized that buying allowed her to access more possibilities and she did not want to wait long for those possibilities to become available. Buying was promising and meant realizing those promises. This caused tensions between Kalina and us and demanded that we needed to rethink how to approach negotiating what to buy and when. Also, I was more eager to buy than my husband, which additionally complicated finding a consistent way of negotiating purchases. Our system was clear to Kalina: when requesting a purchase, the best way was to turn to Mommy, because I was more likely to buy than Daddy. As a result, I tried to instill in her that purchasing involves both parents.
M: But this is also Daddy’s decision.
K: I want you to do it. [Touches my hand and points]
M: What will you do for us, if we do?
K: I want you to...[Touches my hand and looks at me]
M: You have to ask nicely.
K: I want you to buy it, Mommy. [Looks at me]

In this exchange, I tried to teach Kalina that buying is a decision of both parents and that she needed to request a purchase, not just take it for granted. For us, consumption involved our relationship to the economic system and our place in it. Kalina was also placed in this system and also had to exchange a currency —“asking nicely”—for this purchase to be made. We could afford the app, but this didn’t mean we could afford every app, or that buying this app meant we would buy all apps. We wanted to teach Kalina that one needs to be careful and show good judgment when buying. To instill this value, we tried making Kalina aware of value: buying means valuing. She could not exchange money to show she understood value, but she could learn to understand that buying is serious and both parents should participate in it, and that she needed to ask both of us nicely. The tension between adult and child consumers played out, in Vignette 4b, around different currencies in which I attempted to stress that consumerism is a practice of valuing not to be taken lightly.

Vignette 4c: Demanding instant purchases vs. teaching Kalina to choose

between buying new features and buying a new toy. A different response to Kalina’s demand of instant purchase occurred on a different occasion, but pertaining to ebooks. She was about to tap an order to buy an application on her own, but we stopped her. Richard tried to teach her that she needed to weigh her purchasing decisions. He made a concrete comparison between two things Kalina wanted and asked her to make a choice,
to weigh her decision. She chose not to buy.

_Fairy Tale Dress Up, 8/7/12_

K: [Chooses an ebook] We can buy it.
M: But Kalina, we don’t know…This one is $1.99. I do not know, Daddy, if we can buy it.
K: Yeah, we’re gonna. [Ready to tap to install]
M: [Interrupts her] Kalina! You cannot buy it.
D: Kalina, you have to think what you…You know, this costs money. If you want other things, like that Dalmatian dog, or you do this instead.
M: You have to choose, either the Dalmatian dog or this.
K: Yeah?
D: You want to do the book?
K: But is it free? [Looks at me]
M: This one is not free. This one cost $1.99, almost two dollars…
K: I want back to the girls. [She chose to go back to Dress Up.]

Here, Kalina used buying as a way of engaging with an application. It is significant that, upon seeing an application she was interested in, she did not say something like, “I would like to try this app.” Instead, she tried to bypass our newly formed rule that only adults make purchases. My husband’s response to this situation was to make Kalina realize that she cannot always have everything and needed to make a decision between buying this app or buying a toy that she also wanted. I reinforced Richard’s argument. Weighing her decision was effective; she wanted the Dalmatian toy more. In this way, we reinforced the idea that buying involves judgment and conscious decision. She performed valuing: determining the weight of one item against another and determining for herself which was more valuable.

_Vignette 4d: Using more sophisticated rationales to get parents to buy vs._

**Daddy’s persistence in using available outfits.** Later on, Richard and I tried to instill a new rule in order to prevent buying apps that Kalina would not be interested in: before purchasing, check the free version of an app to learn if you really like it. In these
instances, it was usually my husband who tried instilling this rule. I was more eager to buy an application sooner, particularly when I saw the slightest interest coming from Kalina.

_Princess Dress Up, 8/21/12_

M: Two of them are locked, but we have Cinderella we can dress up, and The Princess and the Pea, and Snow White and Sleeping Beauty ... we have to unlock, so we will see if you like these two first. [Points to the choices and K sings]
K: [Starts Cinderella]
D: Wow.
M: Some of the crowns are locked. [Points to locked crowns]
D: Oh.
K: [Looks at locked crowns]
M: Choose the ones on top [Refers to unlocked items]
K: [Chooses a crown] Yes, actually...
M: I kind of like this one. [Refers to K’s choice]
K: [Switches to outfits dresses]
D: Wow.
M: ...tops... These are locked. [Refers to dresses]
K: I want that one. [Points]
D: Keep going up, the other way, Kalina.
M: You want this? Maybe we will unlock tomorrow. [Looks at D]
D: It’s not much different.

Kalina gravitated toward locked items. Richard tried to draw her attention to unlocked items in order to reinforce the rule about purchasing items only after experimenting with the free app. I began to assure her that eventually we would buy the whole app.

Regarding the object, as purchasing, none of us were on common ground. Yet, Kalina remained interesting in buying dresses and colors that were locked.

M: There is a lot of stuff.
D: Yeah.
K: That one. [Points to the yellow dress]
M: See how much it is?
D: Well, keep going.
K: Hair! But she’s never gonna wear the yellow dress. [Looks at me and complains that because the dress is locked Cinderella will never wear it]
M: We will get it.
D: Try something different. ...There is some dresses you can pick, nice...Pick a nice dress that is not locked.
M: Oh, nice hair.
K: [Accidentally opens a chart with the price of the app]
M: Oh, $1.99. We are not buying today, right?

When she pointed to the dress that she particularly liked and said she wanted it, I became more aware of her desire and knew that urging her to stick to unlocked items did not allow her to be more creative. We were at an impasse: Kalina wanted a locked dress; Richard wanted a locked rule; and I caved into Kalina’s sad look, tipping the scales toward a purchase.

D: Yeah.
M: Are we?
K: No.
M: Not today, Richie, right?
D: No.
M: Then tomorrow, right, if Kalina likes it?
D: Right.
K: Yeah, but...
M: Choose something.
K: [Scrolls]
M: But do not choose locked.
K: Yeah, but. I want to unlock it now.
M: Can we unlock it for 1.99? [Turns to D]
K: Please, Dad. [Looks in his direction]
D: All right.

Kalina used the right currency in her part of this exchange. Richard agreed after Kalina asked nicely. She also included both parents in requesting a purchase.

It would have been difficult to sustain Dress Up interactions without buying access to the rest of the application. Kalina knew that she could have more because, without more, she would have stopped her Dress Up productions. Her productions required consumption, and application designers design the production/consumption relationship into their apps. The rule we tried for a short period to enforce, to check a free app before
purchasing, was not sustainable and was counterproductive in terms of Kalina’s object: to
design.

The dialectics revealed that tension around production and consumption played a
role in sustaining Kalina’s meaning making. First, the tension framed all participants as
consumers. Parental mediation refined consumer roles further, by reducing Kalina’s
participation in purchasing but also teaching her that buying involves judgment, choices,
valuing, and knowing how to bend parents’ rules.

Summary of Findings

Four dialectical relationships: 1) Parents’ Object versus Kalina’s Object, 2) Kalina’s Object versus Tool Limitation, 3) Parental Tool Control versus Kalina’s Tool Control, and 4) Production versus Consumption revealed unique meaning making
possibilities. These possibilities were significantly influenced by participants’ positions in
society, experiences brought to those interactions, and the tool itself (iPad and Dress Up
apps).

First, parental and Kalina’s perspectives on the object varied, at times due to our
different experiences and imaginations for meaning making interests. This dialectical
tension between our perspectives enabled us as parents to learn about our daughter’s
expectations regarding an object. Parental participation was also tied to Kalina’s specific
needs. Less technically related dialogue occurred because her expertise with the tool had
increased since her first engagements with ebooks. Kalina learned that she could count on
our support around her needs, mostly in the area of navigation.

In particular, the parental role of audience appears important in interactions on
Dress Up. Seemingly not contributing to mediating interactions, this role appears
important as, through parental presence as audience, Kalina found confirmation and acceptance for her design, an important aspect of meaning making with Dress Up.

The data also show that we as parents needed to first understand what Kalina was trying to accomplish with her design. Without such an understanding, we might have discouraged her from sustaining her engagement. Kalina’s motivation was not tied only to the object; she sometimes had specific outcomes in mind that we were not aware of at the onset of Dress Up activity.

Tool limitations, particularly regarding Dress Up apps, and tensions that they created turned out to be a significant learning factor, as in order to sustain these engagements, Kalina had to navigate tool restrictions that impinged on the object and then learn how to deal with other limitations that came along. Tensions over limitations also became opportunities when, through parental mediation, Kalina learned to problem solve to continue her interest in design. Tool limitations became avenues for learning how to design on Dress Up and how to use tool affordances in order to solve problems and maintain engagement. Parental guidance around limitations was influential in terms of sustaining engagements and supporting the continued play of objects.

While it is obvious that, especially at the beginning, children may need some help with navigation and that it might not be always clear what exactly they want to do with these applications, when our child had a high interest in applications, she needed to learn how to compromise this imagination with what is possible and what is not as restricted by app designers and a family’s economic conditions.

What we as participants did on the iPad during the Dress Up engagements was a result of Kalina’s control of the device. The tension created over division of labor (who
 touches the device) was the result of Kalina’s control of the device and applications and the object of activity. As she controlled the device and had specific purposes for using it, which resulted in certain divisions of labor, she got to decide what was done on it and whose meaning making interests could be realized.

The interactions also show that language is not the only mode of communication during Dress Up events. Kalina used the iPad, a device that allows one to communicate through tapping, or pressing the main button. She also used a range of means of communication to convey a particular meaning to us: agency at the level of its touching and navigating, and at the level of decisions concerning design. She often demonstrated control by simply pressing the main button. Although opportunities for negotiation of a division of labor existed, they were always limited by Kalina’s careful monitoring in order to make sure that neither my husband nor I would break the conditions under which she might agree to share the control. Because she did not protest using verbal language at first, we tended to ignore gestures and stopped our behavior only when she reprimanded us verbally. In addition, I acted as a mediator between Kalina and Richard when I felt that his attempts to control the design threatened Kalina’s engagement.

Because of the way we structured Dress Up events by making decisions about purchases, the economy community became a part of our interactions and meaning making. In addition, buying entire apps often conditioned Kalina’s sustained production on Dress Up and sometimes initiated it. For her, purchase held a promise of more possibilities. This research foregrounds and illuminates the importance of parental mediation in this regard as crucial in apprenticing children for inevitable roles as consumers. As parents, we tried to diminish Kalina’s role as a consumer by creating a
rule that only parents buy. Yet, Kalina still participated in these purchases and sometimes demanded them. We used her position as a consumer as an avenue for teaching her that buying means valuing, and as a result, also making responsible decisions. Because we made some rules we couldn’t keep regarding when buying could occur, Kalina also learned how to turn this ambiguity to her advantage by working the gray areas to move her mother into her corner.

In summary, using grounded theory within an activity theory framework situated meaning making on the iPad within larger conditions, thus revealing a deep relationship of meaning making with other forces. The research approach also led to theorizing making meaning within four prominent dialectical relationships that explained the connection of meaning making and other forces further across interactions in a six-month long engagement with the iPad. Findings pointed to a novel type of interaction and revealed new insights about apprenticeship with new literacies.
Chapter Seven: Discussion

Introduction

Young children learn how to make meaning as they engage in daily conversations and interactions around books with their parents. As children increasingly participate in interactions around new and constantly evolving technologies, they also learn how to make meaning in ways that can differ from more traditional book interactions. The aim of this research was to learn about the nature of meaning making for a five year old child in her first six months of interacting as a family on an iPad. The goal was to detail such interactions, begin to understand the nature of meaning making in interactions with digital tablets, and provide further insights into home literacy practices on twenty first century technology. Specifically, I asked the following question: What was the nature of meaning making in the iPad practices of our family during the first six months of my daughter Kalina’s iPad use?

This question is of great importance because it addresses two gaps in literacy research. First, research on how young children make meaning with technologies is in its beginning stages; therefore, family meaning making with new technologies is not yet fully understood. Current interactional literacy research involves traditional print (Britton, 1970; Caspe, 2009; Doyle & Bramwell, 2006; Halliday, 1975; Heath, 1983; Hindman et al., 2008; Reese et al., 2010; Valencia, 1991; Wells, 2009; Wood et al., 1976) and illuminates an apprenticeship model of teaching and learning. Apprenticeship emphasizes the crucial role of expert guidance in interactions with children (Brown, Collins, & Duguid, 1989; Collings, Brown, & Newman, 1987; Rogoff, 1990). Research on interactions with young children around computers, however, has not yet fully
illuminated the nature of meaning making over time (Marsh, 2003, 2004, 2011; Robinson & Turnbull, 2005; Merchant, 2005; Pahl, 2005; Smith, 2005); therefore, we do not know the degree to which an apprenticeship model of literacy learning can be transferred to computer literacy contexts. A second gap this research addresses is the paucity of literacy research that describes how a sociocultural context influences interactions. A sociocultural perspective is needed in order to understand the complex nature of contexts as culturally and historically situated and how such complexity may influence meaning making. With these two gaps in mind, I employed a sociocultural approach to understand the nature of my daughter’s meaning making on the iPad, over time.

Taking into consideration a wider scope of what is considered now as literacies as explicated by New Literacy Studies and multiliteracies, I focused this research on interactions around electronic books and Dress Up applications. I wanted to explore meaning making in interactions that occurred across different modes of text, not only print. Looking at Dress Up and ebooks with the perspectives of New Literacy Studies and multiliteracies allowed me to see iPad interactions as events in which Kalina learned to make meaning and display behaviors unique to digital, multimodal texts.

Finally, utilizing activity theory for the purpose of accounting for a sociocultural perspective, and approaching grounded theory in an innovative way, helped me explain meaning making in a manner new to literacy studies. Specifically, activity theory caused me to be aware of aspects of learning that I might not have considered had I only examined what was evident in talk and text. I searched the data systematically for insights about participants, objects, tools, rules, communities, and division of labor, as well as the interplay of these elements. When a certain pattern emerged, grounded theory
methodology kept me focused on the data. I posed questions and searched for answers in
the data. I imposed a theoretical framework on the data; therefore, findings did not
emerge outside theory. The theory, though, enabled me to shed new and interesting light
on meaning making on an iPad. As a result of my theoretical framework and data
analysis, I found that meaning making on the iPad differed significantly from meaning
making in apprenticeships involving traditional literacy texts (Caspe, 2009; Doyle &
Bramwell, 2006; Halliday, 1975; Heath, 1983; Hindman et al., 2008; Reese et al., 2010;
Valencia, 1991; Wells, 2009). I discuss these findings and their implications at length in
the following sections.

**Dialectical Relationships, Tension and Meaning Making**

Most significant in this research, as explicated in Chapters Five and Six, was that
making meaning with ebooks and Dress Up was realized around specific dialectical
relationships in our family activity system. Data analysis revealed that the applications
Kalina used most on the iPad (ebooks and Dress Up apps) engaged our family in very
specific dialectical relationships that shaped meaning making. The dialectics took
particular shape depending on the object of our activity: with ebooks, the object of
reading and with Dress Up, an assortment of objects but eventually, design. The tensions
that played in the different types of dialectical relationships were invisible guideposts of
sorts. The discomfort they created helped the family work toward stabilizing a collective
object for our activity. However, the definition of the activity was different for each
family member. Figuring out what the object of activity was involved us in dialectical
relationships. The interactional processes our family went through to stabilize an object
for activity involved distributing labor in various ways and interacting with the tool
(whether it was the iPad itself, images to be manipulated, pages to turn, or narrations to wait through) in very specific ways.

This process of working out tensions within the dialectical relationships of our activity was complex, usually because participants’ perspectives on the object of our activity significantly differed, especially when we were first trying out an app. For example, on ebooks, we as parents wanted to impose a Discourse of reading as print reading in which we were historically and culturally rooted. In comparison, on Dress Up, even though we did not display a similarly intense discourse as on ebooks, as parents we still had different ideas about “experimenting” or “designing” than our daughter did. In addition, on Dress Up, tensions around tool limitations and consumerism were of significant influence while, in the case of ebooks, tensions around rules were more prominent.

As a result of Kalina’s often different perspectives on objects and also on the affordances and constraints of the iPad tool, Kalina redesigned the nature of our interactions, making it much harder for us as parents to guide her in the manner described in interactional literature on apprenticeship (Caspe, 2009; Doyle & Bramwell, 2006; Halliday, 1975; Heath, 1983; Hindman et al., 2008; Reese et al., 2010; Valencia, 1991; Wells, 2009). While, in this literature, the assumption is that the object for activity is stable from the beginning, in the interactions around the iPad, this was not the case. Therefore, our parental efforts concentrated on stabilizing a common object in order to sustain activity. Calling our family’s iPad interaction an apprenticeship into meaning making would be problematic. An apprenticeship involves guidance by an expert. We as parents were not experts. We were new to this device and its applications. We also could
not draw on any models of interaction around iPads because the tool has a very short history and these interactional models do not exist. Instead, we brought assumptions coming from other types of literacy activities such as research on meaning making with regular books. When reading ebooks, these assumptions resulted in conflict with Kalina’s perspectives on the object of reading. Therefore, when guiding Kalina in these apps became difficult, our parental participation focused on stabilizing a common object in order to ease the tensions and sustain those events.

Stabilizing the object of “reading” was a dialectical process our family had to learn as we began this experiment, because “reading” involved negotiating numerous modalities: narrations, no narrations, page turning options, etc. The tool, with its numerous modality options, engaged the family in many labor distributions depending on how we had negotiated the object of reading at a particular point in time. Novel reading, on the other hand, has a longer cultural history. Beginning from when their children are very young, parents have an idea of how they will read to them. Educated parents probably envision conversations with books, taking a child’s lead, looking at pictures, predicting and confirming, starting from page one and continuing a page at a time (Hindman et al., 2008, Wells, 2009). This object can be more easily guided because it has deep social and historical roots. Reading on an iPad is not the same practice, culturally or historically. Furthermore, the tool affordances are vast and can engage a number of objects one might call “reading.” Novel reading did not transfer into our ebook reading because the object of reading, in relation to the tool and its affordances, engaged our family, instead, in distributing labor. This negotiation was geared toward stabilizing what the object of reading even was. Hence, meaning making interactions on the iPad by a
family new to the technology can be seen, first and foremost, as a dialectical process of figuring out the object of activity. Doing so engages the entire activity system; however, certain aspects of activity are more noticeable than others. In our family, the object-tool-distribution of labor most prominently influenced meaning making. The focus of meaning making was often at the level of figuring out what we were doing, on both ebooks and on Dress Up applications. The tool played a predominant role in this because Kalina’s meaning making interests were realized always in the relation to tool affordances and her desire to interact more with the tool than with parents.

“Reading” as an Unstable Object: Meaning Making and Roles in Interaction

The affordance of the tool and Kalina’s growing autonomy in using it allowed her to explore the iPad in ways that realized her own meaning making interests during Dress Up. However, when we introduced Kalina to the iPad, we began with ebooks, when she had less expertise with the iPad. At the same time, we as parents were also fairly new to the iPad and brought perspectives from more traditional discourses on reading to bear on ebook reading, and tensions over the object of reading became significant. As a result, stabilizing reading as an object often meant agreeing to Kalina’s perspective on reading. Kalina determined the object of reading throughout interactions with ebooks. Generally, her object was composing. Sometimes it was listening, but the object was always determined in relation to the tool’s multimodal affordances, especially the ones that differed from print texts.

On ebooks, my husband’s and my socio-cultural-historical perspective on reading caused tensions with Kalina’s perspectives and we agreed to her perspective on the object in order to sustain interactions. Consequently, the kind of dialogic interactions in which
parents extend children’s meaning making in an apprenticeship model of reading were difficult to achieve. Interactional research describes parental roles as paramount in children's meaning making, with parental language being crucial for negotiating and advancing children’s meaning making (Caspe, 2009; Doyle & Bramwell, 2006; Halliday, 1975; Heath, 1983; Hindman et al., 2008; Reese et al. 2010; Valencia, 1991; Wells, 2009). Wells (2009), in particular, demonstrates that parental attentiveness to children’s interests and what they express in language is important in order to truly extend children’s meaning making. Others, in the area of interaction around print books, point to specific parental patterns of talk that are conducive to children’s literacy development.

Yet, this body of literature assumes the stability of a common object between parents and children. Reading typically has a history in people’s homes, a history that plays in stabilizing the object of “reading.” When there is a stable common object from the beginning of interactions, it is then up to a parental dialogic style of interaction to involve the child in a meaning making apprenticeship. Naturally, in this apprenticeship, parents assume the role of experts.

The conditions of apprenticeship in literature on interactions around books were not the conditions featured in this research. We as parents were new to the device and did not know how to interact in ways that would support reading. We did not know what reading would actually entail. Instead, we brought discourses from other types of activities, such as bedtime reading that did not match Kalina’s meaning making interests for reading as composing. As a result, our interactions often featured processes of stabilizing a common object in order to sustain interactions and, once it was stabilized, the interaction was mostly between Kalina and the device. The object became composing, which was not the
“reading” we had in mind. As parents, we often assumed the role of audience, a role not desired by us as parents, but imposed by agreeing to what Kalina was doing on the iPad.

On ebooks, we adjusted to Kalina’s object: composing, and then again to reading/listening with the audio. Our parental attempts to read from the screen in order to create possibilities for a dialogue were seen by Kalina as a threat to her relationship with the device and her vision for reading as composing. Additionally, we did not know how to be dialogic when she composed her own stories, as we were used to conversations around narratives we read from regular books. When she began listening to audio, possibilities for a dialogue also became complicated. Interacting with ebooks in this way created an experience similar to watching a movie. It was also not always possible to stop narration in order to become dialogic for at least two reasons. First, we had to be careful with interfering in terms of tapping on the device because tapping violated Kalina’s apparent bond with it. We learned that narration could be stopped only when it was finished for a particular page, before turning to the next one. Sometimes we talked when narration was still on and missed parts of the story. For us as parents, it was awkward to become dialogic because we were interrupting the flow of ebook narration. Often, when Kalina turned the page and narration began right away, this silenced our attempts to initiate or continue a conversation. It took us, as parents, a long time to recognize different possibilities in relation to different types of ebooks and how they worked. Kalina determined the object, so we took her lead. This is a means of interaction that is at odds with apprenticeship models of reading and learning.

This research shows that parental responsiveness in new literacy interactions around the iPad necessarily differ from traditional print interactions. The multimodal
nature of the tool afforded new possibilities for the object of “reading.” In terms of our parental roles, attentiveness and responsiveness on the iPad meant that we respected Kalina’s relationship with the device and recognized her own perspective on the object and expression of meaning. Our attempts at transferring habits from bedtime reading interactions not only did not work, they also caused tensions that could have resulted in Kalina’s disengagement. In order to sustain traditionally “novel interactions,” we would have needed, first, to stabilize the object of reading. The multimodal nature of ebooks does not seem conducive to apprenticeships geared toward traditional reading. Kalina was eventually interested in hearing the story but rarely showed interest in attending to print. Research extending beyond the six months of this study could demonstrate different interests in the object of reading, however.

**Kalina’s Relationship with the iPad: Meaning Making and Control**

In this study, Kalina demonstrated autonomy, demanding exclusive control over the tool, which had consequences in interactions such as not allowing us to read from the device and participate as we may have liked in design on Dress Up. In addition, our parental positioning in the Discourse of traditional reading and attempts to read to our daughter from the screen influenced her attachment to the tool. The more control we demanded as parents, as influenced by a long history of interacting around books in certain ways, the more resistance to sharing Kalina displayed.

Conversely, in interactional research, children display neither such sustained opposition to parental reading nor an attachment to tools (regular books). In interactional research, parents appeared to guide children in meaning making in interactions that relied only on a bond among participants (Caspe, 2009; Doyle & Bramwell, 2006; Halliday,
It also appeared, based on that literature, that if parents had a bond with their children and asked questions that were open ended, connecting, and detail oriented, this created opportunities for emergent literacy development. Therefore, the quality of adult-child relationship was stressed in these studies. It is then crucial, as this literature suggested, that the most important factor is that parents need to build a relationship with children that will be the cornerstone of those interactions and then be knowledgeable about dialogic reading with children. That was also the case in our bedtime reading, prior to the beginning of the study and during it, but not during iPad events.

For Kalina, the iPad became a very important entity and her deep and emotional relationship with the device became crucial in those interactions. The power of the bond between us that was of special importance in our non-iPad interactions became secondary in iPad events. As she approached the iPad with a different perspective and different social standing regarding technology and reading on the iPad than ours, the iPad was more than a device. Although she called it a little computer, to her the little computer meant more. She kissed it, touched with affection, and referred to interactions with it as talking to it. Additionally, as she could use it only once a day, when we interacted as a family around it, she wanted to make sure that we as parents did not interfere with her interaction. That meant that she did not want us to touch it unless she knew it was necessary in order to learn how to use navigation. We also reinforced her attachment by our constant attempts to change the division of labor and perspectives on the object of activity by attempting to read to her from the screen, or by encouraging her to listen to audio in order to promote listening to ebook narration.
Data analysis revealed how Kalina defined reading on the iPad. She referred to her interaction on ebooks as “talking to,” granting them properties of a live entity. This unique treatment also had consequences: ebooks were not books. She associated reading regular books with bedtime reading, during which usually we as parents read to her. Reading on the iPad meant something completely different. It was “talking to,” and as such, it was not reading in the manner practiced during bedtime, when her parents read from regular books. Moreover, reading on the iPad was not only “talking to” but, specifically, Kalina’s own “talking to” the device. She made this clear by saying to Richard, “Don’t talk to it,” specifying that she was the only one who could hold that privilege. Kalina’s perspective on reading on the iPad as “talking to” involved a deeply emotional relationship with the device. What is more, for her, an ebook was not separated from the device but its integral part. She talked to the entire device, not just to an ebook. She realized her interpersonal relationship with the iPad through interacting with ebooks.

Kalina wanted to interact with the device during reading. This interaction between Kalina and the iPad was more important to her than interacting with her parents. Consequently, reading as “talking to” the iPad reconfigured the positions of all the participants and our relationship with each other. Kalina’s relationship with the device was central. Bedtime reading was not the same kind of activity as reading, or “talking to” on the iPad.

The finding concerning Kalina’s unique relationship with the iPad and its influence on meaning making extends Michael Halliday’s (1979) metafunctions of meaning making. According to Halliday (1979), when people communicate, they realize three types of meaning, or metafunctions. Halliday defined the ideational function as “language
as expressing the speakers’ experience of the external world, and of his own internal
world” (p. 45). The textual function “is the function that language has of creating text, of
relating itself to the context - to the situation and the preceding text” (p. 48). The
interpersonal function is “language as expressing relations among participants in the
situation” (p. 46). In this study, Kalina developed an interpersonal relationship with the
iPad. The iPad became a participant of those interactions. While reading regular books
was always for us a time for bonding as a family, the engagements with ebooks on the
iPad introduced a different kind of bond, one with the device, which allowed Kalina to be
in control of the object of reading.

**Production and Consumption: Interaction and Consumerism**

Data analysis of our interactions on the iPad, particularly on Dress Up, also
illuminated another important aspect of this new literacy practice not featured in
interactional research: consumerism. Consumerism became an important aspect of using
Dress Up applications due to the introduction of an economic community that constituted
applications on the iPad and how they worked. Consumerism could not been avoided on
Dress Up. Even if we as parents had purchased all applications prior to interactions, thus
eliminating negotiations around these purchases, advertisements of new applications
appeared during Dress Up interactions; Kalina tried to open them and sometimes
requested them. Therefore, consumerism is built into applications; thus, Kalina was
involved in production and consumption interactions to various degrees. Her productions
could be enhanced by purchases. She learned this concept quickly in Dress Up.

As parents we decided to first download free versions of Dress Up applications in
order to see if Kalina would be interested in them. Yet, initially, we thought that we
would buy them not while interacting, but would instead purchase them later. However, as Kalina quickly learned that locked items could be easily unlocked, our conversations began to revolve around negotiations concerning in-app purchases during these interactions, and it became obvious that purchasing immediately was a condition for sustaining these engagements. As parents we also needed to find ways of negotiating purchases with Kalina in order to make her realize that, although purchasing on the iPad is effortless and fast, it is an economic transaction not to be taken lightly. In this way, consumerism became an integral part of making meaning in this new type of literacy practice. Our child was no longer only a child interacting with her parents, but also a consumer. In addition, these interactions featured differences between parents. I was eager to buy applications sooner than my husband. Therefore, negotiations around consumerism took place not only between us and Kalina but also just between us as parents.

Purchases served as tool affordances and constraints. Purchasing allowed Kalina to expand her repertoire of choices for dressing up, but on the other hand, choices became available only by becoming a participant in an economic community in which, from my husband’s and my perspective, was a community in which people needed to make responsible decisions. We asked Kalina to be a responsible person when she chose to buy further accessories for her design. We placed Kalina in a role that she, as a child, could not really play. She did, though, understand the idea of “weighing” two values and choosing one over the other. This kind of valuation is sophisticated, and Kalina was able to choose between two desires. However, she did not understand the actual value of money and resorted then to distributing labor in our activity in a way that would suit her
Children are consumers. IPad applications inevitably involve them in making consumer choices, thereby entering an economic world. Our family worked out Kalina’s introduction into consumerism on the Internet in the same fashion we do when she wants something at a store. We listened, we reasoned, and she used her skill at persuasion. Sometimes she got what she wanted and other times, she did not.

**Significance of the Connection between Object and Tool for Learning and Motivation**

Roth and Lee (2007) define learning as “equivalent to the mutual change of object and subject in the process of activity” (p. 198) and add that “human beings plan and change the material world and societal life just as these settings mutually transform agents and the nature of their interactions with each other” (p. 198). They also assert that learning occurs during the expansion of the subject’s action possibilities in the pursuit of meaningful objects in activity. Data analysis in this study revealed that, while Kalina’s object development and learning do align with these assertions, what framed her object pursuit and development from the beginning, especially on Dress Up, was also tool limitations and affordances. This study foregrounded the meaning of a tool limitation as an important factor in motivation.

Because Dress Up was a type of application that did not have any equivalent in Kalina’s non-technological events, she formed her imagination for its possibilities based on her interest in popular culture and music she could listen to on the computer. Conversely, the limitations regarding ebooks were not as intense as she could compare
them to their regular counterparts. On Dress Up, because Kalina could not listen to music and change songs, an object she imagined and strongly desired, she had to abandon pursuing this object and move to an object that was available on the tool, changing outfits.

The entire engagement series, and thus development, with Dress Up applications was a result of a tool constraint (no music) and affordance (outfit choices) that directed her attention to changing outfits, an interest that was sustained and evolved throughout the entire Dress Up period. This finding extends thinking that learning is always a result of a mutual change between subject and object. While subject and object were evidenced in Kalina’s involvement, this is not a full explanation of what learning is and how it is conditioned. Kalina’s development of her design was afforded by the lack of a certain choice. She could have abandoned the object, designing outfits, that this type of application afforded, but she made a decision to go back, accept the limitation, and design within it because she decided that the apps still offered some desirable possibilities, although limited. Once she got over her initial disappointment, she was able to embark on a journey involving outfit designing, focus on it, and develop her skills and interests in this area. This indicates that, at that time, she began to learn an important aspect of meaning making on Dress Up; she acquired an understanding of what she needed to take into consideration in order to remain interested in Dress Up applications and continue pursuing meaningful objects of design, but within the confines of what could and could not be done on these apps. She then began designing within boundaries imposed by the tool. Our parental assistance was unlike typical apprenticeship models. Our guidance mainly alleviated tension that tool constraint created for her. We could not
predict ahead of time what aspect of the tool’s affordances or limitations would engage Kalina, comfortably or not.

**The Nature of Meaning Making in the iPad Practices of Our Family During the First Six Months of iPad Use**

It appears that meaning making on the iPad, in the case of both ebooks and Dress Up, was a complex process saturated with the tensions of figuring out what we were doing on these applications. In addition, meaning making also involved learning what possibilities the tool offered, pursuing meaningful objects in relation to expectations and tool limitations and constraints, making meaning in interaction with the tool more than with parents, and learning how to sustain the new type of interactions.

Because the tool was new, each of us brought certain perspectives that shaped our approach to what reading ebooks or designing with Dress Up would entail. As our parental perspectives were different from our daughter’s due to discourses that we brought, which we knew and in which we were rooted, these differences created tensions that needed to be solved in order to sustain those interactions. On Dress Up, as parents we tried to make sense out of these tensions, without first fully understanding Kalina’s meaning making interests and desired outcomes, such as designing a doll. We then appreciated and better understood Kalina’s thinking once she revealed that she was using the app to design dolls. On ebooks, on the other hand, because we brought a discourse of bedtime reading, we not only did not understand but also did not accept her perspective on reading ebooks on the iPad until she was ready to use audio. However, even when she used audio, our understanding of reading on the iPad was still at odds with her interest in mainly listening to narration, not using additional features. In both cases, for Dress Up
and ebooks, because Kalina was primarily interested in interacting with the tool, its images, narrations, music, and sounds, she was making meaning in interactions with the tool and its affordances, often ignoring parental input.

Kalina realized her meaning making interests in pursuit of certain objects that suited her, such as music, sophisticated design, experimenting with localized features such as screen shots, or reading as talking to the device or ebook characters. As parental perspectives on objects were tied to our positions in the society and being rooted in particular discourses, she too realized her meaning making interests in relation to her perspectives. However, as she was not as rooted in the same discourses, she welcomed the device in much more open ways than we as parents did, but also with higher expectations. These higher expectations resulted in intense disappointment and consequently learning how to pursue meaningful objects within the confines of these limitations. In addition, the device itself held a particular meaning for her. The iPad meant much more than a non-living object, or a tool. It had a personal, emotional meaning to her, which consequently determined her bond with parents as less important in interactions in which the iPad was involved.

Kalina’s specific meaning making interests in relation to tool affordances that she appropriated in order to pursue her objects also determined the subjects of our conversations, and thus the nature of meaning making in these interactions. For instance, in Dress Up, as design became her primary interest, in order to gain access to more clothes and colors, purchases became necessary. Thus, consumerism and negotiations pertaining to purchases and defining Kalina’s role in it often became prominent. In such exchanges, we as parents tried to teach Kalina the values of judgment and what her role
in such decisions were, but because we as parents were unable to become consistent in holding the rules we created, Kalina learned to make sense out of consumerism on the iPad in ways that suited her desires and in order to sustain her design.

**Implications**

The findings from this study have implications for practice, research, and theory.

**Implications for literacy practice.** I foregrounded the importance of the tool in meaning making in interactions around technologies as providing affordances that allowed my daughter to use it in certain ways. Yet, because I was interested in my husband’s and my interactions with Kalina, I did not consider that she had her own dialogue with the device and applications and did not include audio coming from the device as an interactant with Kalina. Including audio in dialogic exchanges would have drawn more attention to how different dialogue is in interaction with technological devices, to whose audio children respond in various ways. Such inclusion in future research would allow us to learn more about the dialogue and its nature in such circumstances. This is of particular importance because while in literature that illuminates apprenticeship for interaction around traditional books, the dialogue is solely between caregivers and children, in my study the dialogic interaction often took place between Kalina and the device. This changes the nature of literacy practice.

**Implications for research.** The innovative approach to grounded theory that I employed in this study in order to theorize the progression of meaning making and account for sociocultural influences that impact meaning making enabled me to illuminate the unique nature of interactions around iPad technology for my family. Therefore, I can see a potential in using this design in research that aims at explaining the
complexity of interactions involving digital technologies. This design can be utilized to investigate the nature of meaning making in other families in order to see how diverse families interact around technological devices and make meaning in such interaction, as well as and in order to understand what influences these processes for different families. In addition, this design could be also employed in research on interactions around technologies in school settings in order to better understand the nature of meaning making in instructional situations among teachers and students and its progression.

**Implications for using activity theory.** Utilizing activity theory in order to explain the nature of interactions around iPad technology and account for sociocultural conditions influencing these interactions was both affording and constraining, which has implications for employing this framework in other research. Activity theory enabled me to illuminate the different nature of interactions around digital technology, and thus substantially contribute to the gap in the area of understanding family meaning making with technologies. By using this framework, I was able to point to several tensions that shaped the nature of this meaning making from the beginning, including the tensions over different definitions of activities. Activity theory also foregrounded the importance of the tool in this mediation, as well as the influential role of perspectives that all participants brought and which influenced how we defined what we were doing on the iPad.

Yet, activity theory was also constraining. While this framework allowed me to explain interpersonal relationships and those between participants and the tool from the perspective of division of labor, this theory did not illuminate the nature and significance of those relationships. In particular, I noticed that Kalina developed an unusual, emotional attachment to the device that influenced this meaning making and was
pronounced more intensely in these interactions that a bond we as parents had with Kalina during bedtime reading. Activity theory did not allow me to further explain either the nature of this unusual attachment or its significance.

**Limitations and Directions for Future Research**

This study has several limitations that could be addressed in future research.

Activity theory did not allow me to fully explain the nature and significance of relationships that I noticed, such as the unusual relationship with the tool that Kalina developed during these interactions. Activity theory allowed me to illuminate relationships mostly at the level of the division of labor. Therefore, future research should employ frameworks that would be more capable of explaining relationships and their nature beyond activity theory.

While grounded theory with activity theory enabled me to illuminate the characteristics of interaction with technology, my use of this methodology and theory allowed me only to foreground multimodality and the role of modalities other than language. Employing a multimodal discourse analysis in future research would be an important direction because it would illuminate participants’ use of different modalities and their interplay in meaning making. As parents, in order to learn Kalina’s intentions, we paid attention to her gestures. Attentiveness to language alone does not fully explain interaction.

Examining data with a lens on gender would also strengthen this research. I am aware that I collapsed my husband’s and my roles as a collective perspective in this research, when indeed, we brought gendered perspectives to our interactions. Incorporating such a lens would have explained gender expectations and assumptions in
these data regarding choices for downloading particular applications, or gender assumptions and expectations embedded in the construction of female characters on Dress Up applications. Future research should employ a lens on gender in order to illuminate and disrupt gender inequalities as present in many iPad applications and in parental decisions regarding choices of applications.

Finally, case studies involving one’s own family are important because they provide perspectives on naturally occurring data, but they are also limiting. I attempted to be reflexive in my analysis and discussions of data. I am sure, however, that an outsider to my family community could analyze this data differently, resulting in entirely different findings. Hopefully, certain findings, regardless of my role in the research, will be salient to readers.

**What I Learned as Parent**

I have learned a great deal during this research, and much of the information could be useful to other parents.

Originally, before we introduced the iPad to our daughter, we thought about using it at bedtime. At the beginning, we associated the device more with reading; therefore, using it at bedtime, when we usually read with Kalina as a family, seemed to be a reasonable option. Yet, knowing that at bedtime at least one of us was sometimes too tired to interact fully, without simply falling asleep, this idea faded. We then thought that it would be more beneficial if we all learned how to use the device and read earlier in the evening when we were not tired. There was also a concern about using electronic devices in bed. I thought that looking at the screen would be too stimulating instead of calming.

If I was to introduce the device to Kalina knowing what I know now as a result of
In this research, I think I would have done it earlier in the evening, as we did. Although I cannot know for sure if she would have demonstrated similar attachment to the device at bedtime, I suspect that using it at bedtime would have transformed our bedtime reading from a time when we bonded as a family while reading regular books into a time of Kalina’s bonding with the device instead of with us. By using the iPad earlier, and not extending it to bedtime, we maintained our intimate bedtime reading and interactions. Reading on the iPad became a different type of practice. I suspect our whole family would have missed our traditional bedtime reading routine had we given it up, and we would have been severely disappointed in what we got in the trade, even though our interactions around the iPad were valuable too.

Other parents may want to consider how, when, and where tablets are used with children. The way we introduce those devices to children can influence existing interpersonal relationships that a family may have established around traditional reading. As parents, we might think that reading on the tablet is just reading on the screen, but children might think of it differently. As a result, their imagination and fascination with those devices can transform interactions we have with our children. Are parents ready for this type of transformation? Are we ready for the autonomy our young children can exhibit?

My husband and I were not ready, and our attempts to read ebooks like traditional books showed how unprepared we were to face the novelty. While it is inevitable that new technologies will transform interactions, we must be aware of the possible shift and unpredictability of its outcomes, particularly if we expect reading ebooks to be the same practice as reading print books. Prior to this research, I was not aware of how a tablet can
transform interactions. Having seen how different ebook interactions were from our bedtime interactions, retrospectively, it was good that we did not use the iPad at bedtime. I am glad that we as family maintained our familiar bond as we read regular books at bedtime and that our daughter fell asleep with the bond she had with us, her parents, not with a digital device.

I often thought about what these interactions would have looked like if we had introduced the iPad earlier, when Kalina was three or four years old. While there is no way of knowing, it is interesting and puzzling that out of all the digital devices that Kalina used, her connection to the iPad was the most personal one. No other digital devices compared with the level of attachment and personification she had with the iPad. Why this device? What kind of attachment with the iPad would she have developed if we had started these interactions earlier? What happens when children begin to read from regular books and ebooks at the same time? These are questions that parents should consider as younger and younger children use tablets.

It is clear, in my discussion here, that these reflections are related to the question of reading ebooks in place of bedtime reading. Bedtime reading, a bonding and family engagement, was the model for my family’s time on the iPad. Had Kalina used the iPad whenever she wanted to and not at a designated time that always involved her dad and me, I am sure the results of the study would have been different. This is a situated literacy practice, a specific case of reading and designing; hence, in that regard, my family’s experience, being a fairly new historical example, can hardly serve as a “model.” Another family may not include two parents and may not include a consistent schedule, for example. Furthermore, another family may decide to allow their child to play on an iPad
without them. This situated, cultural practice is just that: situated in my family and, importantly, situated in a doctoral dissertation.

I learned that as parents, we brought a lot of our own perspectives to what interacting with the iPad—or any practice for that matter—would look like. We made assumptions about reading and designing, and Kalina challenged those perspectives. Yet, from a distance, I think that we worried unnecessarily about her unconventional interactions with ebooks and lack of interest in exploring all Dress Up options. What I have learned is that as parents we need to be open to new challenges and think less in terms what our own expectations are. Digital devices offer possibilities that can be used in various ways and give the child autonomy in these choices. We as parents really do not know what will happen when we introduce a novelty to our child. We need to allow the child to experiment on her own terms with a new technology. Bringing assumptions to these new types of interactions is natural, but on the other hand, being aware of unpredictability in the nature of such interactions would allow parents to be more open to the multiplicity of literacy practices that interactions with new devices afford.
References


Portsmouth, NH: Heinemann.


Ideas in Psychology, 18, 1–22.


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Appendix A: Evolution of Research Questions

The original plan for the study involved two methodologies: grounded theory within activity theory and multimodal discourse analysis. The first research questions were:

1. What is the nature of literacy acquisition during interactions around three types of applications in which my daughter demonstrates sustained interest over time during the first six months of her participation, with her family, on the iPad?
   a. What elements of the family activity system got established over time?
   b. What established elements changed over time?
   c. What avenues of interaction were afforded by the applications as the family participated in them?
   d. What meanings were made within this complex activity system?

2. For one favored application type, what was the nature of multimodality in the activity system’s meaning making processes in one event involving that application type?

During the data analysis period I combined Questions 1, a, b, c, and d in order to better reflect the nature of our activity system. The new questions were:

1. How was our activity system expressed in the iPad practices of our family community in the first six months of my daughter, Kalina’s, iPad use?

2. What specific meanings were made through our interactions in the iPad practices of our family community over time?

3. For one favored application type, what was the nature of multimodality in the activity system’s meaning making processes in one literacy event?

I then reduced the first two questions to one: What was the nature of meaning
making in the iPad practices of our family during the first six months of my daughter Kalina’s iPad use? This reduction took place after realization that the most important focus of this investigation is meaning making and that the way our family activity system was expressed during these interactions is embedded in this final question.
Appendix B: Level One Analysis/Preliminary Activity System Analysis (Excerpts)

Session: 9-21-12

App 1: Curious George Goes Camping (iBooks)

Duration: 7:38pm - 8:52 (14 min)

Participants: Kalina, Mom, Dad (joins us later)

Field notes triangulated with video:

K: What is new? I tell her to go to iBooks and check. She finds the book right away. M: Do you want mommy to read it or you want to listen? K: I want you to listen to it. I enlarge the page layout. She turns pages. She puts the device on her lap. Turns pages at the right moment. I try to comment, to initiate some dialogue but K seems to be paying more attention to the book. Keeps turning pages and slides to the page on the right before reading on the left is done. Turns the page at the right moment. I try to explain about the blue print indicating when it is the right time to swipe, but she turns the page. She swipes to the right page too early and I say it to her. She goes back. When she wants to turn the page before the right time I say, “No no no”. But then K wants to do the same thing. M: Wait. Do you see the blue print? K waits. When she gets to the next page, she wants to swipe ahead again, and I say, “Not yet, still blue.” K swipes at the right time. She taps accidentally on a word and a zooming magnifying glass appears. I say I want to show her something, but she turns the page. K goes back and forth between two pages. Then she gets stuck and cannot turn the page. I restart for her. She appears to pay more attention to the blue print. She gets stuck again. I try to take over to restart the book. I restart but she pushes my hand away. When I try myself again, the page cannot be turned. I tell her not to tap when I tap. K says she wants something different.
The Preliminary Activity System Analysis:

Rules: activity done nightly with parents, the rule of waiting for the blue print to go through all words for that page

Tools: iPad, conversation

Tensions: I want to make sure she turns pages at the right moment and she is not always doing it.

Division of labor: K chooses the mode of reading, taps and swipes. I point and remind about waiting for the blue print. I also take over the device to fix the problem.

Object: reading with audio

Outcome: K did not finish the book.

Reactions: Tensions influenced the outcome (did not finish the book). On the other hand, she is willing to listen and obey the rules and tries to follow the print.

System changes: Kalina started putting the device on her lap and started following the rules for swiping from left to right after the blue print on the left page appeared.
Appendix C: The Frequency of Applications/Changes
to the Activity System Matrix (Excerpts)

Drawing, Coloring, Coloring and Drawing, Letters, Numbers, Puzzles, Matching, and Science Apps

<table>
<thead>
<tr>
<th>Date</th>
<th>Drawing</th>
<th>Coloring</th>
<th>Coloring and Drawing</th>
<th>Letters</th>
<th>Numbers</th>
<th>Puzzles</th>
<th>Matching</th>
<th>Science</th>
</tr>
</thead>
<tbody>
<tr>
<td>9-10-12</td>
<td>Kid Drawing Kids HD</td>
<td>Doodle Buddy</td>
<td>Coloring Book</td>
<td>Coloring and Drawing</td>
<td>Letters</td>
<td>Numbers</td>
<td>Puzzles</td>
<td>Matching</td>
</tr>
<tr>
<td>9-12-12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Descriptions of abbreviations for all matrix excerpts:
- **K**: initiated by Kalina
- **M**: initiated by Mom
- **t**: audio version
- **b**: version Read by Myself
- **g**: version with games
- **ch**: activity system change
- **d**: change in division of labor
- **o**: change in objects
### Ebooks

<table>
<thead>
<tr>
<th>Date</th>
<th>iBooks</th>
<th>Nook</th>
<th>Kindle</th>
<th>Kid-e Story Books</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Why Do We Need Bones?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9-10-12</td>
<td>b</td>
<td>b</td>
<td>b</td>
<td>b</td>
</tr>
<tr>
<td>9-12-12</td>
<td>M t</td>
<td>M t</td>
<td></td>
<td>Kt</td>
</tr>
</tbody>
</table>
## Cooking and Dressing Up

<table>
<thead>
<tr>
<th>Date</th>
<th>Making Food Items</th>
<th>Dressing Up</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pizza Maker!</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cupcake HD</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ice Cream Maker</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Donut Maker</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Popcorn</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Popstar 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dress Animal</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bey vs. Riha</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Star Makeup</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Popstar 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Shear Makeup</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Red Carpet Makeup</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dress Up Fairy Tale Game</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Princess Dress Up</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dress Mermaid</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dress Up Adele Lite Mermaid</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Date</th>
<th>Making Food Items</th>
<th>Dressing Up</th>
</tr>
</thead>
<tbody>
<tr>
<td>9-10-12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9-12-12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9-14-12</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Appendix D: Level Three Analysis/Grounded Theory Analysis

with Patterns for Dress Up (Excerpts)

What is relation of tool to other activity system elements?

7/18: M, D bought Pop Star; first app K sustained engagement with.

7/24: Tool restricts object (has only so many options, mainly design of outfits) and affords it (navigation is easy, numerous outfit matches are possible).

7/25: Tool restricts object (has only so many options) and affords it (navigation is easy and design combinations are numerous); K’s choice of options, then, on this day, influenced by M, D introducing screen shot.

7/26 (6): Tool restricts object (has only so many options) and affords it (navigation is easy and design combinations are numerous); K’s choice of options, then, on this day, influenced by M, D introducing viewing screenshots in order to draw K’s attention away from a new feature that might involve buying.

Question to follow:

Parents influence options on 7/25 and 7/26. First, they introduce screenshots to show Kalina the full range of options. Then, on 7/26, they introduce viewing screenshots as a way of avoiding going to an option that might involve a lot of purchasing. Will this pattern of parental influencing object continue, or different patterns will emerge?

7/26 (7): Tool restricts objects (has both makeup and outfits) and affords it (easy to navigate and combinations are numerous). Parents introduce makeup and hair options on the app as this is a new app, and she engages with these options, but then wants to do outfits.
7/26 (8): This pattern seems to continue. Here, when Kalina says that she likes the girl the way she is, we encourage K to experiment with changing and she goes for it.

7/26 (9): Tool restricts objects (limited options) and affords it (easy to navigate and combinations are numerous); Kalina knows the app and engages in design on her own.

7/27 (10): Tool restricts objects (has both makeup and outfits) and affords it (easy to navigate and combinations are numerous); Kalina knows the app a bit and engages in design on her own.
## Event 1

**Event 1: Mystery in Gabba Land  7/02**

<table>
<thead>
<tr>
<th>Tool</th>
<th>Book on iPad, conversation</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Object</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>K, M, D</td>
<td>K: Reading the book, M, D: Reading the book</td>
<td>D read the book to K.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rules</th>
<th>Community</th>
<th>Division of labor</th>
</tr>
</thead>
<tbody>
<tr>
<td>In the bedroom, in the evening</td>
<td>K, M, D, characters, literacy field, the Discourse of traditional reading</td>
<td>K: Slides pages, listens, M: Holds device, listens, D: Reads, M, D: Demonstrators of how to move to the next page</td>
</tr>
</tbody>
</table>
### Event 2

**Event 2: Dinner with Olivia (Nook) 7/02**

<table>
<thead>
<tr>
<th><strong>Tool</strong></th>
<th>Book on iPad, conversation</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Subjects</strong></th>
<th><strong>Object</strong></th>
<th><strong>Outcome</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>K, M, D</td>
<td>K: Reading the book by herself by commenting on pictures</td>
<td>K read the book by commenting on pictures.</td>
</tr>
<tr>
<td></td>
<td>M, D: Reading by accessing the whole text</td>
<td>M was disappointed because K did not want to listen to the text.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Rules</strong></th>
<th><strong>Community</strong></th>
<th><strong>Division of labor</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>In the bedroom, in the evening</td>
<td>K, M, D, book characters, literacy field, the Discourse of traditional reading</td>
<td>K: Reads</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M, D: Demonstrators, audience for K’s reading</td>
</tr>
</tbody>
</table>
### Event 3

<table>
<thead>
<tr>
<th><strong>Event 1:</strong> How to Train Your Dragon (Nook)</th>
<th><strong>Tool</strong></th>
<th><strong>Event 2</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>7/02</td>
<td>Book on iPad, conversation</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Subjects</strong></th>
<th><strong>Object</strong></th>
<th><strong>Outcome</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>K, M, D</td>
<td>K: Reading by herself (commenting on pictures)</td>
<td>K read by herself.</td>
</tr>
<tr>
<td></td>
<td>M, D: Reading either to K by D or by listening to audio</td>
<td>M and D were disappointed that K did not want to try audio.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Rules</strong></th>
<th><strong>Community</strong></th>
<th><strong>Division of labor</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>In the bedroom, in the evening</td>
<td>K, M, D, book characters, literacy field, the Discourse of traditional reading</td>
<td>K: Explores by doing a picture walk and slides pages</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M, D: Audience, demonstrators of tapping and how to play audio by tapping on printed text</td>
</tr>
</tbody>
</table>
### Appendix F: Level Three Analysis/The Grounded Theory Analysis Chart

#### for Ebooks (Excerpts)

**Event 2**

<table>
<thead>
<tr>
<th>Event</th>
<th>Activity Theory</th>
<th>Grounded Theory</th>
</tr>
</thead>
</table>
| Dinner with Olivia (Nook) 7/02 | **Subjects:** K, M, D  
**Object:**  
K: Reading the book by herself by commenting on pictures  
M, D: Reading by accessing the whole text  
**Tool:** Book on iPad, conversation  
**Outcome:**  
K read the book by commenting on pictures.  
M was disappointed because K did not want to listen to the text.  
**Community:** K, M, D, book characters, literacy field, the Discourse of traditional reading  
**Division of Labor:**  
K: Reads by commenting on pictures  
M, D: Demonstrators, audience for K’s reading  
**Rules:** In the bedroom, in the evening, reads by herself | K’s object changes from listening to D read a book to exploring the book by commenting on pictures.  
Her perspective on object is tied to her deep desire to interact (talk to the device) with the tool. It is also tied to the tool. The tool affords K’s reading as it has the option Read by Myself. It also allows her to slide and go in any directions she wants. Finally, it is also tied to division of labor. Because she wants to interact with the tool, she wants to do everything on it. As a result, reading is more about exploration as she is not able to read the text.  
What is the relationship between object, division of labor, and tool?  
Across; A tension appears between parents and K over division of labor and object. M wants K to listen to narration, and K wants to handle the device (does not want either parents or device to read)  
What is the role of this tension? |
### Event 3

<table>
<thead>
<tr>
<th>Event</th>
<th>Activity Theory</th>
<th>Grounded Theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>How to Train Your Dragon (Nook)</td>
<td><strong>Subjects:</strong> K, M, D</td>
<td>K's object (she wants to read by commenting on pictures) is maintained.</td>
</tr>
<tr>
<td><strong>Object:</strong></td>
<td>K: Reading by herself (commenting on pictures)</td>
<td>Her object is tied to the tool. She is deeply connected to it. The tool affords K’s reading as it has the option Read by Yourself. It also allows her to slide and go in any directions she wants. Finally, it is also tied to division of labor. Because she wants to interact with the tool, she wants to do everything on it.</td>
</tr>
<tr>
<td></td>
<td>M, D: Reading either to K by D or by listening to audio</td>
<td>When K’s perspective on object is different than M and D’s, D and M comply at first, but later try to introduce their perspective on object.</td>
</tr>
<tr>
<td><strong>Tool:</strong> Book on iPad, conversation</td>
<td><strong>Outcome:</strong></td>
<td>Answer: Object is tied to the tool (deep connection and affordances) and to division of labor (the type of reading – exploring pictures-is a result of Kalina doing the reading, controlling the device).</td>
</tr>
<tr>
<td><strong>Community:</strong> K, M, D, book characters, literacy field, the Discourse of traditional reading</td>
<td></td>
<td>Across: Like in the previous event, object is tied to the tool and division of labor in similar ways.</td>
</tr>
<tr>
<td><strong>Division of Labor:</strong></td>
<td>K: Explores by doing a picture walk and slides pages</td>
<td>A tension appears between parents and K over division of labor and object. M and D want to read or have K listen to narration, and K wants to handle the device (does not want either parents or device to read).</td>
</tr>
<tr>
<td></td>
<td>M, D: Audience, demonstrators of tapping and how to play audio by tapping on printed text</td>
<td>What is the role of this tension?</td>
</tr>
<tr>
<td><strong>Rules:</strong> in the bedroom, in the evening, reads by herself</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Appendix G: Level Three Analysis/Grounded Theory Analysis

with Patterns for Ebooks (Excerpts)

What is the relationship of the tool with other activity system elements?

7/02 (1): Object is to read the book and this object is connected to division of labor--D reads and K slides pages.

7/02 (2): Tool, with its affordances (sliding to turn pages, Read by Yourself option) and K’s deep connection to it results in specific division of labor (K handles the device). This division of labor results in a specific object—picture exploration (K turns pages by sliding and tells story based on pictures).

7/02 (3): Tool, with its affordances (sliding to turn pages, Read by Yourself option) and K’s deep connection to it results in specific division of labor (K handles the device). This division of labor results in a specific object—picture exploration (K turns pages by sliding and tells story based on pictures).

Question to follow:

Kalina’s relationship with the tool and tool affordances result in certain division of labor and that division of labor results in what kind of object is realized. It is not reading of an actual text but Kalina’s exploration on her own, with creating a story based on pictures and her prior knowledge. Will this pattern continue, or a new one will emerge?

7/03 (4): Tool, with its affordances (sliding to turn pages, Read by Yourself option) and K’s deep connection to it results in specific division of labor (K handles the device). This division of labor results in a specific object—picture exploration (K turns pages by sliding and tells story based on pictures).

7/03 (5): Accidentally, a different division of labor happens: K turns on the audio button
and listens to the story. As a result of this division, object is more about reading as accessing the full text, not only browsing through pictures. At the same time, K reveals that for her an ebook is not really a book.

7/05 (6): Tool, with its affordances (sliding to turn pages, read by yourself option) and K’s deep connection to it results in specific division of labor (K handles the device). This division of labor results in a specific object—picture exploration (K turns pages by sliding and tells story based on pictures).